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S W I T C H B O A R D A N D S U P P L Y C O M P A N Y
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*KELLOGG Switchboards, Telephones &
Supplies*

GENERAL CATALOG NO. 10

1941

PDF PART 3, Section 8 Line Supplies

See Index section for contents

A general telephone, switchboard and line supplies catalog distributed in 1941, the last catalog before WWII, it would be 8 years before a replacement would be printed in the number 11, 1949. This catalog was produced in looseleaf form and this copy had several inserts from 1946 and 1947 (the 1000 series sets) however it is presented in this PDF in its 1941 published format. A companion catalog (number 100) was also produced for the magneto orinated manual central office companies, and is available in the PDF format from the Kellogg website.

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KELLOGG



**SWITCHBOARDS
TELEPHONES
SUPPLIES**



**GENERAL CATALOG
No 10**

C H I C A G O U . S . A .

The
TELEPHONE INDUSTRY'S
most complete
useful, and
convenient
GENERAL CATALOG



This Kellogg General Catalog, comprising eight different sections and a General Index, contains everything required for the economical operation and maintenance of telephone systems. It is so complete and is arranged in such a manner as to make it the most convenient and useful general telephone reference book available.

All types of Kellogg central office equipment and sub-station apparatus, repair parts, outside plant material, construction items, tools, etc., are contained here UNDER ONE COVER.

Complete descriptions, giving the kind of information you want, with clearly defined illustrations used throughout, mean that you can order from this book . . . without doubt or question . . . with complete assurance that any item selected will do the job for which it is designed.

Every item in this catalog is listed and cross-indexed alphabetically in the General Index Section. This reference directs you to the particular section and page number of each of the thousands of items contained in the entire catalog . . . quickly and easily.



KELLOGG

SWITCHBOARD AND SUPPLY COMPANY
6650 S. CICERO AVENUE — CHICAGO

Line Supplies Section

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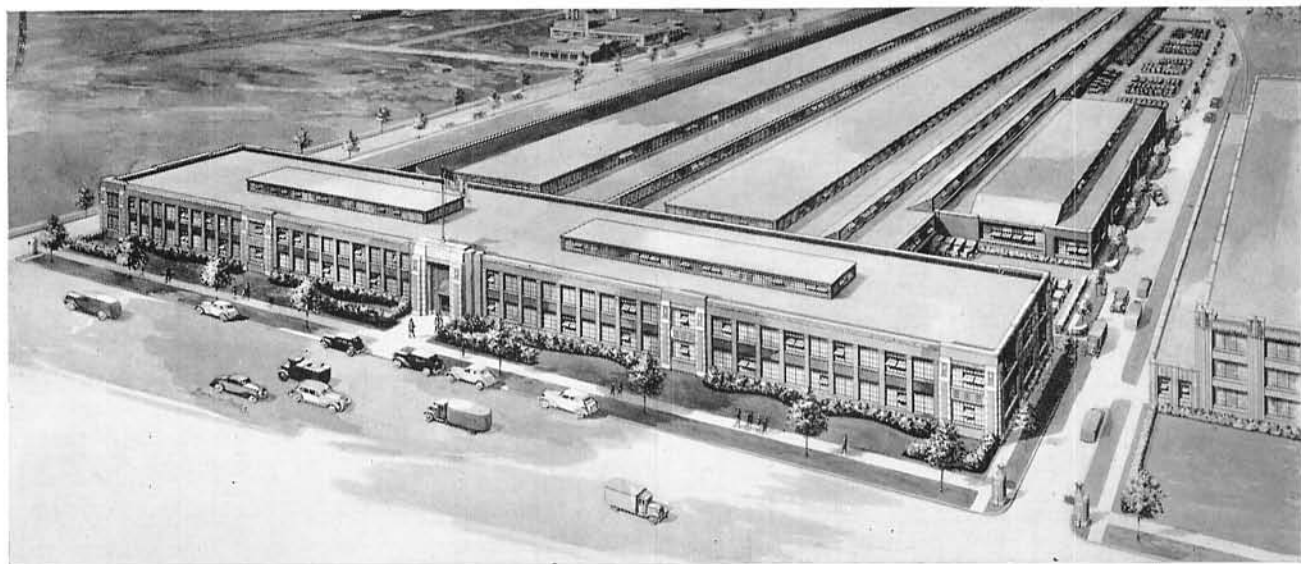
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Factory and General Offices of Kellogg Switchboard and Supply Company

KELLOGG

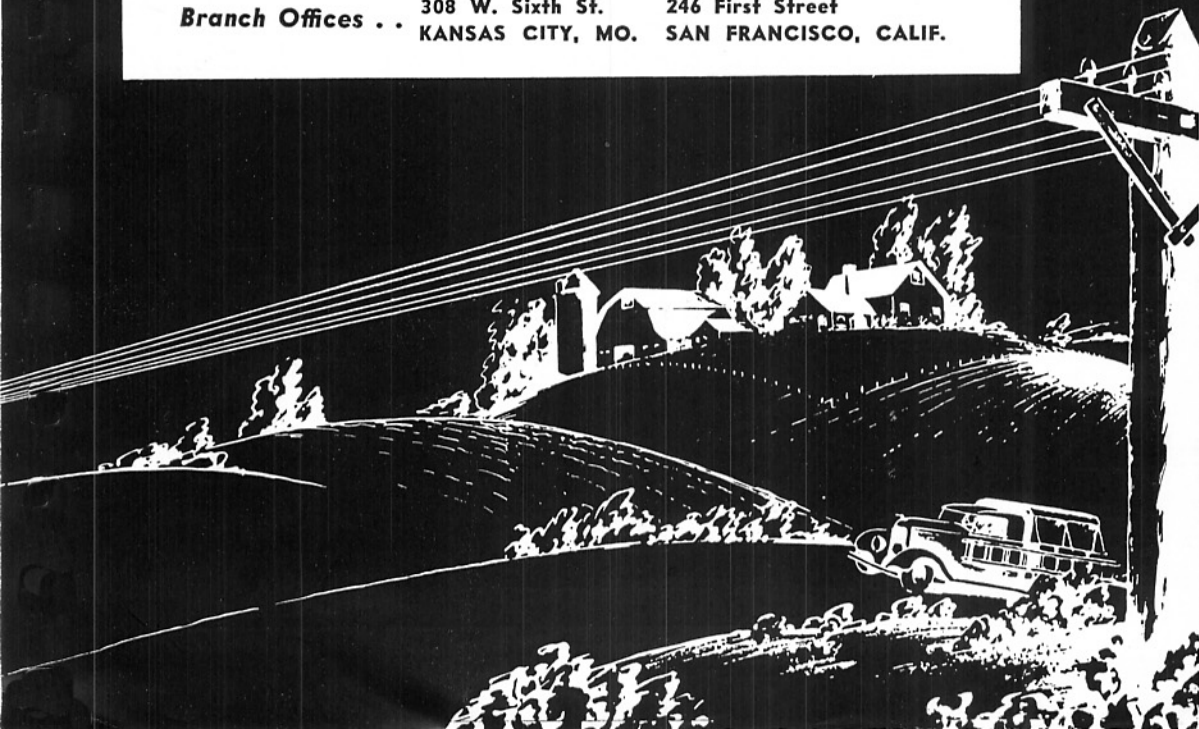
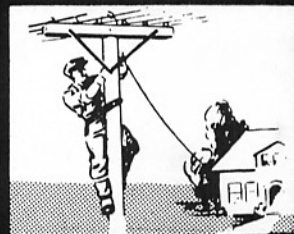
TELEPHONE LINE SUPPLIES AND CONSTRUCTION MATERIAL

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KELLOGG SWITCHBOARD & SUPPLY COMPANY
FACTORY AND GENERAL OFFICES
6650 S. CICERO AVENUE • CHICAGO, ILLINOIS, U. S. A.

Branch Offices . . . 308 W. Sixth St. 246 First Street
KANSAS CITY, MO. SAN FRANCISCO, CALIF.



Line Supplies Section

CUSTOMER INFORMATION

Guarantee

Through the years Kellogg has established with its customers, the reputation of selling goods that give a full measure of satisfaction. Further, all goods properly used are fully guaranteed for one year against any defect in material or workmanship and are subject to replacement.

Always notify us before making any return shipments. This will help to make the proper adjustment without delay.

Terms

Terms are 30 days net from date of invoice except for some items of construction material which carry a discount for cash within ten days from date of invoice. These terms are shown on invoices.

Charge accounts are invited. New customers who may not be rated by the commercial agencies can help assure prompt service by sending credit information with initial orders. Sight draft or C.O.D. orders receive the same immediate attention as those covered by established charge accounts.

Orders

To avoid errors or delays, catalog numbers as well as the name of each article should appear on the order. Possibilities of delay are decreased when complete information is given in the order.

Telephone or telegraph orders should be confirmed by mail immediately so that if a mistake is made in transmission of the order it can be checked and corrected. However, confirming orders must be marked "Confirming" to avoid the possibility of duplication.

Changes and Cancellations

A reasonable charge is made for changes or cancellation of orders when engineering, special assembly or adjustment is involved. These charges are only sufficient to compensate for the actual loss in time or material.

Shipments

Always specify whether goods are to be shipped via freight, express or parcel post. When shipment is desired by freight please specify the routing. In

the absence of instructions we shall use our best judgment in selecting routes which will assure the best service.

Claims for Shortage, Breakage or Non-Delivery

All claims for breakage, damages and non-delivery should be made without delay to the transportation company handling the shipment. We will gladly assist in presenting these claims.

Receipts from the transportation company specify that shipments are received in good condition, therefore shipments must be checked as they are received. Always have the agent of the transportation company make a notation on the bill of lading specifying any damage or shortage.

If packages or cases are in apparent good order, but contents are found to be damaged upon opening, call the freight agent or adjuster and have him mark the freight bill to show the concealed damage.

Claims for damage or non-delivery of parcel post shipments should be made to us as we insure this material and make all adjustments.

Returning Goods

Please notify us before making any return shipments. This will help to make the proper adjustment without delay.

The liability of the Kellogg Company is limited in all cases to the value of the goods claimed to be defective.

Marine and Parcel Post Insurance

Unless otherwise directed, we shall insure against non-delivery all shipments made by steamer or parcel post. A nominal charge will be made to cover the cost of this service.

Specifications

Statistical information contained in this catalog pertaining to strength and proper working loads of materials, tools, etc., is derived from tables compiled by the manufacturer and is reprinted for the convenience of the buyer.

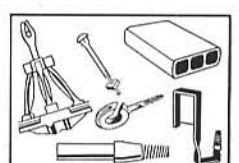
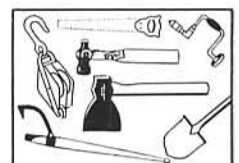
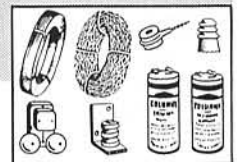
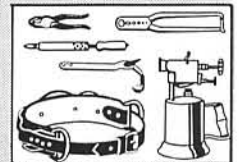
COAST TO COAST BORDER TO BORDER

This Great Network of Line Material Warehouses Provides Faster, More Satisfying Service



**GREATER
DISTRIBUTION
FACILITIES**

*Over 45 warehouses are
stocked with the finest quality materials
at right prices . . . awaiting your orders*



**FULL AND
COMPLETE
STOCKS**

**SPEEDIER
SHIPMENTS**

**FINEST QUALITY
AT RIGHT
PRICES**

WHEN you buy your line supplies from Kellogg you draw upon nearly 50 well-stocked warehouses. This unusual network of line material centers . . . spotted from Coast to Coast . . . is the reason why you can always rely upon Kellogg's speedier, more satisfying service. Complete pole line hardware stocks are carried at 15 strategic points! Bare and insulated wire stocked at 22 shipping centers and poles are carried at 11 yards. In addition, nearly a dozen other warehouses handle anchors, pins and brackets, tools and cross arms. These facilities are your assurance of getting supplies fast, when you want them. Everything you need is here awaiting your orders . . . and everything you buy from Kellogg is backed by the famous "Double Guarantee".

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

Line Supplies Section

ANCHORS



Expanding Anchors

This type of anchor is very popular and easily installed. A hole, about the size of the anchor when closed, is bored and the anchor dropped to the bottom. The anchor is expanded by striking the collar with a tamping bar. Made in three types: two-way, three-way and four-way.

Use standard anchor rods shown in the next column.

Everstick (Less Rods)

Cat. No.	Description	Rod Size Inches	Area Expanded	Weight per 100
52	5" 2-Way	1/2	40 sq. in.	520 lbs.
62	6" 2-Way	5/8	55 sq. in.	685 lbs.
82	8" 2-Way	3/4	100 sq. in.	1130 lbs.
633	6" 3-Way	5/8	65 sq. in.	780 lbs.
834	8" 3-Way	5/8	90 sq. in.	1120 lbs.
836	8" 3-Way	3/4	110 sq. in.	1380 lbs.
8310	8" 3-Way	3/4	125 sq. in.	1515 lbs.
8312	8" 3-Way	1	125 sq. in.	1590 lbs.
10316	10" 3-Way	1	175 sq. in.	2865 lbs.
64	6" 4-Way	5/8	70 sq. in.	960 lbs.
84-3/4	8" 4-Way	3/4	125 sq. in.	1650 lbs.
84-1	8" 4-Way	1	132 sq. in.	1665 lbs.
104	10" 4-Way	1	210 sq. in.	3050 lbs.

Wagner (Less Rods)

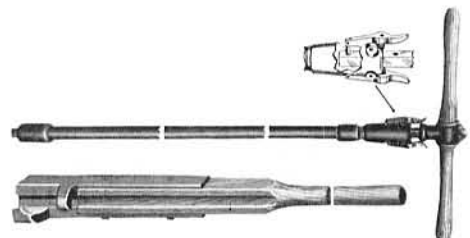
Cat. No.	Description	Rod Size Inches	Area Expanded	Weight per 100
62-W	6" 2-Way	5/8	55 sq. in.	640 lbs.
82-W	8" 2-Way	3/4	100 sq. in.	940 lbs.
633-W	6" 3-Way	5/8	65 sq. in.	670 lbs.
834-W	8" 3-Way	5/8	90 sq. in.	940 lbs.
836-W	8" 3-Way	3/4	110 sq. in.	1110 lbs.
8310-W	8" 3-Way	3/4	125 sq. in.	1160 lbs.
8312-W	8" 3-Way	1	125 sq. in.	1320 lbs.
10316-W	10" 3-Way	1	175 sq. in.	2290 lbs.
84-W	8" 4-Way	3/4	125 sq. in.	1480 lbs.
84-1-W	8" 4-Way	1	132 sq. in.	1600 lbs.
104-W	10" 4-Way	1	210 sq. in.	3000 lbs.

Kearney (Less Rods)

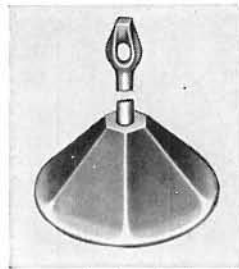
Cat. No.	Description	Rod Size Inches	Area Expanded	Weight per 100
37533	3 3/4" 2-Way	1/2-3/8	34 sq. in.	325 lbs.
5053	5" 2-Way	1/2-5/8	55 sq. in.	500 lbs.
6076	6" 2-Way	1/2-5/8	75 sq. in.	800 lbs.
8120	8" 2-Way	5/8-1	125 sq. in.	1400 lbs.
8136	8" 2-Way	5/8-1	136 sq. in.	1800 lbs.
8090	8" 3-Way	1/2-3/4	90 sq. in.	1000 lbs.
8110	8" 3-Way	1/2-3/4	110 sq. in.	1075 lbs.
8125	8" 3-Way	5/8-1	125 sq. in.	1350 lbs.
84090	8" 4-Way	1/2-3/4	90 sq. in.	1175 lbs.
84125	8" 4-Way	5/8-1	125 sq. in.	1450 lbs.
84140	8" 4-Way	5/8-1	140 sq. in.	1650 lbs.

Anchor Installing Tools

Cat. No.	Description	Weight Each
5	Iwan Auger Blades bore 5 in. holes	4 lbs.
6	Iwan Auger Blades bore 6 in. holes	6 lbs.
8	Iwan Auger Blades bore 8 in. holes	7 lbs.
10	Iwan Auger Blades bore 10 in. holes	8 lbs.
12	Iwan Auger Blades bore 12 in. holes	13 lbs.
8	Telescopic Handle, 8 Ft.	19 lbs.
10	Telescopic Handle, 10 Ft.	22 lbs.
	9 Ft. Everstick Tamping Bar	23 lbs.



Cone Anchors



Where there are rocky earth formations or where moisture does not penetrate the earth very deeply this type is highly recommended.

To install, use an earth auger slightly larger than the size of the anchor. Attach the anchor rod and drop the anchor to the bottom of the hole. Tamp a quantity of broken stone around the anchor and fill the hole with well tamped earth. Use standard anchor rods listed below.

Chance (Less Rods)

Cat. No.	Anchor Size Inches	Rod Size Inches	Weight Per 100
C-6	6	5/8-1/2	325 lbs.
C-8	8	3/4-5/8	650 lbs.
C-10	10	3/4-5/8	975 lbs.
C-12	12	1-3/4	1575 lbs.

Everstick (Less Rods)

Cat. No.	Anchor Size Inches	Rod Size Inches	Weight Per 100
6-C	6	5/8	250 lbs.
8-C	8	3/4	575 lbs.
10-C	10	3/4	1000 lbs.
12-C	12	1	1400 lbs.

Standard Anchor Rods

Thimbleye (Single Guy)



Cat. No.	Diameter	Length	Diameter of Eye	Std. Pkg. Quantity	Weight per 100
J-7405	1/2 in.	5 ft.	7/16 in.	10	350 lbs.
J-7406	1/2 in.	6 ft.	7/16 in.	10	410 lbs.
J-7416	5/8 in.	6 ft.	1/2 in.	10	650 lbs.
J-7417	5/8 in.	7 ft.	1/2 in.	10	750 lbs.
J-7418	5/8 in.	8 ft.	1/2 in.	10	850 lbs.
J-7426	3/4 in.	6 ft.	5/16 in.	5	940 lbs.
J-7427	3/4 in.	7 ft.	5/16 in.	5	1090 lbs.
J-7428	3/4 in.	8 ft.	5/16 in.	5	1240 lbs.
J-7429	3/4 in.	9 ft.	5/16 in.	5	1390 lbs.
J-7438	1 in.	8 ft.	3/8 in.	3	2250 lbs.
J-7440	1 in.	10 ft.	3/8 in.	3	2810 lbs.

Twineye (Double Guy)



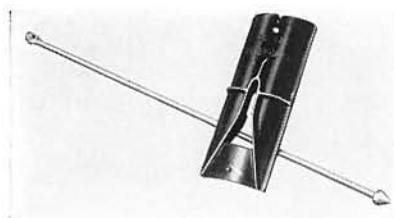
Cat. No.	Diameter	Length	Diameter of Eye	Std. Pkg. Quantity	Weight per 100
J-7526	3/4 in.	6 ft.	1/2 in.	5	960 lbs.
J-7528	3/4 in.	8 ft.	1/2 in.	5	1260 lbs.
J-7529	3/4 in.	9 ft.	1/2 in.	5	1410 lbs.
J-7538	1 in.	8 ft.	5/8 in.	3	2280 lbs.
J-7540	1 in.	10 ft.	5/8 in.	3	2820 lbs.

Oval Eye (Single Guy)

Cat. No.	Diameter	Length	Size of Eye	Std. Pkg. Quantity	Weight per 100
J-1000	1/2 in.	5 ft.	1 1/4 x 1 1/2 in.	10	340 lbs.
J-1002	1/2 in.	6 ft.	1 1/4 x 1 1/2 in.	10	400 lbs.
J-1005	5/8 in.	5 ft.	1 1/2 x 2 in.	10	540 lbs.
J-1006	5/8 in.	6 ft.	1 1/2 x 2 in.	10	640 lbs.

ANCHORS

Never-Creep Anchors



As the name implies, this type of anchor will not creep or move when properly installed. They pull against solid, undisturbed earth; all of the holding area is utilized. There are only two pieces, the certified malleable plate and the one-piece drop-forged steel rod.

To install, bore a hole for the plate at right angles to the line of pull, drive the rod into the hole through solid earth, in line with the pull. Hang the plate on the end of the ball point rod.

Never-Creep *Ball-Point* Anchor Rods must be used with these anchors. Specifications are shown below.

Chance Never-Creep Anchor Plates (Less Rods)

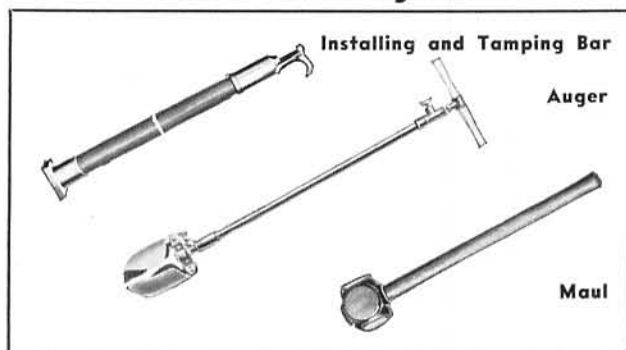
Cat. No.	Size of Plate	Rod Size	Weight per 100
C-510	5x10 in.	1/2 in.	365 lbs.
C-615	6x15 in.	5/8 in.	683 lbs.
C-620	6x20 in.	3/4-5/8 in.	938 lbs.
C-820	8x20 in.	3/4-5/8 in.	1260 lbs.
C-825	8x25 in.	3/4 in.	1680 lbs.
C-830	8x30 in.	3/4 in.	2420 lbs.
C-835	8x35 in.	1-3/4 in.	3238 lbs.
C-1040	10x40 in.	1 in.	4761 lbs.

Chance Never-Creep Anchor Rods (Thimbleye)



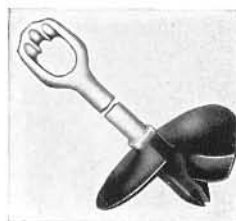
Cat. No.	Diameter	Length	Std. Pkg. Quantity	Weight per 100
C-25	1/2 in.	5 ft.	10	300 lbs.
C-26	1/2 in.	6 ft.	10	450 lbs.
C-56	5/8 in.	6 ft.	10	680 lbs.
C-57	5/8 in.	7 ft.	10	755 lbs.
C-36	3/4 in.	6 ft.	5	960 lbs.
C-37	3/4 in.	7 ft.	5	1120 lbs.
C-38	3/4 in.	8 ft.	5	1245 lbs.
C-18	1 in.	8 ft.	3	2300 lbs.

Chance Installing Tools



Cat. No.	Descriptions	Weight Each
C-15	10 Ft. Never-Creep Installing and Tamping Bar	9 lbs.
C-16	Wood Faced Maul	12 lbs.
C-610	Telegraph Auger, 5 3/8 in. to 7 3/4 in.	26 lbs.
C-812	Heavy Telegraph Auger, 8 in to 12 3/4 in.	28 lbs.
C-177	Quick Catch, Telescoping Auger Handle.	10 lbs.

Screw Anchors



Saving in installing time plus great holding surface makes this anchor well suited to most types of earth. There are no moving parts to adjust or assemble. Furnished with rods ready to install.

Joslyn - Chance (With Rods)

Cat. No.	Anchor Size	Rod Size Diam.	Length	Weight per 100
J-6524-4345	4 in.	3/4"	x4'6"	805 lbs.
J-6526-6346	6 in.	3/4"	x5'6"	1040 lbs.
J-6527-716	7 in.	1"	x5'6"	1825 lbs.
J-6528-816	8 in.	1"	x5'6"	1900 lbs.
J-6530-10146	10 in.	1 1/4"	x5'6"	3200 lbs.

Kearney (With Rods)

Cat. No.	Anchor Size	Rod Size Diam.	Length	Weight per 100
61	6 in.	1/2"	x6'	825 lbs.
65	6 in.	5/8"	x6'	1040 lbs.
75	7 in.	5/8"	x6'1"	1105 lbs.
73	7 in.	3/4"	x6'1"	1345 lbs.
85	8 in.	5/8"	x6'2"	1345 lbs.
83	8 in.	3/4"	x6'2"	1455 lbs.

60—Adjustable Screw Wrench—27 lbs. each

Matthews (With Rods)

Cat. No.	Anchor Size	Rod Size Diam.	Length	Weight per 100
412-R	4 in.	1/2"	x6'	650 lbs.
612-R	6 in.	1/2"	x6'	750 lbs.
658-R	6 in.	5/8"	x6'	950 lbs.
758-R	7 in.	5/8"	x6'	1100 lbs.
858-R	8 in.	5/8"	x6'	1300 lbs.

567—Wrench—30 lbs. each

865—Ratchet Handle—17 lbs each

Drive and Twist Anchors



Ease of installation and great holding power are characteristic of this anchor. The point acts as a pilot when driving through roots, gravel and rocky soil. For installing just drive anchor down with a sledge then insert a bar in the eye and twist four revolutions to the right.

Made of steel, hot galvanized. The shaft eye and point are all one solid piece dipped in asphaltum.

Cat. No.	Span Blades	Rod Size	Wt. Each
1	8 in.	3/4 in. x 4 ft.	8 lbs.
2	12 in.	7/8 in. x 5 ft.	12 lbs.
3	12 in.	7/8 in. x 6 ft.	15 lbs.

Harpoon Anchors

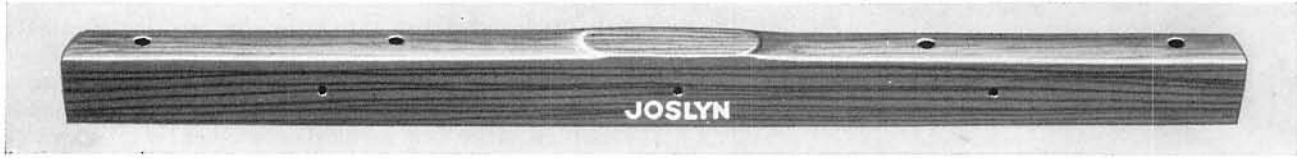


The sharp spear point makes driving easy and assures quick penetration of hard soil, gravel, roots and other obstacles.

For installing, drive anchor into earth with a sledge; blades are opened by lifting it up about 4 inches. Positive holding power in undisturbed earth is assured because blades open automatically when strain is applied.

Manufactured from drop forged steel. Furnished hot galvanized or black asphaltum. Specify finish desired.

Cat. No.	Rod Length	Rod Size	Wt. Each
5	5 ft.	1 inch square	20 lbs.

*Line Supplies Section***FIR CROSS ARMS-- SPECIFICATIONS****Scope**

These specifications cover material and workmanship of cross arms and alley arms in sizes 6x6 cross section and smaller, made of coast type Douglas Fir (*Pseudotsuga Taxifolia*).

General

Complete specifications and drawings include all instructions necessary for the manufacturer's guidance in his work. They are intended to supplement each other and any details indicated in one and not in the other shall be executed the same as if indicated in both. All arms shall be finished smooth on all four sides and ends shall be sawed square. Pin and bolt holes shall be smooth and free from splintering where the bit has broken through.

Dimensions

Cross arms shall be of the style and dimensions shown and allowable variations must not be exceeded. Figures on the drawings shall be followed in preference to scale measurements.

Seasoning

Arms shall be made of air-dried or kiln-dried lumber, the moisture content of which shall average not less than 12 per cent and not more than 20 per cent of its oven dry weight.

Material

Finished cross arms shall not contain boxed hearts, checks along the same grain appearing at adjacent pin holes or through checks, cracks across the grain, any decay or fungus growth, loose or unsound knots, shakes, worm holes, pieces of exceptionally light weight or a combination of bow and crook.

Finished cross arms may contain the following defects, provided they do not exceed stated limits.

Annular Rings—Annular rings measured over a 3-inch portion of a radial line shall average not less than 8 nor more than 20 per inch. Six rings per inch will be permitted provided the piece contains $\frac{1}{8}$ or more summerwood. The radial line shall be at a right angle to the annular rings and the center of the 3-inch portion of the line shall be at the center of the end of the piece. If a 3-inch portion of the radial line cannot be obtained, the measurement shall be made over as much of the 3-inch portion as is available.

Checks not exceeding $\frac{3}{4}$ inch in depth or $\frac{1}{16}$ inch in width. Other checks shall be permitted provided they do not exceed 6 inches in length on the top of the arm or where entering a pinhole, 12 inches in length on the bottom of the arm or where entering a bolt hole or 18 inches in length on the sides of the arm.

Grain—Spiral or diagonal grain, which departs from parallelism with the axis of the arm by an amount not greater than 1 inch in 12 inches of length (approximately 5 degrees).

Material (Continued)

Sound Knots not exceeding $\frac{1}{4}$ inch in diameter in any 3-inch longitudinal section having a pin or bolt hole at its center. In the center half of the arm single sound knots in any 6-inch longitudinal section shall not exceed $\frac{3}{4}$ inch in diameter. In the end quarter sections, the size of knots may be increased to 1 inch in diameter. A plurality of knots shall not exceed in area the limits specified for single knots. The size of knot shall be taken as the smallest diameter.

Pitch Pockets—Pitch pockets not exceeding $\frac{1}{8}$ inch in width and 4 inches in length on top of the arm. Pitch pockets not exceeding $\frac{1}{4}$ inch in width and 8 inches in length or the equivalent area on sides and bottom of the arm.

Sapwood—Sapwood not in excess of $\frac{1}{3}$ of the girth of the arm.

Wane—All bark shall be removed from wane edges. Wane not in excess of $\frac{3}{4}$ inch of the beveled surface.

Warp—Bow or crook not exceeding $\frac{1}{16}$ inch per foot of length.

Combination of Defects—An 8-foot arm may contain either 4 allowable, sound, tight knots or smaller knots equivalent in area, or 4 allowable pitch pockets. These defects are to be reduced proportionately when they appear in combination. They are to be increased or decreased proportionately for longer or shorter arms.

Testing

Testing—Pin and bolt holes shall be tested with steel gages as follows:

$1\frac{1}{32}$ -inch pin holes shall admit the $1\frac{1}{2}$ -inch gage without forcing, but shall not admit the $1\frac{1}{16}$ -inch gage.

$1\frac{1}{16}$ -inch bolt holes shall admit the $\frac{5}{8}$ -inch gage without forcing.

$\frac{9}{16}$ -inch bolt holes shall admit the $\frac{1}{2}$ -inch gage without forcing.

$\frac{7}{16}$ -inch bolt holes shall admit the $\frac{3}{8}$ -inch gage without forcing.

Inspection

Inspection—Arms not conforming with this specification shall be rejected and the manufacturer shall either replace such rejected arms with arms complying with this specification at his own expense or allow credit for such rejected arms.

Storage

Storage—Cross arms held for storage shall be stacked in cross piles on skids 6 inches above the floor in such a manner as to provide good ventilation. Stacks shall be roofed to prevent the penetration of rain or direct action of the sun.

STANDARD FIR and PINE CROSS ARMS

The following have been recognized generally as standard arms. If any variation is desired please be sure to show these changes plainly on the order.

STOCK NUMBER		Size Arm—Inches	PIN HOLES				Center Bolt Hole Inches	Brace Bolt Spacing Inches	Use Length Brace Inches	WEIGHT Per 100 Arms (Lbs.)	
Fir	Pine		Spacings—Inches			Size Inches				Fir	Pine
			Center	Sides	Ends						
		3 1/4 x 4 1/4	Electric Light Arms*								
J-5800	1	3 ft., 2 pin	28	..	4	1 17/32	5/8	25	20	1062	1500
J-5801	2	4 ft., 4 pin	16	12	4	1 17/32	5/8	28	22	1416	2000
J-5802	3	5 ft., 4 pin	18	17	4	1 17/32	5/8	28	22	1770	2600
J-5803	4	6 ft., 4 pin	22	21	4	1 17/32	5/8	32	24, 26	2124	3100
J-5804	5	6 ft., 6 pin	16	12	4	1 17/32	5/8	32	24, 26	2124	3100
J-5805	6	8 ft., 6 pin	18	17 1/2	4	1 17/32	5/8	32	24, 26	2832	4100
J-5806	7	8 ft., 8 pin	16	12	4	1 17/32	5/8	32	24, 26	2832	4100
J-5807	8	8 1/2 ft., 10 pin	16	9 3/4	4	1 17/32	5/8	32	24, 26	3009	4300
J-5808	9	10 ft., 8 pin	17 1/2	15 3/4	4	1 17/32	5/8	42	30, 32	3540	5100
J-5809	10	10 ft., 10 pin	16	12	4	1 17/32	5/8	42	30, 32	3540	5100
J-5810	11	10 ft., 12 pin	16	9 5/8	3 7/8	1 17/32	5/8	42	30, 32	3540	5100
		2 3/4 x 3 3/4	Pony Telephone Arms**								
J-5819	31	24 in., 2 pin	17	..	3 1/2	1 9/32	5/8	..	..	540	800
J-5820	32	30 in., 2 pin	23	..	3 1/2	1 9/32	5/8	..	..	675	1000
J-5821	33	36 in., 2 pin	29	..	3 1/2	1 9/32	5/8	25	20	810	1200
J-5822	34	42 in., 4 pin	16	9 1/2	3 1/2	1 9/32	5/8	28	22	945	1300
J-5823	35	62 in., 6 pin	16	9 3/4	3 1/2	1 9/32	5/8	28	22	1395	2000
J-5824	36	82 in., 8 pin	16	9 3/4	3 3/4	1 9/32	5/8	28	22	1845	2600
J-5825	37	102 in., 10 pin	16	9 3/4	4	1 9/32	5/8	28	22	2295	3200
J-5826	38	120 in., 12 pin	16	9 5/8	3 7/8	1 9/32	5/8	28	22	2700	3800
		3 x 4 1/4	Western-Union Arms								
J-5920	25	6 ft., 6 pin	20	11 1/2	3	9/16	2 1/32	..	..	1980	2900
J-5921	26	8 ft., 8 pin	21	11 1/2	3	9/16	2 1/32	..	..	2640	3800
J-5922	27	10 ft., 10 pin	22	11 1/2	3	9/16	2 1/32	..	..	3300	4800
		3 1/2 x 4 1/2	N. E. L. A. Arms								
J-5828	41	3 ft. 2 in., 2 pin	30	..	4	1 17/32	1 1/16	28	22	1267	1900
J-5829	42	5 ft. 7 in., 4 pin	30	14 1/2	4	1 17/32	1 1/16	38	28	2233	3400
J-5830	43	8 ft., 6 pin	30	14 1/2	4	1 17/32	1 1/16	38	28	3200	4800
J-5831	44	9 ft. 2 in., 8 pin	30	12	4	1 17/32	1 1/16	38	28	3667	5500
		3 1/4 x 4 1/4	N. E. L. A. (Light) Arms								
J-5833	51	3 ft. 2 in., 2 pin	30	..	4	1 17/32	1 1/16	28	22	1120	1600
J-5834	52	5 ft. 7 in., 4 pin	30	14 1/2	4	1 17/32	1 1/16	38	28	1976	2900
J-5835	53	8 ft., 6 pin	30	14 1/2	4	1 17/32	1 1/16	38	28	2832	4100
J-5836	54	9 ft. 2 in., 8 pin	30	12	4	1 17/32	1 1/16	38	28	3245	4700
		3 1/4 x 4 1/4	Guard Arms								
G-48		Guard Arms are 48"x4 1/4"x3 1/4", bored for one 5/8" machine bolt, one 3/8" carriage bolt and drop attachments—specify when ordering. Guard Arm braces are shown on page 58.							1416	2000	

*Electric Light Arms are bored 1 17/32 inch for 1 1/4 inch Pins or 1 13/16 inch for 1 1/2 inch Pins. 1 1/4 inch Pins are considered standard for telephone work. When ordering be sure to specify size of Pins to be used. Orders not specifying will be shipped with 1 1/4 inch Pin boring. **Pony Telephone Arms are bored for 1 1/4 inch Pins only.

Pine Cross Arms: Standard are 8 lb. pressure treated. They are carried in stock at the mills only; can be shipped in carload lots, less than carload lots or in conjunction with shipments of carloads of pine poles.

Note: All standard arms are bored for 3/8" brace bolts unless otherwise specified.

Special Arms with special borings or spacings to meet particular requirements can be furnished. A drawing should accompany such orders.

Minimum Carload Weights

Fir Cross Arms: From Pacific Coast Mills, 38,000 lbs. Small cars are scarce and weight of at least 50,000 lbs. should be figured on. Cars to contain as high as 90,000 lbs. can be had.

Pine Cross Arms: (Cross arms alone or with Pine Poles.) From mills west of the Mississippi River, single load 30,000 lbs. if 36 ft. car; single load 34,000 lbs. if over 36 ft. car; double load 48,000 lbs. From mills east of the Mississippi River, single load 34,000 to 36,000 lbs.; double load 58,000 to 60,000 lbs.

Line Supplies Section

WOOD BRACKETS, STEPS and PINS

Side or Pole Brackets



Manufactured from oak thoroughly seasoned and dried, eliminating shrinkage after the brackets are installed. Threaded one inch in diameter, four threads to the inch, with $\frac{1}{8}$ -inch taper per inch of length. The length of the thread on all sizes is $2\frac{1}{4}$ inches. There are two $\frac{3}{8}$ -inch diameter holes for mounting with spikes which are shown on page No. 77. The Kellogg Special and Giant Brackets are much stronger due to their short shank feature — furnished only by Kellogg.

All Brackets are furnished painted or unpainted except the Kellogg and Western Union sizes which are furnished unpainted only. Creosoted and paraffined Brackets are also available.

Cat. No.	Size Inches	Number per Bundle	Weight per 1000
J-2550-4	$1\frac{1}{2} \times 2 \times 10$	25	600 lbs.
J-2551-1	$1\frac{1}{2} \times 2 \times 12$	25	800 lbs.
J-2552-3	$1\frac{1}{2} \times 2\frac{1}{4} \times 12$	25	1000 lbs.
J-2553-L.D.	$1\frac{3}{8} \times 2 \times 12$	25	800 lbs.
J-2555-W.U.	$2 \times 2\frac{3}{8} \times 12$	20	1000 lbs.
J-2557-New W.U.	$2 \times 2\frac{3}{4} \times 12$	20	1150 lbs.
2560-Kellogg Spl.	$1\frac{1}{2} \times 2 \times 10$	25	600 lbs.
2561-Kellogg Giant	$2 \times 2\frac{3}{8} \times 12$	25	1000 lbs.

Wood Pole Steps



Furnished in plain, painted or creosoted oak. Two $\frac{3}{8}$ -inch holes are provided for mounting with spikes. Spikes are shown on page No. 77. For galvanized steel steps see page No. 63.

Cat. No.	Size Inches	No. per Bundle	Weight per 1000
J-2556	$1\frac{1}{2} \times 2 \times 7$	25	700 lbs.
J-2662	$1\frac{3}{4} \times 2\frac{5}{8} \times 7$	20	700 lbs.

Corner and Duplex Insulator Pins



Corner Pins are used principally on corners and strain points. They are reinforced with a $\frac{3}{8}$ -inch galvanized bolt which extends through the entire length of the pin. An extra large washer 2 inches in diameter is provided so that the nut may be tightened and the pin securely fastened in place.

Duplex Pins are threaded on both ends and are also used for transposition insulators.

All pins are shipped in heavy burlap bags.

No. J-1784

Cat. No.	Pin Size Inches	Description	Weight per 1000
J-1784 Corner	$1\frac{1}{4} \times 8$	No. 1 Grade Locust	590 lbs.
J-1758 Corner	$1\frac{1}{2} \times 9$	No. 1 Grade Locust	750 lbs.
J-1786 Duplex	$1\frac{1}{4} \times 11\frac{1}{2}$	No. 1 Grade Locust	500 lbs.

Bracket Clips

Hot Galvanized

Bracket Clips are used under the head of the nail to prevent the wood bracket from splitting. They are made of No. 14 gauge steel.



Cat. No.	Width Between Legs	Weight per 100
J-2560-C	$1\frac{1}{2}$ in.	4 lbs.
J-2561-C	2 in.	4 lbs.

Standard Wood Insulator Pins



Cat. No.	Pin Size Inches	Top Size	Std. Bag	Weight per 1000
J-1760	$1\frac{1}{4} \times 8$	1 in.	250	325 lbs.
J-1761	$1\frac{1}{2} \times 9$	1 in.	250	480 lbs.



Transposition Pins

Transposition Pins conform to the above specifications but have an extra long thread for use with transposition insulators. They are made of No. 1 Grade Locust and are shipped in heavy burlap bags.

Cat. No.	Pin Size Inches	Std. Bag	Weight per 1000
J-1782	$1\frac{1}{4} \times 9$	250	400 lbs.

Western Union Steel Pins

Hot Galvanized

The cobs are made of the best grade of air-dried oak, boiled in paraffin to exclude all moisture. The pins are forged from stiff, high carbon open hearth steel and are cut threaded on the top to receive the cobs.

The Long Shank Pin is equipped with one square nut and a round washer, clipped on one side to permit locking the nut by driving a nail into the arm.

Short shank pins are furnished with nut only and are used on transposition brackets, steel crossarms, ridge irons, etc. Extra cobs can be furnished.



No. J-1193

Cat. No.	Diameter of Shank	Length Below Shoulder	Length Above Shoulder	Std. Pkg.	Weight per 100
J-1190	$\frac{1}{2}$ in.	5 in.	$4\frac{1}{4}$ in.	325	67 lbs.
J-1191	$\frac{5}{8}$ in.	5 in.	$4\frac{1}{4}$ in.	250	102 lbs.
J-1193	$\frac{1}{2}$ in.	1 in.	$4\frac{1}{4}$ in.	500	46 lbs.
J-1195	$\frac{5}{8}$ in.	1 in.	$4\frac{1}{4}$ in.	400	65 lbs.

Bracket Reinforcing Straps

Hot Galvanized

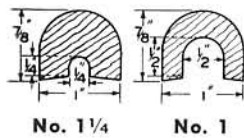
Made of hot galvanized, 14-gauge steel, 1-inch wide. Three $\frac{3}{8}$ -inch holes are provided for nailing to wood bracket. The bottom strap is used on an outside bracket and the top strap on an inside bracket.



Cat. No.	Description	Weight per 100
J-2562	Bottom Strap	18 lbs.
J-2563	Top Strap	28 lbs.

WOOD MOULDING, TREE GUARDS

Wood Ground Wire Moulding

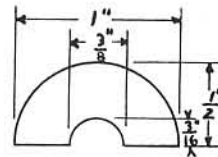


Used to protect the ground wire on the side of poles or buildings. This moulding is made of the highest grade material. Can be supplied either painted or unpainted. Use staples No. 127 or 126 for fastening to the pole.

Put up in neat bundles with steel strapping.

Cat. No.	Size of Groove	Size Over All	Std. Length	No. Feet per Bundle	Weight per 1000 Feet
1 1/4	1/4 in.	1 x 7/8 in.	8 ft.	500	150 lbs.
1	1/2 in.	1 x 7/8 in.	8 ft.	500	120 lbs.

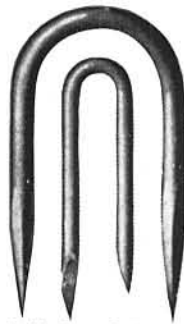
Type B Tree Guards



Wood guards for protecting drop wires in trees. A.T.&T. specification No. 6203. There are two grooves in each piece for tying the half rounds together with wire. Two feet of moulding are required for each foot to be protected. The wood is fir, creosote treated.

Description	Size Hole	Size Over All	Std. Length	Weight per 100 ft.
Type B, half round	3/8 in.	1 x 1 in.	7 to 12 ft.	75 lbs.

Galvanized Staples



Used for moulding, conduit and grounding wires. Numbers J-127 and J-128 are used for standard 1 x 7/8-inch wood moulding. Standard package, 100 pound keg.

Rolled Point — Moulding

Cat. No.	Length	Inside Width	Size Wire	Weight per 100
J-126	1 in.	3/8 in.	1/8 in.	.75 lbs.
J-127	2 in.	1 1/16 in.	3/16 in.	3.5 lbs.
J-128	3 in.	1 1/16 in.	1/4 in.	7 lbs.

Cut Point — Fence

Cat. No.	Length	Inside Width	Size Wire	No. per 100 lb. Keg
J-1672	1 1/2 in.	3/8 in.	.148 in.	5600
J-1673	1 3/4 in.	3/8 in.	.148 in.	5000

Copperweld Staples

Used for moulding, conduit and grounding wires. Numbers J-6521 and J-6522 are designed for 1 x 7/8 inch wood moulding.

Rolled Point — Moulding

Cat. No.	Length	Inside Width	Size Wire	Std. Pkg.	Wt. per 100 Staples
J-6493	1 1/4 in.	1/4 in.	.114 in.	500	.7 lbs.
J-6494	1 1/2 in.	1/4 in.	.144 in.	500	1.3 lbs.
J-6495	1 3/4 in.	3/8 in.	.144 in.	500	1.5 lbs.
J-6496	2 in.	1/2 in.	.162 in.	500	2.2 lbs.
J-6521	2 in.	1 1/16 in.	3/16 in.	100	3 lbs.
J-6522	3 in.	1 1/16 in.	1/4 in.	100	7.8 lbs.
J-6523	3 in.	3/4 in.	1/4 in.	100	7.3 lbs.
J-6524-C	3 in.	1 1/2 in.	1/4 in.	100	8.3 lbs.
J-6525	3 3/4 in.	1 3/4 in.	3/8 in.	50	15 lbs.

Cut Point — Fence

Cat. No.	Length	Inside Width	Size Wire	No. per 100 lb. Keg
J-6651	1 3/8 in.	1/2 in.	.162 in.	6100
J-6652	1 1/2 in.	3/8 in.	.162 in.	5700
J-6653	2 in.	1/4 in.	.162 in.	4400
J-6654	1 1/4 in.	3/16 in.	.114 in.	13400
J-6655	2 in.	1/2 in.	.162 in.	4300

Galvanized Pipe Straps



Accurately stamped to size from galvanized sheet metal — used to support BX and rigid conduit. Sold by the pound — when ordering please specify pounds and not pieces. Packed in standard bags of 50 pounds each.

Cat. No.	Size	No. per lb.	Cat. No.	Size	No. per lb.
J-1650	1/4 in.	80	J-1656	1 1/4 in.	11
J-1651	BX	77	J-1657	1 1/2 in.	8
J-1652	3/8 in.	50	J-1658	2 in.	7
J-1653	1/2 in.	38	J-1659	2 1/2 in.	3
J-1654	3/4 in.	23	J-1660	3 in.	2 1/2
J-1655	1 in.	16			

Half Round Wood Cable Moulding



Used to protect the cable on the side of the pole. One piece of moulding is placed on each side of the cable or strand and the two pieces bound together by wrappings of .083-inch galvanized iron wire. Two feet of moulding are required for each foot of cable

or strand to be protected. Cable straps are required for fastening to poles.

Made of thoroughly seasoned wood, unpainted. Packed in steel strapped bundles.

Type	Inside Diameter	Outside Diameter	Wall Thickness	Standard Length	Weight per 1000 Feet
L	1/2 in.	1 1/4 in.	3/8 in.	7 to 12 ft.	90 lbs.
K	1 in.	1 3/4 in.	3/8 in.	7 to 12 ft.	230 lbs.
H	1 1/4 in.	2 in.	3/8 in.	7 to 12 ft.	270 lbs.
G	1 1/2 in.	2 1/4 in.	3/8 in.	7 to 12 ft.	290 lbs.
F	2 in.	2 3/4 in.	3/8 in.	7 to 12 ft.	350 lbs.
E	2 1/2 in.	3 1/4 in.	3/8 in.	7 to 12 ft.	460 lbs.

Wood Moulding — Slotted

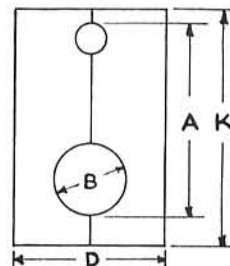
Half Round slotted wood mouldings are used to protect wires and cables running through trees. Two pieces of moulding are fitted together by wrapping with wire. Two feet of moulding is required for each foot of cable or strand to be protected.

Furnished unpainted or painted. Specify finish desired. Packed in steel strapped bundles.

Size of Hole	Std. Length	Weight per 1000 Feet
1/2 in.	8 feet	180 lbs.
3/4 in.	8 feet	270 lbs.
1 in.	8 feet	330 lbs.
1 1/4 in.	8 feet	375 lbs.
1 1/2 in.	8 feet	630 lbs.

Type D Tree Guards

For covering strand and cable exposed to contact with foreign wires, trolley poles, etc. Two No. 16 gauge, sheet steel straps and two 1/4-inch carriage bolts are furnished for fastening wooden guards together. The wood is fir, creosote treated.

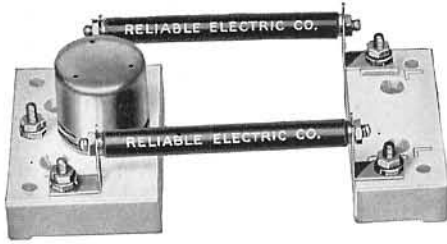


Size	Std. Length	A	B	D	K
1 1/2 in.	2 feet	2 7/8	1 3/8	2 3/8	4 3/8
2 in.	2 feet	3 1/8	2 1/8	3 1/8	5 1/8
2 1/2 in.	2 feet	4 1/4	2 1/2	3 1/2	5 3/4
2 7/8 in.	2 feet	4 3/8	2 7/8	3 7/8	6 1/8

Line Supplies Section

ARRESTERS and PROTECTORS

Reliable No. 977-HH Indoor Protectors



Listed as Standard by Underwriters' Laboratories. Self-cleaning, sawtooth, air gap protector for indoor use. Consists of low absorption porcelain base, phosphor bronze fuse clips and discharge block springs, two No. 55, 7 ampere fibre fuses, a brass screw cover over two No. P-495 sawtooth discharge blocks and two No. P-197 carbons.

Mounting holes are $\frac{3}{16}$ -inch for No. 10 flat head wood screws.

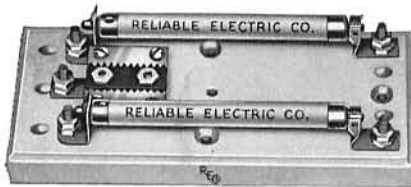
Cat. No.	Size	Weight Each
977-HH	$7\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{4}$ inches	2 lbs.

Reliable No. 977-DD Indoor Protectors

Listed as Standard by Underwriters' Laboratories. Same as No. 977-HH except equipped with clips that bite into the tips of two No. 77, 7 ampere fibre fuses.

Cat. No.	Size	Weight Each
977-DD	$7\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{4}$ inches	2 lbs.

Reliable No. 998-C Indoor Protectors



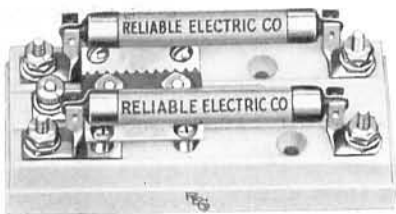
Listed as Standard by Underwriters' Laboratories. Self-cleaning, sawtooth air gap protector for indoor use. Consists of porcelain base; two

No. 77, 3 ampere fibre fuses, held in place by phosphor bronze clips which bite into the fuse tips; and two adjustable sawtooth metal discharge plates placed .004-inch from the carbon ground.

Mounting holes are $\frac{3}{16}$ -inch for No. 10 flat head wood screws.

Cat. No.	Size	Weight Each
998-C With Metal Cover	$6\frac{1}{2} \times 3 \times 1\frac{7}{8}$ in.	3 lbs.
998-C Less Cover	$6\frac{1}{2} \times 3 \times 1\frac{7}{8}$ in.	2½ lbs.

Reliable No. 975 Indoor Protectors

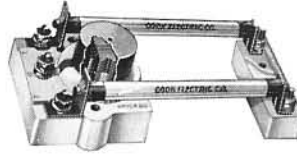


Listed as Standard by Underwriters' Laboratories. Self-cleaning, sawtooth air gap protector for indoor use. Consists of porcelain base, two No. 48, 3 ampere fibre fuses,

and two adjustable, sawtooth metal discharge plates placed .004-inch from the carbon ground. Mounting holes are $\frac{3}{16}$ -inch for No. 10 round head wood screws.

Cat. No.	Size	Weight Each
975 With Metal Cover	$5 \times 2 \times 2$ inches	2 lbs.
975 Less Cover	$5 \times 2 \times 2$ inches	1½ lbs.

Cook No. B-13 Indoor Protectors



Designed to carry either a long or short fuse. It consists of two pieces of porcelain, one carrying phosphor bronze fuse clips for the line end and the other carrying phosphor bronze fuse clips

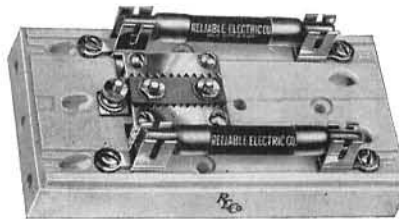
for the instrument end. Studs, nuts and washers are of Everdur.

Lightning arresters consist of two No. 4500 non-grounding True Gap Dischargers and two No. 2080 flat carbons set in a well in the porcelain and covered by a vented metal cap. Equipped with two No. 2104 A-9, 5 amp. fuses.

Mounting holes are $\frac{3}{16}$ -inch for No. 8, 1½-inch RHI Galvanized wood screws.

Cat. No.	Description	Size	Weight Each
1560	B-13 Protector	$2 \times 7 \times 3$ inches	1¼ lbs.

Reliable No. 976 Indoor Protectors



Listed as Standard by Underwriters' Laboratories. Self-cleaning, sawtooth, air gap protector for indoor use. Consists of porcelain base, two No. 52, 3-ampere round fibre fuses and two adjustable

sawtooth metal discharge plates placed .004-inch from a carbon block. All-over metal cover is supplied unless otherwise specified.

Mounting holes are $\frac{3}{16}$ -inch for No. 10 round head wood screws.

Cat. No.	Size	Weight Each
976	$5\frac{7}{8} \times 3 \times 2$ inches	2½ lbs.

Reliable No. 976-C Indoor Protectors

Same as No. 976 except equipped with two No. 44, 3-ampere fibre fuses.

Cat. No.	Size	Weight Each
976-C	$5\frac{7}{8} \times 3 \times 2$ inches	2½ lbs.

Reliable No. 997-B Protectors



Listed as Standard by Underwriters' Laboratories.

Weatherproof, self-cleaning, sawtooth, air gap protector for outside use. Consists of weatherproof cover, porcelain base, two No. 95, 3-ampere wood fuses, two adjustable sawtooth metal discharge blocks mounted .004-inch from two carbons.

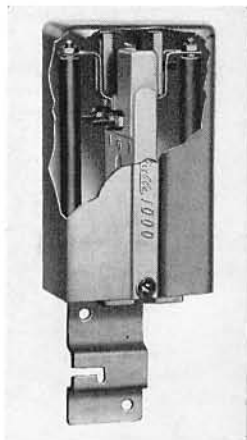
Mounting holes are $\frac{3}{16}$ -inch for one No. 8 flat head and two No. 8 round head wood screws.

Cat. No.	Size	Weight Each
997-B	$8\frac{3}{4} \times 4\frac{1}{8} \times 2\frac{3}{4}$ inches	5 lbs.

Other fuse capacities are available for all protectors. For fuses and arrester parts see pages 14 and 15.

ARRESTERS and PROTECTORS

Reliable No. 1000 Outdoor Protectors



Listed as Standard by Underwriters' Laboratories.

The fuses and air gaps are for protection against static and crosses with electric circuits. Equipped with a weather-proof, drawn aluminum cover which cannot be contacted with line fuse clips. Hot galvanized mounting bracket is slotted for a knob to take up slack in a ring run of drop wire — a great convenience when mounting on stone, brick or similar type buildings.

The No. 1000 protector has ample space for terminating wires — even from four-party line telephones. Bevelled washers also simplify installation of wires.

With Upright Bracket Has special, low absorption porcelain, treated binding posts and phosphor bronze clips and springs. Reliable No. P-495 self-cleaning sawtooth discharge blocks and No. P-197 carbons.

Mounting bracket has two $\frac{1}{2}$ -inch holes for No. 12 round head wood screws.

Other fuse capacities will be supplied on these protectors when specified.

Nos. 1000-C and 1000-H are equipped with inverted mounting brackets turned up along the side of the protector.

Cat. No.	With Fuse No.	Type of Fuse	Type of Bracket	Size Over All Inches	Weight Each
1000	55, 7 amp.	Fibre	Upright	$8\frac{3}{4} \times 3\frac{1}{2} \times 2\frac{1}{4}$	2 $\frac{1}{2}$ lbs.
1000-E	77, 7 amp.	Fibre	Upright	$8\frac{3}{4} \times 3\frac{1}{2} \times 2\frac{1}{4}$	2 $\frac{1}{2}$ lbs.
1000-C	55, 7 amp.	Fibre	Invert.	$5\frac{3}{4} \times 3\frac{1}{2} \times 2\frac{1}{4}$	2 $\frac{1}{2}$ lbs.
1000-H	77, 7 amp.	Fibre	Invert.	$5\frac{3}{4} \times 3\frac{1}{2} \times 2\frac{1}{4}$	2 $\frac{1}{2}$ lbs.
1000-A	95, 7 amp.	Wood	Upright	$8\frac{3}{4} \times 3\frac{1}{2} \times 2\frac{1}{4}$	2 $\frac{1}{2}$ lbs.
1000-F	27, 7 amp.	Wood	Upright	$8\frac{3}{4} \times 3\frac{1}{2} \times 2\frac{1}{4}$	2 $\frac{1}{2}$ lbs.

Nos. 1000-A and 1000-F are not listed by Underwriters' Laboratories.

Reliable No. 955 Station Protectors



Listed as Standard by Underwriters' Laboratories.

Self-cleaning, sawtooth, air gap protector for indoor use. Consists of low absorption porcelain base, phosphor bronze fuse clips and discharge block springs and heavy binding posts, two No. 55, 7 ampere, fibre fuses, brass screw cover over two No. P-495 sawtooth discharge blocks and two No. P-197 carbons.

Other fuse capacities will be supplied on these protectors when specified.

Mounting holes are $\frac{3}{8}$ -inch for No. 10 round head wood screws.

Cat. No.	Size	Weight Each
955	$5\frac{5}{8} \times 3\frac{1}{2}$ inches	2 lbs.

Reliable No. 955-A Station Protectors

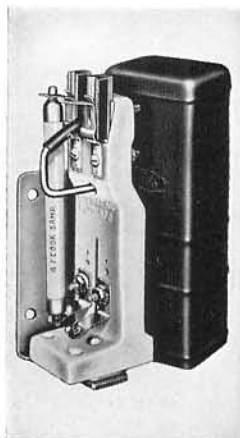
Listed as Standard by Underwriters' Laboratories.

Same as No. 955 except equipped with clips which bite into the tips of the two No. 77, 7 ampere, fibre fuses.

Cat. No.	Size	Weight Each
955-A	$5\frac{5}{8} \times 3\frac{1}{2}$ inches	2 lbs.

Other fuse capacities are available for all protectors.

Cook Type O Sub-Station Protectors



Single circuit protectors, made for both indoor and outdoor use. The body of the arrester is a single piece of heavy white glazed porcelain, designed and made to prevent surface leakage. Fuse and arrester clips are of phosphor bronze securely fastened to the porcelain by Everdur metal bolts.

The non-corrosive Everdur hood fits tightly to the sides and bottom of the porcelain. The hood is grounded through a strong Everdur hood guide. Line connections are on one side of the porcelain and instrument and ground connections are on the other side.

All connections are terminated under hexagon Everdur nuts.

To simplify installation, the heavy hot galvanized bracket is split so the protector slides into place after bracket is mounted.

Equipped with two No. 4500 non-grounding True Gap Dischargers and two No. 2080 carbons mounted on a copper ground strip. The type "O" protector is made for various types and lengths of fuses, as listed below. Fuses are 5 amperes and blow at rating. When specified, fuses of higher or lower rating will be furnished.

Mounting bracket has $\frac{1}{2}$ -inch holes for No. 12, 1-inch RHI galvanized wood screws.

Cat. No.	Type	Fuses	Size	Weight Each
1582	O-7	A-7 wood	$6\frac{1}{4} \times 2\frac{1}{4} \times 1\frac{3}{4}$ in.	2 lbs.
1583	O-9	A-9 comp.	$6\frac{1}{4} \times 2\frac{1}{4} \times 1\frac{3}{4}$ in.	2 lbs.
1581	O-12	A-12 comp.	$4\frac{1}{2} \times 2\frac{1}{4} \times 1\frac{3}{4}$ in.	1 $\frac{1}{2}$ lbs.
1584	O-16	A-16 wood	$6\frac{1}{4} \times 2\frac{1}{2} \times 1\frac{3}{4}$ in.	2 lbs.
1585	O-44	A-44 wood	$4\frac{1}{2} \times 2\frac{1}{4} \times 1\frac{3}{4}$ in.	1 $\frac{1}{2}$ lbs.
1586	O-52	A-52 fibre	$6\frac{1}{4} \times 2\frac{1}{4} \times 1\frac{3}{4}$ in.	2 lbs.
1587	O-64	A-64 fibre	$6\frac{1}{4} \times 2\frac{1}{4} \times 1\frac{3}{4}$ in.	2 lbs.

Cook No. B-7 Indoor Protectors



Base is of heavy, highly glazed porcelain, on which are mounted phosphor bronze contact springs. Screws, nuts, and washers are of Everdur.

Lightning arresters consist of two No. 4500 non-grounding True Gap Dischargers and two No. 2080 flat carbons set in a well in the porcelain and covered by a vented metal cap. Equipped with two No. 2104-A-9, 5 ampere fuses.

Mounting holes are $\frac{3}{8}$ -inch for No. 8, $1\frac{1}{8}$ -inch R.H. galvanized wood screws.

Cat. No.	Description	Size	Weight Each
1530	B-7 Protector	$3 \times 6\frac{3}{4} \times 2$ inches	1 $\frac{1}{2}$ lbs.

Socket Wrenches



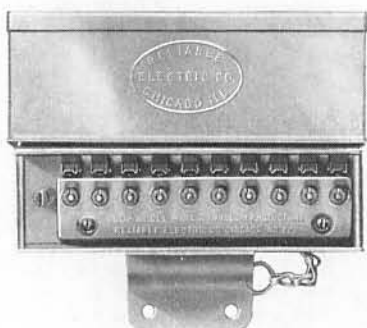
No. 313-1599 Single Socket Wrench, with $\frac{3}{8}$ inch socket for cable terminals and lightning arresters.

For fuses and arrester parts see pages 14 and 15.

Line Supplies Section

ARRESTERS and PROTECTORS

Reliable No. 222 Outdoor Arresters



The No. 222, ten-wire cross arm arrester drains static from exposed lines. It is very sensitive and is used in connection with un-protected cable terminals where open wire or drop wire leads are too long to be left un-protected. It is also of outstanding value when placed one to three poles from

a protected terminal. In locations where static is very troublesome, cross arm arresters should be placed at frequent intervals.

Self-cleaning, sawtooth discharge blocks give protection without permanently grounding the line. Binding posts are treated to prevent the deposit of copper salts which cause surface leakage. Special low-absorption porcelain and phosphor bronze clips and springs are used. The metal body and cover are ruggedly constructed.

Equipped with ten P-495 self-cleaning sawtooth discharge blocks and ten P-663 carbons.

Mounting bracket has $\frac{5}{16}$ -inch holes for lag screws.
 Cat. No. 222 Size $8\frac{1}{4} \times 2\frac{3}{8} \times 4\frac{1}{2}$ inches Weight Each 4 lbs.

Reliable No. 402-S Outdoor Arresters

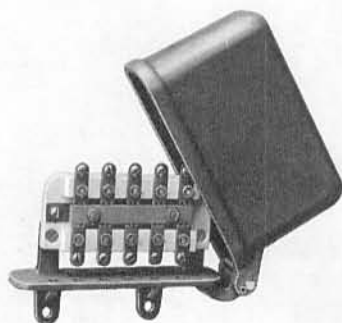


Weatherproof, self-cleaning sawtooth air gap arrester for outdoor use, used to discharge static at the telephone station or to drain exposed lines. Consists of metal cover and mounting bracket, porcelain base, two No. P-495 self-cleaning sawtooth discharge blocks and two No. P-1384 carbons.

Mounting bracket has two $\frac{3}{8}$ -inch holes for No. 10 round head wood screws.

Cat. No. 402-S Height Over-All $8\frac{1}{2}$ inches Weight Each 2 lbs.

Reliable No. 202 Outdoor Arresters



Weatherproof, self-cleaning, sawtooth air gap ten-wire arrester for draining static from open wire lines. Consists of cast iron cover and base and ten adjustable, sawtooth metal discharge blocks placed .004-inch from carbons.

Mounting holes are $\frac{1}{4}$ -inch diameter for lag screws.

Cat. No. 202 Size $7 \times 2\frac{5}{8} \times 5\frac{1}{4}$ inches Weight Each $6\frac{1}{2}$ lbs.

Cook No. 7 Outdoor Arresters



10-Wire Capacity

Mounted on a pole or cross arm, this arrester will shunt to ground high potentials induced on open leads. Provides protection to cable from exposed drops connected to un-protected terminals.

When installed on open leads

near their connection to a protected pole cable terminal, the No. 7 Lightning Arrester prevents excessive fuse operation.

Base and mounting bracket is a single piece of heavy steel, hot galvanized. Tight-fitting hood is of zinc. Springs are of heavy phosphor bronze. Studs are of Everdur metal.

The insulation and fanning strip is a single piece of molded bakelite. Ground strip is of copper.

Equipped with ten No. 4500 non-grounding True Gap Dischargers and ten No. 2080 carbons.

Mounting bracket has $\frac{11}{16}$ -inch holes for $\frac{5}{16} \times 2$ -inch galvanized lag screws.

Cat. No. 2200 Description No. 7 Arrester Size $7\frac{1}{2} \times 2 \times 5$ inches Weight Each 3 lbs.

Cook No. 1 Outdoor Arresters



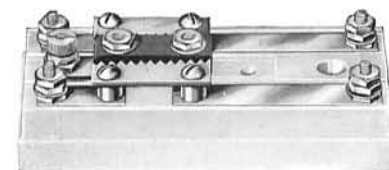
A weatherproof arrester for mounting on a cross arm to drain static or high potentials from aerial circuits, or on the outside of a subscriber's building as a sub-station lightning arrester.

Base and back is a single piece of heavy glazed porcelain, so made that surface leakage is eliminated. Hood, bolts, nuts and washers and hood guide are of Everdur. Arrester springs are of phosphor bronze. Bracket is of steel, galvanized. Two No. 4500 True Gap Dischargers and two No. 2080 carbons are standard.

Mounting bracket has $\frac{11}{16}$ -inch holes for No. 12, 1-inch RHI galvanized wood screws.

Cat. No. 7800 Description No. 1 Arrester Size $3\frac{1}{2} \times 2\frac{1}{2} \times 2\frac{1}{2}$ in. Weight Each $\frac{3}{4}$ lb.

Reliable No. 975-B Indoor Arresters



Self-cleaning, sawtooth air gap arrester for indoor use. Consists of porcelain base, and two adjustable sawtooth metal discharge plates placed

.004-inch from a carbon block. All-over metal cover is available when specified.

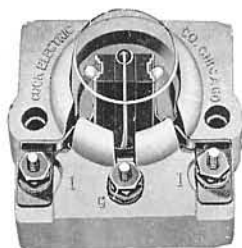
Mounting holes are $\frac{3}{16}$ -inch for No. 10 round head wood screws.

Cat. No. 975-B Less cover Size $5 \times 2 \times 1\frac{1}{2}$ inches Weight Each $1\frac{1}{2}$ lbs.
 975-B With cover $5 \times 2 \times 1\frac{1}{2}$ inches $1\frac{1}{2}$ lbs.

For arrester parts see pages 14 and 15.

ARRESTERS and PROTECTORS

Cook No. 2 Indoor Arresters



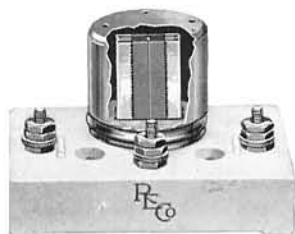
An indoor arrester, consisting of a solid piece of glazed porcelain fitted with Everdur binding posts, nuts, washers, and phosphor bronze springs.

Lightning arresters are two No. 4500 non-grounding True Gap Dischargers and two No. 2080 ground carbons, set in a recess and covered with a ventilated metal cap.

Mounting holes are $\frac{3}{8}$ -inch for No. 8, $1\frac{1}{4}$ -inch RHI galvanized wood screws.

Cat. No.	Description	Size	Weight Each
1606	No. 2 Arrester	3x2 $\frac{3}{4}$ x2 inches	$\frac{1}{2}$ lb.

Reliable No. 977-AA Indoor Arresters

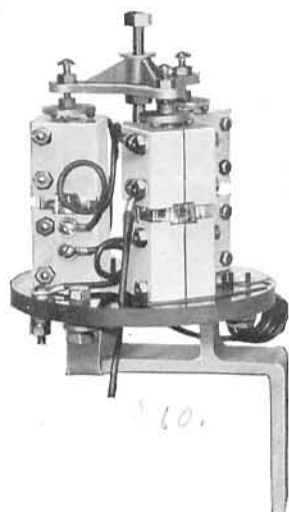


Self-cleaning, sawtooth air gap arrester for indoor use. Consists of low-absorption porcelain base, phosphor bronze springs, heavy binding posts with treated studs, brass screw cover over two No. P-495 sawtooth discharge blocks and two No. P-197 carbons.

Mounting holes are $\frac{5}{16}$ -inch for No. 10 flat head wood screws.

Cat. No.	Size	Weight Each
977-AA	3 $\frac{1}{2}$ x2 $\frac{1}{2}$ x2 $\frac{1}{4}$ inches	1 lb.

The Serjdetour Telephone Protectors



For all communication circuits exposed to power line induction or possible contact. A weatherproof air gap protector, no moving parts or auxiliary relays. Will carry discharge of 25 amperes for ten minutes without becoming short-circuited, and hence may be mounted in connection with 25 ampere fuses. Serjdetour will sustain voltage of 66 KV without blowing and without allowing any of the high voltage to get past to damage the station telephone equipment. Equipped with cover. Shipping weight, 25 lbs.

VAC-M Arresters

VAC-M Arresters consist of a base on which are mounted electrodes in a vacuum tube. Uninterrupted service is assured with protection from static and sneak currents.

No. 3-B VAC-M Arrester



Designed for metallic or two-line circuit protection for lines that must remain closed at all times.

The arrester unit consists of a cylinder shaped glass tube, in which are three electrodes, the center one for the ground connection and the other two for the line connections. These electrodes are mounted on porcelain discs, supported on glass stems sealed into the tube and containing lead-in wires. The base of the arrester is porcelain with brass binding posts and phosphor bronze clips to hold the removable arrester unit and form the electrical contacts. Mounted with $1\frac{1}{2}$ -inch flat head wood screws.

Size, 5 $\frac{3}{4}$ x2 $\frac{1}{4}$ x2 inches. Shipping weight each, 1 $\frac{1}{4}$ lbs.

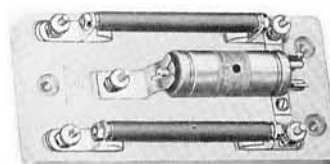
No. 4 VAC-M Arrester

Designed for grounded or single line circuit protection for lines that must remain closed at all times.

Same as No. 3-B except that there are two electrodes in the tube, one for grounded connection and the other for the line connections.

Size, 5 $\frac{3}{4}$ x2 $\frac{1}{4}$ x1 $\frac{1}{4}$ inches. Shipping weight, $\frac{3}{4}$ lb.

Brach Vacuum Arresters



The Type 440 Arrester is equipped with a triple path cartridge, and by bringing the two-line wires into the same vacuum chamber as the ground connection, the maximum degree of protection

is secured; and, due to the fact that both sides of the line are in the same vacuum chamber, there is a decided shunting or balancing effect which equalizes both sides of the line whenever they become unbalanced due to static disturbances.

In addition, this arrangement of the three electrodes in one tube relieves either side of the line when subjected to abnormal conditions and immediately carries all such disturbances to ground.

In addition to the vacuum cartridge, this arrester is equipped with regulation telephone type fuses.

Cat. No.	Description	Size, Inches	Weight
440	Arrester Complete	7x3 $\frac{1}{4}$ x2 $\frac{1}{2}$	2 lbs.
53	Fuse only		.5 oz.
	Cartridge only		.8 oz.
	Base only		1 $\frac{1}{2}$ lbs.

For arrester parts see pages 14 and 15.

Line Supplies Section

FUSES and HEAT COILS

Terminal and Protector Fuses

Sizes and types for every telephone protector and cable terminal—wood, fibre, composition, porcelain and mica. When ordering, please be sure to specify the amperage desired, also the catalog number of the fuse. This will ensure the selection of the correct fuse.



Cat. No.	Material	Length Shoulder to Shoulder	Weight Per 1000
Reliable, 3	Wood	4 ³ / ₁₆ in.	63 lbs.
Reliable, 6	Wood	3 ⁷ / ₈ in.	60 lbs.
Reliable, 27	Wood	4 ³ / ₄ in.	63 lbs.
Reliable, 28	Porcelain	4 ³ / ₄ in.	100 lbs.
Reliable, 29	Wood	3 in.	46 lbs.
Reliable, 30	Porcelain	3 in.	73 lbs.
Reliable, 48	Fibre	3 in.	48 lbs.
Reliable, 77	Fibre	4 ³ / ₄ in.	65 lbs.
Reliable, 95	Wood	4 ³ / ₁₆ in.	45 lbs.
Cook 2103, A-7	Wood	4 ³ / ₄ in.	80 lbs.
Cook 2104, A-9	Composition	4 ³ / ₄ in.	80 lbs.
Cook 2106, A-12	Composition	3 in.	60 lbs.
Cook 1424, A-16	Wood	3 ⁷ / ₈ in.	70 lbs.
Cook 2108, A-44	Composition	3 in.	60 lbs.
Cook 2109, A-45	Composition	3 in.	60 lbs.
Cook 2110, A-46	Wood	3 in.	60 lbs.
Cook 2105, A-57	Fibre	4 ³ / ₄ in.	80 lbs.
Cook 2805, A-64	Wood	3 ¹ / ₁₆ in.	70 lbs.

Round Fibre with Nutted Ends



Cat. No.	Material	Length Shoulder to Shoulder	Weight Per 1000
Reliable, 53	Fibre	3 ³ / ₄ in.	75 lbs.
Reliable, 55	Fibre	4 ¹ / ₁₆ in.	80 lbs.
Cook 2170, A-52	Fibre	4 ¹ / ₁₆ in.	80 lbs.

Round Fibre, ⁷/₁₆ in. Hexagon Nut, 8-32 Threaded Tip



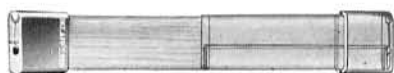
Cat. No.	Material	Length Shoulder to Shoulder	Weight Per 1000
Reliable, 56	Fibre	4 ¹ / ₁₆ in.	83 lbs.
Cook 2773, A-62	Fibre	3 ¹ / ₁₆ in.	80 lbs.

Round Fibre with Flat Tip



Cat. No.	Material	Length Over All	Weight Per 1000
Reliable, 49	Fibre	5 in.	70 lbs.
Reliable, 52	Fibre	3 ¹ / ₂ in.	68 lbs.

Flat Wood Fuse—(Wire Lies in Open Slot)



Cat. No.	Material	Length Over All	Weight Per 1000
Reliable, 44	Wood	3 ¹ / ₂ in.	43 lbs.

Reliable Mica Fuses

Provided with copper terminals. When ordering please be sure to specify the amperage desired, also the catalog number of the fuse.

The fuses shown below are carried in stock in both ¹/₄ and ¹/₂ ampere. When orders do not specify the enclosed type will be shipped.

Special mica and fibre fuses can be furnished promptly.

Western Union Type



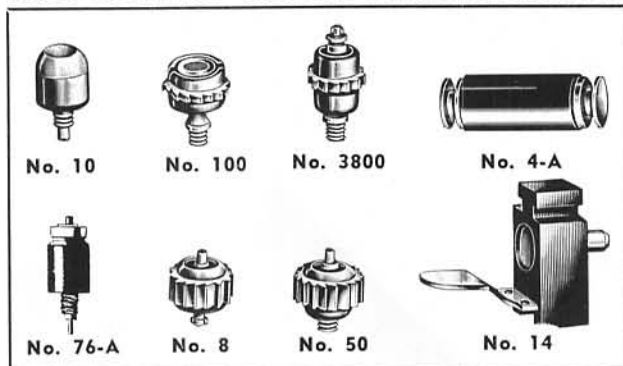
Cat. No.	Length	Width	Std. Pkg.	Weight Per 1000
8	2 ¹ / ₈ in.	³ / ₈ in.	50	3 to 6 lbs.
19	2 in.	³ / ₈ in.	50	3 to 6 lbs.
22	2 ¹ / ₂ in.	¹ / ₂ in.	50	3 to 6 lbs.

Postal Type



Cat. No.	Length	Width	Std. Pkg.	Weight Per 1000
11	2 ¹ / ₈ in.	³ / ₈ in.	50	3 to 6 lbs.
21	2 in.	³ / ₈ in.	50	3 to 6 lbs.
25	2 ¹ / ₂ in.	¹ / ₂ in.	50	3 to 6 lbs.
137-1	1 ⁷ / ₈ in.	¹ / ₄ in.	50	3 to 6 lbs.
137-2	2 in.	¹ / ₄ in.	50	3 to 6 lbs.

Heat Coils For Central Office Protectors



These coils are wire wound, approximately 3 ¹/₂ ohms resistance, will carry .35 amperes for 3 hours and will operate within 210 seconds on .5 ampere in an ambient temperature of 68° F.

Combination Heat Coil Fuse



Cat. No.	Material	Overall Length	Weight Per 1000
107	Fibre	3 ¹ / ₁₆ in.	29 ¹ / ₂ lbs.

Fuse Wire

A copper alloy wire, especially made for telephone fuses. It has high tensile strength and can be soldered without fear of burning the wire. It will not corrode or crystallize.

Made in 1, 2, 3, 5 and 7 ampere capacities, and is supplied on 300-foot spools.

ARRESTER and PROTECTOR PARTS

Reliable Sawtooth Discharge Blocks



No. P-495 self-cleaning sawtooth discharge blocks eliminate dirty carbon trouble. They dissipate static discharges with no time lag and do not ground the line unnecessarily. They operate in the plant just as sensitively as carbon to carbon discharge gaps and have none of the latter's faults.

Carbon ground blocks of various shapes and thicknesses adapt the discharge block to fit any lightning arrester or cable terminal which uses standard carbon or copper blocks.

Cat. No.	Description	Std. Pkg.	Weight Per
P-495	Sawtooth Discharge Block	20	3 oz.

Cook No. 4500 True Gap Discharger



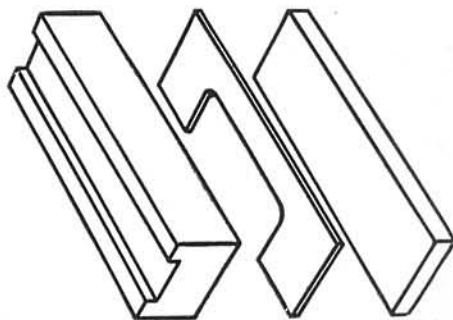
A lightning arrester for use on circuits where it is not desirable to ground the line during continuous discharges. The discharger is used with a carbon block.

A heavy bronze discharge blade is inserted into a molded bakelite block, the size of an ordinary carbon. On the top of this bakelite block is a bronze cap anchored to the discharge blade. The discharge surfaces are completely enclosed so no dust can accumulate.

These True Gap Dischargers are used in pole cable terminals, sub-station protectors, lightning arresters and in some types of central office protectors.

Cat. No.	Description	Weight Per
4500	True Gap Discharger	1 lb.

Carbon Blocks and Dielectrics



Cat. No.	Description
Cook, 2080	Plain Carbon Block
Cook, 2081	Grooved Carbon Block
Cook, 2603	Plain Carbon Block
Cook, 2625	Carbon Block for No. 100 Protector
Reliable, P-22	Plain Carbon Block
Reliable, P-52	Grooved Carbon Block
Reliable, P-663	Plain Carbon Block
Reliable, P-1384	Plain Carbon Block
Cook, 2090	U-Shaped Acetate Dielectric, .005 in.
Cook, 2094	Acetate Dielectric, .007 in. thick
Cook, 2092	Mica Dielectric, .007 in. thick
Cook, 2096	Mica Dielectric, .010 in. thick
Reliable, P-23	Mica Dielectric, .007 in. thick
Reliable, P-53	Mica Dielectric, .009 in. thick
Reliable, P-215	U-Shaped Mica Dielectric, .005 in.

Cook Outdoor Coil Mountings



For mounting and protecting repeating coils. It has a capacity of one to four coils with the necessary protection against high potentials.

Made of steel, formed and hot galvanized to give freedom from corrosion. All current carrying parts are insulated with hard rubber.

Phosphor bronze clips hold the fuses under constant tension, yet the fuses are easily removed and replaced. Separate phosphor bronze lightning arrester springs insure positive permanent pressure between the arresters and ground plate.

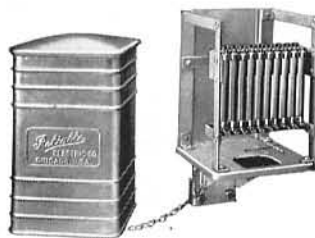
Coil leads are soldered direct to the front of the hollow brass studs holding the arrester springs and fuse clips assembly to the mounting plate. The line connections enter through treated insulation and are terminated either under screw and washer or on solder connections.

No. 4500 True Gap Dischargers, No. 2103, A-7, 5-ampere, wood fuses and No. 2081 carbons are used.

Mounted with four 3/8-inch lag screws, 3 1/2 inches long.

Cat. No.	Pairs Protection	—Number of Coils—			Weight Less Coils
		18-A	Kellogg Cat. No. 22-A	24-A	
6100	3 Pair	....	....	1	10 lbs.
6104	3 Pair	1	....	....	10 lbs.
6101	5 Pair	....	1	....	11 lbs.
6103	5 Pair	2	or	2	11 lbs.
6102	10 Pair	....	2	....	17 lbs.

Reliable Outdoor Coil Protectors



Designed for mounting one to four repeating coils and protecting them with sawtooth discharge blocks and fuses.

The housing is ruggedly constructed of steel, hot-galvanized. The mounting plate comes drilled to accommodate all types of repeating coils. A detachable mounting

bracket simplifies installation on the pole. Insulated parts are of molded bakelite. The square can allows plenty of room for terminating all wires conveniently, and binding posts are accessible without removing fuses. Fuse clips and discharge block springs are phosphor bronze. Provision is made for connecting the ground wire directly to the protector ground strip to insure a good conducting path.

No. P-495 sawtooth discharge blocks, No. 27 wood fuses and No. P-197 carbons are used.

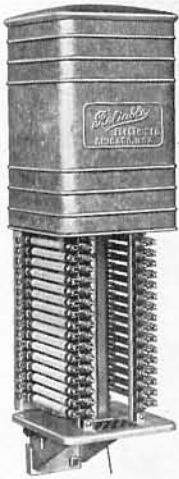
There are four 3/8-inch holes for mounting.

Cat. No.	Pairs Protection	—Number of Coils—			Weight Less Coils
		18-A	Kellogg Cat. No. 22-A	24-A	
13	3 Pair	....	....	1	13 lbs.
13-18	3 Pair	1	....	....	18 lbs.
25	5 Pair	....	1	....	13 1/2 lbs.
25-18	5 Pair	2	or	2	18 1/2 lbs.
410	10 Pair	....	2	....	20 lbs.

CABLE TERMINALS

Reliable No. B-27 Cable Terminals

Protected Type



B-27 provides a perfect means of terminating lead covered cable and gives high grade protection and excellent facilities for drop wire distribution. It is all metal yet is light in weight.

Protection consists of two No. 27, 5 ampere wood fuses of the snap-in type, two No. P-495 saw-tooth discharge blocks and two No. P-197 carbons per pair.

The cable chamber is on the pole side and if necessary is easily accessible by removing the terminal from the bracket for work on the platform. The cable chamber is air-tight with a flat rubber gasket to thoroughly seal it. Cable wires are terminated in hollow studs and can be soldered outside of the cable chamber.

All drop wiring is done on the side away from the pole, giving perfect visibility and convenience. There are individual clips for carbons and fuses to prevent the blocks from crossing when removing fuses. It is unnecessary to remove fuses when installing jumper wires as all binding posts are at right angles to the fuses. These heavy binding posts are treated to prevent season cracking. They are mounted in molded Bakelite and cannot short or turn. Fuse clips and all other metal parts are rounded to prevent scratches to linemen. Beveled washers on the binding posts make it easy for the linemen to insert wires. Jumper wires enter the terminal through a heavy fibre fanning hole in the bottom plate.

The can top is square with a heavy cast galvanized cover which acts as protection against bending or puncturing by linemen working near the terminal. It is guided from three points to prevent contact with live parts during raising or lowering.

A detachable mounting bracket simplifies installation — it has four $\frac{3}{8}$ -inch holes for $\frac{3}{8}$ -inch lag screws. Four lag screws are shipped with the terminal.

This terminal can be furnished with a 7-foot, 22 B & S gauge, double paper wrapped cable stub attached. When ordering please be sure to specify with or without stub. Orders not specifying will be shipped less stub.

Capacity	Height Over All	Weight Less Stub	Weight With Stub
11 Pair	14 $\frac{1}{2}$ in.	15 $\frac{1}{2}$ lbs.	19 $\frac{1}{4}$ lbs.
16 Pair	17 $\frac{1}{2}$ in.	19 lbs.	22 $\frac{1}{4}$ lbs.
26 Pair	23 $\frac{5}{8}$ in.	26 $\frac{1}{2}$ lbs.	31 $\frac{1}{2}$ lbs.

B-56 Protected Cable Terminals

Same as B-27, except equipped with No. 56, 5 ampere, screw type fibre fuses.

Capacity	Height Over All	Weight Less Stub	Weight With Stub
11 Pair	14 $\frac{1}{4}$ in.	15 $\frac{1}{2}$ lbs.	19 $\frac{1}{4}$ lbs.
16 Pair	17 $\frac{1}{2}$ in.	19 lbs.	22 $\frac{1}{4}$ lbs.
26 Pair	23 $\frac{5}{8}$ in.	26 $\frac{1}{2}$ lbs.	31 $\frac{1}{2}$ lbs.

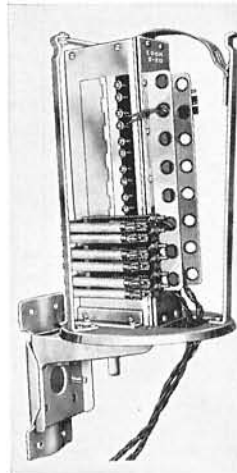
B-55 Protected Cable Terminals

Same as B-27, except equipped with No. 55, 7 ampere, screw type, fibre fuses.

Capacity	Height Over All	Weight Less Stub	Weight With Stub
11 Pair	14 $\frac{1}{4}$ in.	15 $\frac{1}{2}$ lbs.	19 $\frac{1}{4}$ lbs.
16 Pair	17 $\frac{1}{2}$ in.	19 lbs.	22 $\frac{1}{4}$ lbs.
26 Pair	23 $\frac{5}{8}$ in.	26 $\frac{1}{2}$ lbs.	31 $\frac{1}{2}$ lbs.

Cook No. S-20 Cable Terminals

Protected Type



The S-20 cable terminal offers maximum economy because protector units are purchased only when required. Drops can be connected with or without protectors. The protector units in one pair each, Catalog No. H-20, are installed only when drops are attached that require protection. All connections are at the front. The remaining pairs may be left unoccupied or used as unprotected. Additional protector units can be installed at any time.

All metal parts of the terminal are made of non-corrosive material or steel, hot galvanized. All metal parts are grounded. Insulation is of

hard rubber and Bakelite. A self-soldering nozzle is located in the moisture proof cable chamber to bring the cable close to the pole and behind subscribers' drops. Drop wires enter at the front of the terminal through an insulated frame with knockouts. Metal fanning strips with insulated bushings are located at the front of the cable chamber to insure orderly arrangement of drop wires. The cover of the cable protector chamber is easily removed from the front without removing the terminal from pole. The hood is of steel, hot galvanized.

A separate mounting bracket provides easy installation without gaining pole. There are four, $\frac{3}{8}$ -inch holes in the bracket for $\frac{3}{8}$ x $\frac{1}{2}$ -inch lag screws which are furnished with the terminal.

Can be furnished with a 7-foot, 22 B&S gauge, cable stub attached. Please order by catalog number.

Cat. No.	Type	Capacity	Cable Stub	Height Inches	Diam. Inches	Weight Each
1800	S-20	6 Pr.	Less Stub	12	9	11 lbs.
1805	S-20	6 Pr.	With Stub	12	9	18 lbs.
1820	S-20	11 Pr.	Less Stub	15 $\frac{1}{2}$	9	15 lbs.
1825	S-20	11 Pr.	With Stub	15 $\frac{1}{2}$	9	23 lbs.
1840	S-20	16 Pr.	Less Stub	19	9	18 lbs.
1845	S-20	16 Pr.	With Stub	19	9	27 lbs.
1870	S-20	26 Pr.	Less Stub	28	9	23 lbs.
1875	S-20	26 Pr.	With Stub	28	9	35 lbs.

Cook H-20 Protector Units

Used with Cook S-20 Terminals

Each pair of protection is a complete unit in itself — mounted in a piece of high strength Bakelite. Springs are of phosphor bronze. Studs are of Everdur metal. Subscribers drop connections are located at the front. This unit is placed on cable pairs when drop requires protection.

The unit contains two sets of lightning arresters. Primary lightning arresters, on the cable side are at the front. Secondary lightning arresters on the drop side also at the front provide high potential protection after fuses are blown. It is designed to withstand rough handling and extreme service conditions.

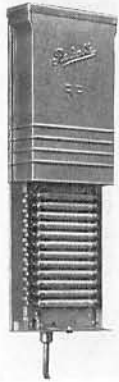


Cat. No.	True Gap Dischargers	Wood Fuses	Plain Carbons	Weight Per 100
1850-H-20	4500	A-7, 5 amp.	2080	26 lbs.

CABLE TERMINALS

Reliable RP-27 Cable Terminals

Protected Type



The RP is a reversible, protected cable terminal, compactly designed and made of corrosion resistant aluminum alloy throughout, resulting in a very light-weight but substantial structure. Insulation is molded bakelite.

The cable chamber is a durable casting and will out-last the cable. A sliding cover is provided, making the terminal reversible and eliminating the bother of handling separate types for installation with stub at top and bottom.

Protection consists of two No. 27, 5-ampere wood fuses, two No. P-495 saw-tooth discharge blocks and two No. P-197 carbons per pair.

The mounting bracket is detachable for easy installation, and has four $\frac{1}{8}$ -inch holes for $\frac{3}{8}$ -inch lag screws which are shipped with each terminal.

This terminal is shipped with a 6-foot, 22 B.&S. gauge cable stub attached.

Cat. No.	Capacity	Height	Weight With Stub
RP-27-4	4 Pair	11 $\frac{3}{4}$ in.	9 $\frac{1}{2}$ lbs.
RP-27-5	5 Pair	11 $\frac{3}{4}$ in.	9 $\frac{1}{2}$ lbs.
RP-27-6	6 Pair	11 $\frac{3}{4}$ in.	9 $\frac{1}{2}$ lbs.

Reliable RP-56 Cable Terminals

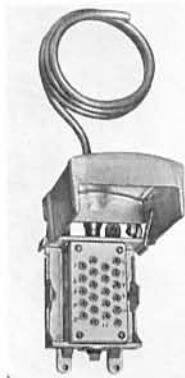
Protected Type

Same as No. RP-27 except equipped with No. 56, 5-ampere fibre fuses.

Cat. No.	Capacity	Height	Weight With Stub
RP-56-4	4 Pair	11 $\frac{3}{4}$ in.	9 $\frac{1}{2}$ lbs.
RP-56-5	5 Pair	11 $\frac{3}{4}$ in.	9 $\frac{1}{2}$ lbs.
RP-56-6	6 Pair	11 $\frac{3}{4}$ in.	9 $\frac{1}{2}$ lbs.

Reliable GR Cable Terminals

Unprotected Type



Reliable GR is a hot galvanized, cast iron, unprotected cable terminal provided with a gravity cover that is balanced to shut tight. Equipped with a porcelain face plate grooved in back to prevent turning of the binding posts. These binding posts are treated to prevent season cracking and are provided with beveled washers. The sides of the terminal are shaped to guide bridle wires and prevent them from getting in the way of the cover.

Can be furnished with or without 6 ft., 22 B.&S. gauge cable stub. Orders not specifying will be shipped less stub.

When ordering specify whether required with the cable stub at the top or bottom.

Cat. No.	Capacity	Height	Weight Less Stub	Weight With Stub
GR-11	11 Pair	8 in.	10 $\frac{1}{2}$ lbs.	22 $\frac{1}{2}$ lbs.
GR-16	16 Pair	10 in.	20 lbs.	25 lbs.
GR-26	26 Pair	12 in.	26 lbs.	34 lbs.

Cook No. S-6 Cable Terminals

Protected Type



The Cook S-6 Terminal is all steel, thoroughly galvanized. All metal parts are grounded. Insulation is of hard rubber and springs are phosphor bronze. The moisture-proof cable chamber has a removable zinc face plate and is equipped with a self-soldering nozzle.

Non-grounding lightning arresters are in front where they can easily be taken out, inspected and replaced. Protection consists of two No. A-7, 5-ampere wood fuses, two No. 4500 True Gap Dischargers and two No. 2081 grooved carbons per pair. The cable and drop facilities are on a pair basis. Any broken or damaged pair can be replaced without disturbing any other pair. Cable wires are carried from the inside of cable chamber through hollow brass studs and soldered to the tinned end of the stud.

The hood is made of sheet steel, formed, assembled and then hot galvanized.

A separate mounting bracket simplifies installation. It has four $\frac{3}{8}$ -inch holes for $\frac{5}{8}$ -inch lag screws, 3 $\frac{1}{2}$ inches long. Four lag screws are supplied with the terminal. A ground is necessary, use a No. 6 B.&S. gauge copper wire or larger.

Can be furnished with a 7-foot, 22 B&S gauge cable stub attached. Please order by catalog number.

Cat. No.	Type	Capacity	Cable Stub	Height Inches	Diam. Inches	Weight Each
1700	S-6	11 Pr.	Less Stub	14	9	16 lbs.
1706	S-6	11 Pr.	With Stub	14	9	27 lbs.
1701	S-6	16 Pr.	Less Stub	17 $\frac{1}{2}$	9	19 lbs.
1709	S-6	16 Pr.	With Stub	17 $\frac{1}{2}$	9	30 lbs.
1702	S-6	26 Pr.	Less Stub	26 $\frac{1}{2}$	9	27 lbs.
1712	S-6	26 Pr.	With Stub	26 $\frac{1}{2}$	9	38 lbs.
1703	S-6	51 Pr.	Less Stub	39 $\frac{1}{2}$	9	65 lbs.
1715	S-6	51 Pr.	With Stub	39 $\frac{1}{2}$	9	82 lbs.

Cook SX Cable Terminals

Protected Type

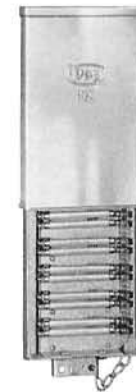
A protected type terminal for use where the maximum distribution is only four to six pairs and where protection is required.

The cable chamber and bracket are made of steel, formed, assembled and hot galvanized. The hood is of zinc, fastened to the terminal with a strong chain.

Protection consists of two No. A-7, 5-ampere, snap-in type, wood fuses, two No. 4500 non-grounding True Gap Dischargers and two No. 2081 grooved carbons per pair.

When desired, a detachable mounting bracket will be furnished at no extra charge.

Can be furnished with or without a 6-foot, 22 B.&S. gauge cable stub attached. Please order by catalog number.



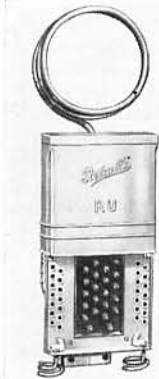
Cat. No.	Type	Capacity	Cable Stub	Height Inches	Diam. Inches	Weight Each
9000	SX	4 Pr.	Less Stub	15 $\frac{1}{4}$	7 $\frac{3}{8}$	11 lbs.
9004	SX	4 Pr.	With Stub	15 $\frac{1}{4}$	7 $\frac{3}{8}$	20 lbs.
9001	SX	5 Pr.	Less Stub	15 $\frac{1}{4}$	7 $\frac{3}{8}$	11 lbs.
9007	SX	5 Pr.	With Stub	15 $\frac{1}{4}$	7 $\frac{3}{8}$	20 lbs.
9002	SX	6 Pr.	Less Stub	15 $\frac{1}{4}$	7 $\frac{3}{8}$	11 lbs.
9010	SX	6 Pr.	With Stub	15 $\frac{1}{4}$	7 $\frac{3}{8}$	20 lbs.

Line Supplies Section

CABLE TERMINALS

Reliable RU Cable Terminals

Unprotected Type



A reversible, unprotected type cable terminal — the cable chamber is made of cast iron, thoroughly galvanized, it will outlast the cable. The face plate is molded bakelite and the terminal binding posts are seated in back to prevent turning. Binding posts are treated for protection against season cracking. Beveled washers simplify the placing of jumpers.

Jumper wires enter through guide rings at the base and are fanned to the terminal binding posts over a flat surface giving ample finger room and convenience.

The design of this terminal with its perfectly sealed cable nozzle and the indirect openings for the jumper wires creates an unusually weather-proof box.

The rigid cover is made of zinc. Gravity catches are provided on the fanning plate to hold the cover in a raised position. The terminal is equipped with a detachable mounting bracket for easy installation. The bracket has four $\frac{3}{16}$ -inch holes for mounting and is secured to the terminal with a chain.

This terminal can be furnished with or without a 6-foot, 22 B.&S. gauge cable stub attached. When ordering please be sure to specify with or without stub. Orders not specifying will be shipped less stub.

Cat. No.	Capacity	Height	Weight Less Stub	Weight With Stub
RU-11	11 Pair	11 in.	9½ lbs.	14½ lbs.
RU-16	16 Pair	12½ in.	11 lbs.	16 lbs.
RU-26	26 Pair	17 in.	15½ lbs.	24 lbs.

Reliable RUG Underground Terminals

Unprotected Type



To be mounted in a manhole and distribution of underground cable systems.

The rugged, cast iron housing is thoroughly hot galvanized. The binding posts, set in a bakelite face plate are treated to prevent season cracking and are provided with beveled washers to facilitate wiring.

Brass plugs on the outside of RUG terminals are removed to insert solder dipped stuffing boxes which accommodate entering instrument cables. Each stuffing box will accommodate one or two pair, lead covered cable and form a gas tight entrance for the cable. They are rugged in construction, yet easy to install. When ordering please specify the number of stuffing boxes required. Orders not specifying will be shipped less stuffing boxes.

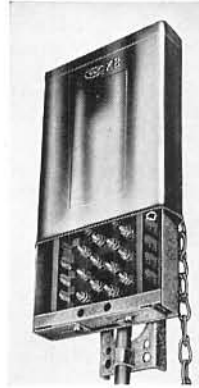
This terminal is furnished with a cable stub attached. When ordering please specify whether 6 ft. or 15 ft. stub is required.

Cat. No.	Length of Stub	Capacity	Height	Weight Each With Stub
RUG-6	6 feet	11 Pair	8¼ in.	25 lbs.
RUG-15	15 feet	11 Pair	8¼ in.	30 lbs.

Stuffing Boxes for RUG Terminal
6 oz.

Cook XB Cable Terminals

Unprotected Type



Strong, yet light in weight — mounts close to the pole or wall with cable out either top or bottom as the cover will slip on over either end.

The cable chamber is heavy hot galvanized steel. The cable enters through a wall in the chamber into which solder is puddled so that a strong and moisture proof connection is made. A patented metal strap on the mounting bracket clamps the cable to prevent injury at the joint between the cable and terminal. The face plate and fanning strips are made of a single piece of molded bakelite. Studs, nuts and washers are of Everdur. Ample room is provided on both sides of the face plate for jumper wires which are taken through to openings at the bottom of the terminal.

The zinc hood is attached with a heavy chain. The mounting bracket is heavy steel, hot galvanized. When desired a detachable mounting bracket will be furnished at no extra charge. The mounting bracket has $\frac{3}{8}$ -inch holes for $\frac{3}{8}$ x $3\frac{1}{2}$ -inch lag screws which are shipped with the terminal when the detachable bracket is requested.

Can be furnished with or without a 6-foot, 22 B&S gauge cable stub attached. Please order by catalog number.

Cat. No.	Capacity	Cable Stub	Ht. In.	Width In.	Wt. Each
3502	6 Pr.	Less Stub	9	6	5 lbs.
3506	6 Pr.	With Stub	9	6	8 lbs.
3503	11 Pr.	Less Stub	12½	7	7 lbs.
3509	11 Pr.	With Stub	12½	7	15 lbs.
3504	16 Pr.	Less Stub	12½	7	7 lbs.
3512	16 Pr.	With Stub	12½	7	15 lbs.
3505	26 Pr.	Less Stub	15¼	7¾	11 lbs.
3515	26 Pr.	With Stub	15¼	7¾	22 lbs.

Cook UX Underground Terminals

Unprotected Type



A watertight terminal for mounting in a manhole or handhole for the termination and distribution of underground cable systems.

The cable chamber and cover are made of cast red brass. The mounting bracket is of Everdur metal. The method of terminating the lateral cable is the same as described in Cook XB. The terminal provides for service outlets. These outlets in the sides of the terminal are sealed with a brass pipe plug having a $\frac{3}{8}$ -inch pipe thread. Instrument distribution cables are terminated in heavy brass stuffing boxes set in the service outlets. Stuffing boxes are made to accommodate lead cable of $\frac{3}{8}$ -inch diameter and are sold separate from the terminal. The number required should be stated.

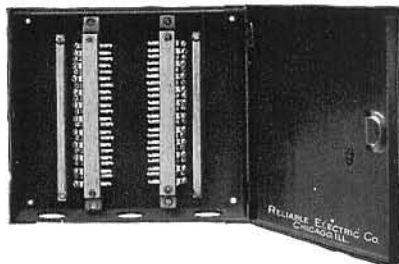
Insulation and drop wire connections are the same as used in Cook XB terminals.

The terminal is ordinarily furnished with a 6-foot, 22 B&S gauge cable stub out of top or bottom. Please order by catalog number.

Cat. No.	Type	Capacity	Cable Stub	Height Inches	Width Inches	Weight Each
3700	UX	11 Pr.	Less Stub	11½	6½	20 lbs.
3701	UX	11 Pr.	With Stub	11½	6½	30 lbs.
3705	UX	16 Pr.	Less Stub	11½	6½	22 lbs.
3706	UX	16 Pr.	With Stub	11½	6½	31 lbs.
3750	Stuffing Boxes, complete					

CABLE TERMINALS

Reliable Building Terminal Box



Surface mounting terminal boxes for terminating and distributing lead covered cable. Can also be supplied for flush mounting.

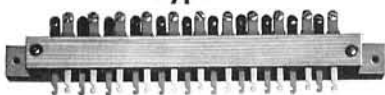
Type E Box is equipped with Type E terminal strips.

Type L Box is the same as the Type E except that it is equipped with Type L terminal strips having twin screw binding posts with one soldering washer.

Type EC Building Boxes are exactly like the Type E with jumper rings and space at top and bottom for running jumper wires.

Cat. No.	Capacity	Height Inches	Width Inches	Depth Inches	Weight
E-11	11 Pairs	10	5½	4	5½ lbs.
E-16	16 Pairs	12½	5½	4	6¼ lbs.
E-22	22 Pairs	9¾	11	4	8½ lbs.
E-26	26 Pairs	13¾	11	4	11¼ lbs.
E-32	32 Pairs	13¾	11	4	11½ lbs.
E-52	52 Pairs	19¾	11	4	16 lbs.
E-104	104 Pairs	40	11	4	34 lbs.
E-208	208 Pairs	40	24	4	125 lbs.
L-11	11 Pairs	9¾	11	4	9 lbs.
L-16	16 Pairs	13¾	11	4	11½ lbs.
L-26	26 Pairs	19¾	11	4	16 lbs.
EC-2-26 two	26 Pairs	19¾	11	4	16 lbs.
EC-2-52 two	52 Pairs	24	24	4	105 lbs.
EC-2-104 two	104 Pairs	48	24	4	165 lbs.

Reliable Terminal Strips Type E



Screw binding posts with soldering terminals embedded in hard maple, mounted on maple back strip.

Capacity	Length Inches	Weight Lbs.	Capacity	Length Inches	Weight Lbs.
11 Pair	9 1/8	1/2	26 Pair	19 3/8	1
13 Pair	10 3/8	5/8	32 Pair	22 1/8	1 1/2
16 Pair	11 1/8	3/4	52 Pair	37 3/4	2
22 Pair	17 1/8	1			

Type L



Twin screw binding posts with one soldering washer, mounted on hard rubber, with maple back strip.

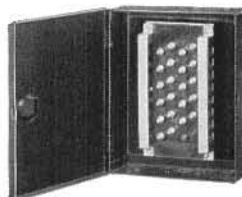
Capacity	Length Inches	Weight Lbs.	Capacity	Length Inches	Weight Lbs.
5½ Pair	9½	1/2	13 Pair	18¾	1¼
8 Pair	15¾	¾	16 Pair	23¼	1½
11 Pair	17	1	26 Pair	35¾	2½

Type T



Soldering terminals embedded in hard rubber and mounted on maple back strip. Made with 1, 2, 3 or 4 rows of terminals of 20 or 26 terminals per row. Please specify number of rows when ordering.

Cook WXB Building Terminal Box



For terminating and distributing lead covered cable inside of buildings.

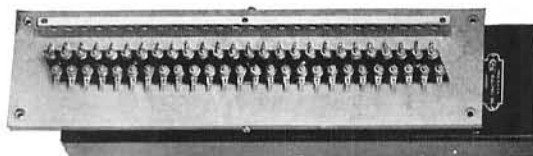
The face plate and fanning strips are of a single piece of molded bakelite. Studs are made of Everdur metal and inserted into the bakelite insulation so they cannot turn. This cable chamber

contains a compression coupling which permits a moistureproof connection to be made by a few turns of the compression nut on either lead covered or loom cable.

This terminal can be furnished with or without a 6-foot, 22 B. & S. gauge cable stub attached. When ordering please be sure to specify with or without stub. Orders not specifying will be shipped less stub.

Cat. No.	Description	Capacity	Height Inches	Width Inches	Depth Inches	Weight Less Stub
8000	Surface Type	5 Pairs	10	8	3	6 lbs.
8001	Surface Type	11 Pairs	10	8	3	6 lbs.
8002	Surface Type	16 Pairs	10	8	3	6 lbs.
8003	Surface Type	26 Pairs	15	8	4	9 lbs.
8800	Flush Type	5 Pairs	10	8	3	7 lbs.
8801	Flush Type	11 Pairs	10	8	3	7 lbs.
8802	Flush Type	16 Pairs	10	8	3	7 lbs.
8803	Flush Type	26 Pairs	15	8	4	11 lbs.

Cook Interior Junction Boxes



For terminating and distributing interior telephone or signal cables. It consists of a molded bakelite distribution strip and a maple fanning strip mounted on a highly finished maple base. The cable is terminated on solder clips. Distribution wires are brought through the fanning strip and terminated under hexagon nuts.

The cover is of metal, finished in black. The box is mounted with No. 12, 1-inch RHI galvanized wood screws through ¼-inch holes.

Cat No.	Capacity	Length Inches	Width Inches	Depth Inches	Weight
5100	13 Pairs	11	5	2¼	3 lbs.
5101	26 Pairs	19½	5	2¼	5 lbs.

Cook Distributing Strips



A molded bakelite strip of high insulating value and great strength. The studs, nuts and washers are of non-corrosive metal, securely held in the bakelite. Maple fanning strip, same length as bakelite, is furnished when specified.

The KS strip is similar to the K strip except it has a row of solder clips under the nuts.

Mounted with No. 8, ¾-inch RHI cadmium plated screws through 5/16-inch holes in the strip.

When ordering please specify number of pairs.

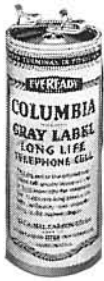
Cat. No.	Description	Length Per Pair Inches	Width Inches	Depth Inches	Weight Per 100 Pairs
5001	K Strip	¾	1¼	1½	5 lbs.
5002	KS Strip	¾	1¼	1½	6 lbs.
5005	Fanning Strip	¾	1¼	1½	2 lbs.

Line Supplies Section

BATTERIES

Dry Cells

No. 6 Columbia Gray Label Telephone Battery



This is a medium, low current, long life battery, especially designed for telephone service. Initial amperage is 18 to 22, 1½ volts. Size is 2¾ x 6¾ inches. Fahnestock spring terminals are shipped unless screw connections are specified.

Cat. No.	Voltage	Description	Std. Pkg.	Weight Std. Pkg.
6-Gray Label	1½	Round	25	57 lbs.

Dry Cells

No. 6 Ray-O-Vac Telephone Battery



Made with an internal protective coating which reduces shelf deterioration, making this battery especially serviceable in telephone work. Initial amperage is 18 to 22, 1½ volts. Size is 2½ x 6½ inches. Furnished with spring clips unless screw terminals are specified.

Cat. No.	Voltage	Description	Std. Pkg.	Weight Std. Pkg.
6-Telephone	1½	Round	25	58 lbs.

No. 6 "Eveready" Ignitor Dry Battery

The "Eveready" Ignitors are general purpose cells, providing long life in all dry cell applications. Furnished with screw terminals unless Fahnestock terminals are specified. Initial amperage is 28 to 32, 1½ volts.

Cat. No.	Voltage	Description	Size Inches	Std. Pkg.	Weight Std. Pkg.
6-Ignitor	1½	Round	2¾x6¾	12	27 lbs.

No. 6 Ray-O-Vac Ignition Battery

This battery is high in amperage and is made for ignition and other heavy duty work. It is also used for pole changers. Initial amperage is 28 - 32, 1½ volts. Furnished with screw terminals unless spring clip terminals are ordered.

Cat. No.	Voltage	Description	Size Inches	Std. Pkg.	Weight Std. Pkg.
6-Ignition	1½	Round	2½x6	25	59 lbs.

4F2J Burgess Twin-Six Telephone Batteries



The Burgess Twin-Six is, as its name implies, the electrical equivalent of two No. 6 cells. It is made of eight heavy duty cells connected in series parallel to give three volts. These eight cells have 12% more zinc area than two No. 6 cells. Supplies a higher working voltage through the service life of the battery.

Cat. No.	Voltage	Size, Inches	Std. Pkg.	Weight Std. Pkg.
4F2J	3	5 5/8 x 3 1/8 x 2 3/8	15	44 lbs.

Ray-O-Vac Unit Type Telephone Batteries



Unit type plug in batteries, No. 86-T, 3 volts (the equivalent of two No. 6 cells) or No. 89-T with 4½ volts (the equivalent of three No. 6 cells)—housed in a single compact carton—are convenient and economical. These batteries are supplied in mailing cartons ready to be sent to the subscriber who then makes the change himself.

Cat. No.	Voltage	Size, Inches	Std. Pkg.	Weight Std. Pkg.
86-T	3	3 7/8 x 2 5/8 x 5 3/8	25	72 lbs.
89-T	4½	3 7/8 x 3 7/8 x 5 3/8	25	107 lbs.

Air Cells

Eveready Transmitter Batteries



Eveready, air depolarized, constant voltage, primary batteries are specially made as a source of power for telephone operators' transmitters. They are designed for long life with constant voltage for sustained high quality transmission. There are two sizes, T-2600 and T-1600.

Two No. T-2600 batteries, connected in series, provide current at never over 5 volts and never below 4 volts. One No. T-2600 battery and one No. T-1600 battery, connected in series, will furnish current at never over 3.75 volts and never below 3 volts.

Their capacity is conservatively rated at 600 ampere-hours and when installed in modern switchboards drawing approximately 100 milliamperes they will supply 6000 talking hours of peak transmission.

These batteries use a liquid electrolyte but are shipped dry. In the dry state they undergo no depreciation. They can be activated for service by adding ordinary drinking water. The maximum load to which either battery should be subjected is 650 milliamperes.

Cat. No.	Voltage	Description	Size Inches	Std. Pkg.	Weight Each
T-1600	1.25	air cell	5 1/4 x 6 3/8 x 10 7/8	1	13 lbs.
T-2600	2.5	air cell	9 1/8 x 6 3/8 x 10 7/8	1	24 lbs.

Ray-O-Vac Transmitter Battery



Designed for use at operators' positions on telephone switchboards. Composed of a number of small high efficiency cells connected in series parallel, to furnish 4½ volts. Provided with long service capacity and a uniform voltage characteristic.

Cat. No.	Voltage	Size, Inches	Std. Pkg.	Weight Each
9451	4½	11 7/8 x 4 1/8 x 7	1	17 lbs.

Test Set Batteries

Cat. No.	For Test Set No.	Description	Voltage	Size Inches	Std. Pkg.	Weight Std. Pkg.
04	Kellogg No. 1016	Oval	1½	1 1/4 x 2 1/4 x 4	20	12 lbs.
321-R	Stewart	Round	3	3 1/2 x 3 3/8 x 1 5/8	1	11 oz.
531-703	Kellogg No. 1020	Flat	4½	2 1/8 x 2 1/8	1	6 oz.
705	Kellogg No. 3000	Round	4½	7 1/8 x 1 1/8	12	7 1/2 lbs.
950	West	Round	1½	2 1/8 x 1 1/8	36	7 3/4 lbs.
777	Govt. Field	Round	3	.....	..	.....

BATTERIES, BELLS, BUZZERS

Edison Primary Batteries



Used in telephone service to supply power for magneto switchboard transmitters, inter-phone, bell and annunciator systems.

Suitable for open or closed circuit work; open circuit voltage is 0.90 for all cells; average closed circuit voltage is 0.60 to 0.65 per cell. Do not lose capacity when idle even over long periods; have low and constant internal resistance; show accurate visual indications of approaching exhaustion; give long life; are easily installed and renewed, and require no charging facilities.

Cat. No.	Description	Amperes			Size Overall Inches	Weight Each
		Capacity Ampere Hours	Continu-ous	Inter-mittent		
S-502 Rectangular		500	2.2	3.0	5 3/4 x 6 3/4 x 12 1/4	26 lbs.
S-504 Cylindrical		500	2.2	3.0	7 Diam. x 11 5/8	26 lbs.

For S-502

Refills

For S-504

Cat. No.	Description	Cat. No.	Description
S-502-R	Complete Renewal	S-504-R	Complete Renewal
S-502-Z	Zinc-Oxide Assem.	S-504-Z	Zinc-Oxide Assem.
S-502-C	Caustic Soda	S-504-C	Caustic Soda
S-502-O	Special Oil	S-504-O	Special Oil

Gravity Type Batteries

Used in telephone exchanges to supply operator's transmitter battery where storage battery is unattainable. Designed for closed circuit work of small consumption and are not recommended for telephone use. A complete cell consists of glass jar, one crowfoot zinc, one battery copper and 2 1/2 lbs. of blue vitriol for No. 57 or 3 lbs. of blue vitriol for No. 68.



Cat. No.	Description	Size	Weight
K-57	Complete Cell	5x7 in.	7 lbs.
	Blue Vitriol		2 1/2 lbs.
	Glass Jar	5x7 in.	2 1/2 lbs.
	Crowfoot Zinc		1 3/4 lbs.
	Battery Copper		12 lbs. per 100
K-68	Complete Cell	6x8 in.	9 1/4 lbs.
	Blue Vitriol		3 lbs.
	Glass Jar	6x8 in.	3 1/8 lbs.
	Crowfoot Zinc		3 lbs.
	Battery Copper		13 lbs. per 100

Battery Boxes

Used wherever dry cells are used. Inexpensive, saves batteries and stores them neatly and conveniently where they can be readily inspected.



These boxes are neat and attractive—made of heavy, pressed steel, finished in bright black japan and lined throughout with heavy fibre which insulates the sides of the box and edges of the holes. A tight fitting cover is attached to the box by a nickel-plated chain. Holes are provided in the top and bottom for leading in wires. May be mounted on a hook or nail in the wall.

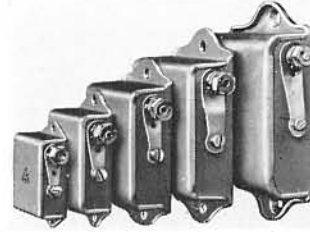
Cat. No.	Capacity	Size	Weight Each
2	Two No. 6 Dry Cells	2 3/4 x 5 1/2 x 7 1/2 inches	1 1/2 lbs.
3	Three No. 6 Dry Cells	2 3/4 x 8 1/4 x 7 1/2 inches	2 lbs.

Push Buttons

These push buttons are surface type, furnished in copper finished metal. Overall diameter is 1 3/8 inches.

Cat. No.	Description
200	Copper Finished Push Buttons

Lungen Type Bells and Buzzers



Sizes: 0 1 2 3 4



No. 13

Surface type—available in five sizes, varying in tone and volume to meet all conditions. Covers fit tightly making them bug and dust proof. They have phosphor bronze springs and double adjustment, pure, hard-drawn silver contacts. Standard finish is rustproof, polished chrome.

Standard voltage is 8-10 volts AC or 6-8 volts DC. Special voltages or resistances up to 48 volts are available—please specify exactly when ordering.

No. 15 Lungen Buzzers

No. 13 Lungen Bells—

Cat. No.	Size Inches	Std. Pkg.	Weight Std. Pkg.	Cat. No.	Size Gong	Std. Pkg.	Weight Std. Pkg.
15-0	1 3/8 x 1 1/8	10	1 1/4 lbs.	13-1	1 in.	10	1 7/8 lbs.
15-1	2 1/8 x 1 5/8	10	2 1/4 lbs.	13-1 3/4	1 3/4 in.	10	2 1/2 lbs.
15-2	2 3/8 x 1 3/4	10	3 1/2 lbs.	13-2 1/2	2 1/2 in.	10	5 lbs.
15-3	3 x 2	10	5 lbs.	13-3	3 in.	10	7 lbs.
15-4	3 1/2 x 2 1/4	10	6 1/4 lbs.	13-4	4 in.	10	10 lbs.

No. 13-4, DC only

Bells and Buzzers



rustproof.

The bell operates perfectly on one, two or three dry batteries or from the 6 volt secondary circuit of a bell ringing transformer. Free action of the armature eliminates mechanical adjustment. The mechanism is doped, therefore rustproof. Cases are dust and bug proof.

Cat. No.	Type	Size of Gong	Resistance Ohms	Weight Each
222-3 1/2	Marlo Bell	3 in.	3 1/2	1 lb.
212-300	PRXXX Bell	3 in.	300	1 lb.
212-500	PRXXX Bell	3 in.	500	1 lb.
220-3 1/2	Marlo Buzzer	..	3 1/2	1/2 lb.
210-50	PRXXX Buzzer	..	50	1/2 lb.
210-300	PRXXX Buzzer	..	300	1/2 lb.

Rechargeable Storage Batteries for Flashlights

Day-in and day-out flashlight users find that the Ideal Rechargeable Flashlight Storage Battery saves up to \$15.00 per year per flashlight.

Lasts as long as several hundred size D dry cells. You can charge it yourself, easily and quickly! Cannot be overcharged! Positively spill-proof! Delivers a

strong, bright light without the continual expense and nuisance of replacing dry cells.

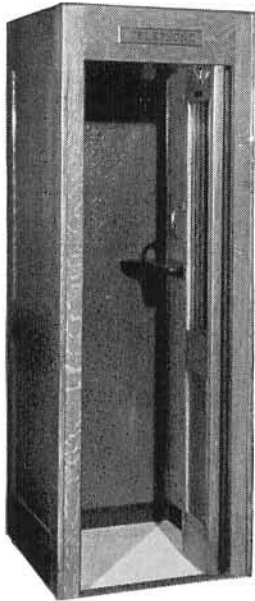
Cat. No.	Description
44	Flashlight Storage Battery, Replaces 2 size D Dry Cells
50	Charger, Uses 110-120 Volt, 60 Cycle A.C.



Line Supplies Section

BOOTHS

Series 100 Folding Door Booth For Unit Installation



The new series 100 Telephone Booth is the result of years of scientific research, experiments and improvement of existing models. It is made of selected, kiln dried lumber by skilled cabinet makers. Handsome as a fine piece of furniture, it harmonizes with its surroundings and attracts favorable attention. Being acoustically designed and automatically lighted and ventilated this booth affords privacy and perfect comfort to the user.

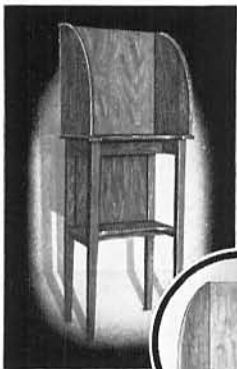
Standard equipment includes a silent electric ventilator and complete automatic lighting equipment — both operated by

an automatic door switch. This booth is completely metal lined. No floor — glass in door only.

Shipped "knocked down" unless order specifies to be shipped "set up." Size over all, 84½ in. high x 33¼ in. wide x 30½ in. deep.

Cat. No.	Material	Finish	Shipping Weight
100-A	Oak	Light or medium oak	300 lbs.
100-B	Birch	Light or medium mahogany	300 lbs.

Stand or Wall Mounting Portable Booth



An attractive, compact, inexpensive telephone booth—easily installed in restaurants, stores, railroad stations or any location that offers possibilities of increasing revenues with a booth installation. Sufficient privacy is afforded for ordinary conversations.

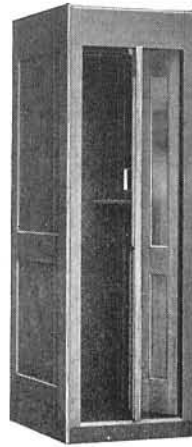
The unit may be moved from one location to another as the need for a telephone booth changes. The top section may be ordered separately for wall mounting or may be ordered with the stand. To install just screw the top onto the stand or if the shelf is to be used

alone it is simply bolted to the wall. The stand has an extra shelf for directory or packages, or better, for displaying a store's merchandise.

Equipped with a panel for mounting ringer box. Solid oak only carried in stock. Available in mahogany or walnut finish on special order.

Description	Height	Size		Shipping Weight
		Width	Depth	
Complete Booth	67 in.	24½ in.	16½ in.	67 lbs.
Section for Wall Mounting	25 in.	24½ in.	16½ in.	35 lbs.

No. 1 Folding Door Booth For Group Installation



Furnished with unfinished sides—separators are used between the units of group installations and finished panels are used at each end of the group only. It is particularly desirable for use in narrow places as the door requires a space of only 3 inches in front for opening and closing. No guide slot is required.

Strong in construction and beautiful in appearance—made of solid mahogany or quartered oak. The inside is lined with sheet metal, the floor and baseboard covered with linoleum and the threshold provided with safety tread. There are two glass panels in the door.

The ceiling of the booth is 4½ inches below the roof. The intervening space may be used as a wiring

chamber and to house an electric light relay or door switch equipment.

When desired, these booths can be furnished with seats and electric light and silent electric ventilator operated by an automatic door switch.

Size over all, 88¼ in. high x 29 in. wide x 30½ in. deep.

Cat. No.	Material	Back	Shipping Weight
1-C	Golden Oak	Hardwood-exposed back	310 lbs.
1-D	Golden Oak	Softwood -exposed back	310 lbs.
1-A	Light Mahogany	Hardwood-exposed back	310 lbs.
1-B	Light Mahogany	Softwood -exposed back	310 lbs.
1-E	Dark Mahogany	Hardwood-exposed back	310 lbs.
1-F	Dark Mahogany	Softwood -exposed back	310 lbs.

No. 2 Folding Door Booth

For Unit Installation



Similar in construction to the folding door booth used for group installation except that it is built as a single unit and is finished on all sides. Several can be placed in a group with glass panels at the front only.

When desired these booths can be furnished with seats and door switch equipment to operate both an electric light and electric ventilator.

Shipped knocked down and crated. Size over all, 88¼ in. high x 29 in. wide x 30½ in. deep — shipping weight, 365 lbs.

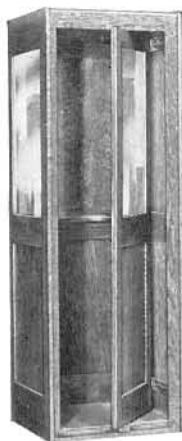
2 Glass Panels in Door, 2 in Left Side and 1 in Right Side

Cat. No.	Material	Finish	Cat. No.	Material	Finish
2-A	Oak	Medium Oak	2-G	Oak	Medium Oak
2-B	Birch	Dark Mahogany	2-H	Birch	Dark Mahogany
2-C	Birch	Light Mahogany	2-J	Birch	Light Mahogany
			2-K	Birch	Walnut

2 Glass Panels in Door Only

BOOTHS

No. 3 Receding Door Booth For Unit Installation



The door, when swung open, slides back along the right wall. It opens easily and smoothly, with no grooved slot needed. Only 6 inches is required in front of the booth for opening and closing the door.

Finished inside and out by staining, shellacking and varnishing. The floor is thoroughly oiled. This booth has a reinforced back panel for mounting a wall telephone or coin collector. Also furnished with a writing shelf which can be used for a desk telephone if desired.

Can also be equipped with seat, electric light and silent electric ventilator operated by automatic door switch equipment.

Shipped knocked down and crated. Size over all, 83 1/2 in. high x 28 1/4 in. wide x 29 1/4 in. deep—shipping weight, 260 lbs.

1 Glass Panel in Door and 1 in Right Side

Cat. No.	Material	Finish
3-A	Oak	Medium Oak
3-B	Birch	Dark Mahogany
3-C	Birch	Light Mahogany

1 Glass Panel in Door, 1 in Right Side and 1 in Left Side

Cat. No.	Material	Finish
3-D	Oak	Medium Oak
3-E	Birch	Dark Mahogany
3-F	Birch	Light Mahogany

1 Glass Panel in Door Only

Cat. No.	Material	Finish
3-G	Plain Oak	Medium Oak
3-H	Birch	Dark Mahogany
3-J	Birch	Light Mahogany

No. 4 Swinging Door Booth



Similar in construction to No. 3 Booth except has swinging type door.

Shipped knocked down and crated. Size over all, 83 1/2 in. high x 28 1/2 in. wide x 29 1/4 in. deep—shipping weight, 260 lbs.

1 Glass Panel in Door and 1 in Right Side

Cat. No.	Material	Finish
4-A	Plain Oak	Medium Oak
4-B	Birch	Dark Mahogany
4-C	Birch	Light Mahogany

1 Glass Panel in Door, 1 in Right Side and 1 in Left Side

Cat. No.	Material	Finish
4-D	Oak	Medium Oak
4-E	Birch	Dark Mahogany
4-C	Birch	Light Mahogany

1 Glass Panel in Door Only

Cat. No.	Material	Finish
4-G	Oak	Medium Oak
4-H	Birch	Dark Mahogany
4-J	Birch	Light Mahogany

Acousti-Booth

The Acousti-Booth is a radical departure from conventional booth design. It has patented, acoustic inner walls and ceiling that effectively suppress extraneous sound, providing a comparative "island of quiet" for the person telephoning.

The telephone user in this booth is comfortable too, for it is doorless and open at the bottom to insure the natural ventilation and sanitation so noticeably lacking in the conventional type telephone booths. Privacy and quiet are obtained by absorbing the noise—not by attempting to block it out with a door.

Model 203 DeLuxe Acousti-Booth For Public Pay Stations



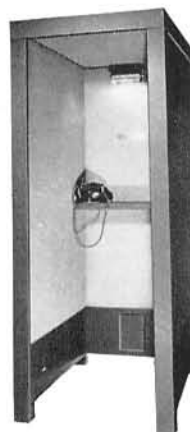
Acoustic walls absorb noise, no door is required. Always well ventilated, never gets "stuffy". There is no maintenance problem, nothing to get out of order. The booth is simple to install and easily moved about. It is the accepted modern way to maintain efficient telephone service with comfort, convenience and sanitation.

The fine plywood walls and ceiling are finished in walnut on the outside with lighter plywood interior. Walls and ceiling are lined with a three-inch layer of sound absorbent material. Furnished with a shelf for telephone instrument. Also equipped with a handy overhead electric lamp with pull chain socket and a reinforcing plate for a pay station corner bracket. Shipped "knocked down" unless otherwise specified.

Cat. No.	Finish	Width	Size Height	Depth	Shipping Weight
203	Walnut	31 in.	81 in.	42 1/2 in.	195 lbs.

Front opening, 25 in. x 78 in.

Model 204 Industrial Acousti-Booth For Factories, Power Houses, Mills, Etc.



Constructed of heavy gauge steel with a three-inch layer of sound-absorbent material, protected by a perforated metal facing. A metal shelf is provided for holding the telephone instrument and a wood panel for mounting a telephone ringer box. A handy overhead electric lamp with pull chain socket, attachment cord and plug are also provided. No special conduit connections are necessary for electric power. Merely plug an attachment cord into any convenient outlet.

Attractively finished in black and steel gray—delivered "knocked down" and can be bolted together easily.

Cat. No.	Finish	Width	Size Height	Depth	Shipping Weight
204	Black and Steel Gray	31 in.	79 3/4 in.	38 in.	375 lbs.

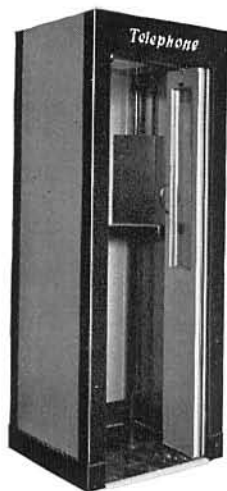
Front opening 76 in. x 24 in.

Line Supplies Section

BOOTHS

All-Steel Folding Door Booth

For Unit or Group Installation



An all-metal square telephone booth of conservative modern design that can be assembled in single or multiple units. It is fire-proof and practically indestructible. Wall interiors are lined with sound inhibiting material. Finish is high grade baked enamel, smooth or crinkle, in single color or in color combinations.

The door is of the equal-leaf type, and when in the open position it does not extend beyond the space of the booth — operates smoothly and quietly in a stainless steel track. Handle is of hard aluminum alloy.

A specially designed light, with self-closing lens, placed in the ceiling gives maximum illumination on the telephone instrument. Adequate ventilation can be provided by a

compact ventilating unit concealed between the ceiling and the roof. Both light and ventilator are controlled by a noiseless door switch. A rigid steel seat can be provided which is readily installed or removed without drilling holes in floor or walls of booth.

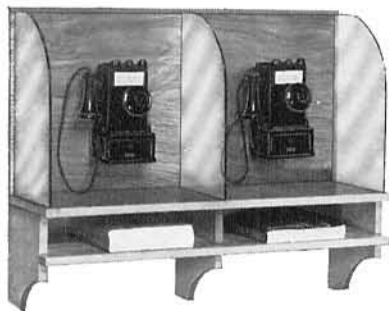
The shelf and telephone instrument backboard are adjustable for either a standing or sitting position. Backboard is drilled with mounting holes for coin collector. Simple wiring instructions are furnished.

The floor of the booth is covered with a single piece of $\frac{3}{8}$ -inch rubber, and is provided with a stainless steel track at the entrance.

When ordering specify color and type of finish; ventilating unit; seat. Shipped completely assembled or knocked down, if specified.

Cat. No.	Size	Weight Each
4-S	83 $\frac{3}{4}$ in. high x 30 in. wide x 30 in. deep	550 lbs.

Teleshelf



An attractive, inexpensive telephone booth installation. Supplied for one, two, three or more phones — each booth 20 inches wide. Glass partitions projecting on each side of the phone are 11 $\frac{1}{2}$ inches wide—large enough to make phone conversations comparatively private.

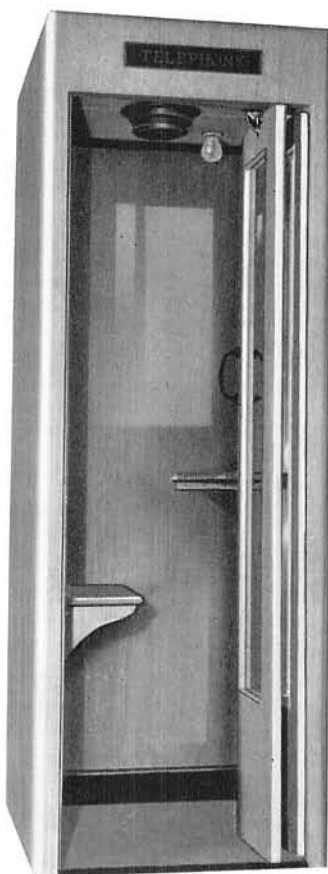
A 12-inch shelf for directories is provided under the telephone shelf.

Natural finish or if opaque finish is desired send in sample and it will be duplicated.

Cat. No.	Description	Height Overall Inches	Height to Top Shelf Inches	Width Each Unit Inches	Depth of Shelf Inches	Weight
1	1 Phone Teleshelf	34	20	20	11 $\frac{1}{2}$	50 lbs.
2	2 Phone Teleshelf	34	20	20	11 $\frac{1}{2}$	65 lbs.
3	3 Phone Teleshelf	34	20	20	11 $\frac{1}{2}$	85 lbs.

Churchill Streamliner Telephone Booth

Glass Lined



Here's a telephone booth destined to provide an entirely new standard of comfort, cleanliness, beauty and customer appeal.

This modern, "Streamliner" Booth, beautiful as the finest piece of furniture, harmonizes with its surroundings and its eye appeal really sells phone service. It is not to be considered an expense item but as a revenue producer through increased earning capacity.

An innovation is the covering of each inside wall with a sheet of glass. This not only makes the booth more soundproof but makes it the easiest booth to keep clean. Users cannot deface the glass surface as happens with ordinary booths. The glass does not break under extreme conditions, proven by exhaustive tests.

The new booth is made of solid mahogany and mahogany plywood. The finish is beautiful, modernistic hand rubbed

blond mahogany and the corners are rounded for a truly modern "stream-lined" effect.

All booths are equipped with a silent automatic ventilator and light, both operated by an automatic door switch. They also have a comfortable seat and a convenient shelf that may be used for a handset or as a writing desk. The folding doors have full length, full vision, bevelled plate glass windows.

Outside dimensions, 84 $\frac{1}{2}$ in. high, 28 $\frac{1}{2}$ in. wide and 30 in. deep; shipping weight crated is 450 pounds.

Pay Station Signs



Every telephone company should have a number of these signs placed in conspicuous places to indicate public telephone pay stations.

These double-faced signs are attractively made of porcelain enamel on 18 gauge steel plate and are guaranteed never to fade or tarnish from the effects of the weather. They will last a business lifetime.

Cat. No.	Color	Size	Weight Each
4	Blue and White	8x18 inches	3 lbs.

PAY STATIONS

Gray Post-Payment Attachment Type

Non-Electrical, for Local or Central Battery Service

The operation of these pay stations is accomplished without the aid of moving parts or electrical connections, the signals being produced by the coins striking gongs or chimes, the sound of which is transmitted to the central office operator through the transmitter of the telephone at which the pay station is located. Because of

the simplicity and reliability of these pay stations, their maintenance cost is extremely low.

In the case of the handset type pay stations, the signals are picked up by a special signal transmitter, mounted within the box. These pay stations cannot be used for pre-payment service, as the coin is not under the control of the central office operator.

No. 11 Side Mounting Type



No. 11 will fit any regular wall telephone in present use. It is connected to the telephone by a mounting plate furnished with the pay station. Has nickel, dime and quarter slots.

Furnished less telephone set . . . unless instrument code number is specified.

Size is 9 in. high, 4½ in. wide, 3 in. deep. Shipping weight 16 lbs.

No. 11-J Handset, Side Mounting Type



Same as No. 11 but arranged for use with a wall type or desk type Masterphone.

A universal mounting plate is arranged for either wall or shelf mounting and a No. LD-72 signal transmitter is mounted within the box to pick up the coin signals. It is not necessary to mechanically connect the pay station to the telephone set but the signal transmitter must be cut into the handset transmitter circuit, preferably at the ringer box terminal block. A two-conductor cord is required for this purpose.

Furnished less telephone set . . . unless instrument code numbers is specified.

The size of No. 11-J Pay Station is 9¾ in. high, 4¾ in. wide and 3¾ in. deep. The shipping weight is 16 pounds.

No. 14 Portable Type



Designed for general portable business — made to fit any make desk telephone. Equipped with three slots, for nickels, dimes and quarters.

The pay station is so arranged that by unlocking the back, inspection and repairs can be made without unlocking the coin compartment. Each compartment requires a different key. A spiral chute enables the station

to operate satisfactorily even when tipped at an angle.

Furnished less desk stand and desk set box.

For a complete installation the following additional parts should be ordered:

- 1 No. F-41-A Receiver
- 1 No. 22-C Transmitter
- 1 No. F-602-BA Common Battery Desk Set Box or any standard 3-conductor magneto desk set box.

The size of No. 14 Pay Station is 11 in. high, 4½ in. wide, 3¼ in. deep, and the shipping weight is 16 pounds.

No. 14-J Handset, Portable Type



Same as No. 14 Pay Station but arranged for use with a handset. No. 14-J is furnished with a No. LD-72 coin signal transmitter, switch-hook and hook-switch springs.

Furnished less handset and desk set box.

For a complete installation the additional parts listed below should be ordered:

- 1 No. F-27-C Handset
- 1 No. 610-BA or 700-BA Desk Set Box

The size of No. 14-J Pay Station is 12¼ in. high, 4½ in. wide, 4½ in. deep, and the shipping weight is 12 pounds.

Line Supplies Section

PAY STATIONS

Gray Post-Payment Type Pay Stations Non-Electrical, for Local or Central Battery Service

The operation of these pay stations is accomplished without the aid of moving parts or electrical connections, the signals being produced by the coins striking gongs or chimes, the sound of which is transmitted to the central office operator through the transmitter of the telephone at which the pay station is located. Because of the simplicity and reliability of these pay stations, their maintenance cost is extremely low.

In the case of the handset type pay stations, the signals are picked up by a special signal transmitter, mounted within the box. These pay stations cannot be used for pre-payment service, as the coin is not under the control of the central office operator.

No. 23-D Post-Payment Type



No. 23-D station, compact and neat in appearance is the three slot type, for nickels, dimes and quarters.

The upper compartment is hinged, allowing inspection without opening the money drawer or disconnecting any wiring, the repair man and inspector being confined to the top section while the collector has the lower. Each compartment has a lock.

The universal mounting plate on this station allows either wall

or shelf mounting. Standard equipment includes the mounting for the transmitter, switch-hook and hook-switch springs.

Furnished less transmitter, receiver and ringer box.

For a complete installation a No. F-41-A Receiver, a No. 22-C Non-Positional Transmitter and a No. F-602-BA Common Battery Desk Set Box or any standard 3-conductor magneto desk set box should be ordered.

No. 23-D Pay Station is 10½ in. high, 6 in. wide, 4½ in. deep, and the shipping weight is 20 pounds.

No. 23-J Handset, Post-Payment Type

Similar to No. 23-D but arranged for use with a handset. Standard equipment includes switch-hook, hook-switch springs and No. LD-72 signal transmitter.

Furnished less handset and desk set box.

For a complete installation a No. F-27-C Handset and a No. 610-BA or 700-BA Desk Set Box should be ordered.

No. 23-J Pay Station is 10½ in. high, 6 in. wide, 4½ in. deep, and the shipping weight is 20 pounds.



Gray Pre-Pay and Convertible Post-Pay Type Pay Stations

The Gray No. 34 Series of Pay Stations can be furnished for pre-payment or post-payment service on manual or machine switching exchanges.

They are arranged for wall mounting, but may be mounted in a corner by means of a No. 153-A bracket or on a shelf by means of a No. 139-A backboard.

These stations are sturdily constructed of heavy, pressed steel and the cash compartment door is hardened to prevent burglary. They are furnished in black japan with chromium plated trimmings.

When used for pre-payment service, special central office equipment is required to switch 110-volt direct current onto the line to operate the coin collecting and refunding magnet.

No. 34-A-9 Handset Pre-Payment Type, for Dial or Manual Service



The dial of this station is normally inoperative until a coin is deposited. The deposited coin closes a switch which serves to unlock the dialing circuit so that a local call can be made. The deposited coin is held in suspension and through a special chain of relays in the central office, is automatically collected or refunded depending upon the completion or non-completion of the connection.

To make a long distance call the subscriber dials the operator and gives her the order. The operator calls for the deposit of the charge and, as each coin is put into the slot, a distinctive signal is sounded, which is audible to the operator. The coins are held in a coin hopper and may be deposited or refunded at will.

This pay station has an anti-side tone circuit requiring the use of a desk set box with a three winding coil.

No. 34-A-9 Pay Station is 18¼ in. high, 7 in. wide, and 6 in. deep, and the shipping weight is 32 pounds.

Furnished less handset and desk set box.

For Dial Service

When ordering specify Catalog No. 34-A-9 for Dial Service which includes a No. 10-L Lock, No. LD-72 Signal Transmitter, No. 50-C Apparatus Blank, No. 2-A Coin Receptacle, and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For a complete installation a No. 27-C Non-Positional Handset and Cord, a No. 700-BA Desk Set Box, a No. AK-11 Dial and a No. D-53594 Extended Dial Number Plate should be ordered.

For Manual Service

When ordering specify Catalog No. 34-A-9 for Manual Service which includes a No. 10-L Lock, No. 50-C Apparatus Blank, No. 2-A Coin Receptacle, No. LD-72 Signal Transmitter and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For a complete installation a No. 27-C Handset and Cord, and a No. 700-BA Desk Set Box should be ordered.

PAY STATIONS

Gray Pre-Pay and Convertible Post-Pay Type

The Gray No. 34 Series of Pay Stations can be furnished for pre-payment or post-payment service on manual or machine switching exchanges.

They are arranged for wall mounting, but may be mounted in a corner by using a No. 153-A bracket or on a shelf with a No. 139-A backboard.

These stations are sturdily constructed of heavy, pressed

steel and the cash compartment doors are hardened to prevent burglary. They are furnished in black japan with chromium plated trimmings.

When used for pre-payment service, special central office equipment is required to switch 110-volt direct current onto the line to operate the coin collecting and refunding magnet.

No. 34-A-10 P1 Post-Payment Type for Dial Only

A special type, readily convertible to handset operation — permits local pay station service without the aid of an operator and without special central office equipment. The only central office requirement is that the reverse battery method of supervision be used.

The arrangement of the coin unit is such that the calling party is free to dial without depositing a coin but the reverse battery operates a relay in the pay station and shunts the calling party's transmitter. He can hear the called party answer but cannot carry on a conversation until a coin is deposited. A low resistance shunt prevents the calling party from defeating the purpose of the pay station by using the receiver as a transmitter. If the wrong coin is inserted it is returned.

Free lines such as "information," "long distance," "fire" and "police" may be arranged as these lines do not reverse the current supply to the calling subscriber's line. For toll service the subscriber dials "long distance" and the toll operator collects for the call in the regular manner.

A ringer box with a three winding induction coil is required for the operation of this station. In ordering specify Catalog No. 34-A-10 P1 which includes a No. 10-L Lock, No. 1-B Card Holder, No. 2-A Coin Receptacle, Transmitter Swivel, 90 Ohm Resistor and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For a complete installation the following additional parts should be ordered:

- | | |
|----------------------------------------|---------------------------|
| 1 No. 22-C Non-Positional Transmitter | 1 No. F-41-A Receiver |
| 1 No. AK-11 Dial | 1 No. 700-BA Desk Set Box |
| No. D-53594 Extended Dial Number Plate | |

No. 34-A-10 Pay Station is 18¼ in. high, 6 in. deep, 7 in. wide, and the shipping weight is 32 pounds.



No. 34-A-8 Pre-Payment Type, for Dial or Manual Service

Similar to No. 34-A-9 but designed for standard instruments. This model can be converted into a No. 34-A-9 handset type by adding the proper accessories.

For Dial Service

In ordering specify Catalog No. 34-A-8 for Dial Service which includes a No. 10-L Lock, No. 1-B Card Holder, No. 2-A Coin Receptacle, Transmitter Swivel and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For a complete installation the following additional parts should be ordered:

- | | |
|----------------------------------------|---------------------------|
| 1 No. 22-C Transmitter | 1 No. F-41-A Receiver |
| 1 No. AK-11 Dial | 1 No. 700-BA Desk Set Box |
| No. D-53594 Extended Dial Number Plate | |

For Manual Service

In ordering specify Catalog No. 34-A-8 for Manual Service which includes a No. 10-L Lock, No. 50-C Apparatus Blank, No. 2-A Coin Receptacle, Transmitter Swivel and Circuit Label showing connections to Kellogg No. 700-BA triad circuit desk set box.

For complete installation the following additional parts should be ordered:

- | | |
|---------------------------------------|---------------------------|
| 1 No. F-41-A Receiver | 1 No. 700-BA Desk Set Box |
| 1 No. 22-C Non-Positional Transmitter | |



No. 34-A-11 P1 Handset Post-Payment Type, for Dial Only

Same as No. 34-A-10 P1, except that it is arranged for use with a handset.

In ordering specify Catalog No. 34-A-11 P1 which includes a No. 10-L Lock, No. 50-C Apparatus Blank, No. 2-A Coin Receptacle, No. LD-72 Signal Transmitter, 90 Ohm Resistor and Circuit Label showing connections to Kellogg triad circuit desk set box.

For complete installation the following additional parts should be ordered:

- | |
|----------------------|
| 1 No. 27-C Handset |
| 1 No. AK-11 Dial |
| No. D-53594 Extended |



1 No. 700-BA Desk Set Box
No. 34-A-11 Pay Station is 18¼ in. high, 6 in. deep, 7 in. wide, and the shipping weight is 32 pounds.

Post-Payment Type for Manual or Dial

For Free Local Service

Order Pay Station No. 34-A-8P2 less Coin Collecting and Refunding Relay or No. 34-A-9P2 less Coin Collecting and Refunding Relay if desired for use with handset. Please specify whether for dial or manual service.

The operation of these stations is similar to Nos. 23-D and 23-J respectively except that they may be converted to the pre-pay type pay stations with the addition of the proper relays.

CABLE

Paper Insulated, Lead Encased Telephone Cable



Telephone cable is regularly made with various electrostatic capacities and with conductors of Nos. 19, 22, 24 and 26 AWG.

Each wire is insulated with one or more wraps of manila paper, or paper made from clear rope stock with suitable proportions of wood pulp or cotton rag stock added. The paper is wound loosely, in helical form, around the wire. When two or more papers are used they are applied in reverse direction. Dry paper is used because of its low specific inductive capacity which is further reduced by the air space introduced by the loose wrapping.

After insulation of the conductors they are twisted together to form pairs, each wire of a pair being wrapped with paper of a different color for tracing purposes. The length of lay of the twisted pair varies from two to five and one-half inches.

The twisted pairs are cabled together in layers, each layer being one pair thick. Alternate layers are cabled in opposite directions. The completed cable core is taped over with paper.

The cable is then treated under controlled high temperature and vacuum to remove the moisture from the cable without causing deterioration of the paper insulation.

The cable is then sheathed with lead containing one per cent antimony. Pure lead or lead containing up to three per cent tin may be used in special cases. The lead-antimony sheath is usually used to give additional stiffness to the sheath and to prevent crystallization of the lead under continuous vibration.

After the cable is sheathed it is immersed in water to detect any imperfection in the sheath and then tested for dielectric strength, insulation resistance, capacity, and continuity of the conductors.

Efficiency of transmission depends upon the resistance of the conductors, the electrostatic capacity and to a limited extent on the insulation resistance.

Scope

Cable is regularly made in the following types:

Type	Size A.W.G. or B.&S.	Paper Insu- lation. Wrap	Mut. Cap. Micro- farads per Mile	Grd. Cap. Micro- farads per Mile	Resist- ance per Mile in Ohms	Trans. Loss in Decibels per Loop Mile
26-S-85	26	Single	.085	.1275	215	2.98
24-S-9	24	Single	.09	.1275	136	2.41
24-D-8	24	Double	.08	.12	136	2.28
22-S-9	22	Single	.09	.135	85	1.92
22-D-95	22	Double	.095	.14	85	1.98
22-D-8	22	Double	.08	.12	85	1.82
19-S-9	19	Single	.09	.135	42.5	1.36
19-D-8	19	Double	.08	.12	42.5	1.26

Conductor Resistance

Except for purposes of long distance transmission, where a lower conductor resistance may be necessary, cables are usually built of Nos. 19, 22, 24 or 26 AWG wires. The resistances of these wires—approximately 42.5 ohms, 85 ohms, 136 ohms and 215 ohms respectively at 20°C—are increased by twisting into pairs and by cabling, but as the increase is not constant the maximum resistance for any wire in the cable is usually specified.

Electrostatic Capacity

The electrostatic capacity is specified in microfarads per mile at a given temperature and is expressed as "Mutual Capacity" or "Grounded Capacity." By "Mutual Capacity" is meant the capacity between one wire of a pair and its mate the measurement being made while all the other wires of the cable are connected to the sheath and to ground. By "Grounded Capacity" is meant the capacity between one wire and the balance of the wires and the sheath of the cable. The grounded capacity of a wire in a cable is approximately one and one-half times the mutual capacity of the pair of which that wire is a part.

The lower the capacity of a cable the greater the separation of the conductors, i.e., for two cables with the same number of conductors of the same size the cable with the lower capacity will have the larger diameter under the lead.

Insulation Resistance

The effect of insulation resistance under actual working conditions is not definitely known owing to the high frequencies employed. The usual practice is to specify a minimum of 500 megohm miles which is considered sufficiently high to prevent appreciable leakage. Actual tests of cable generally exceed 1000 megohm miles. Insulation resistance decreases with an increase in temperature so it is usual to specify the temperature at which a minimum resistance is desired.

Conductors

Each conductor shall be solid wire of commercially pure annealed copper, smoothly drawn, cylindrical, uniform in quality and resistance and free from scale and other defects. All joints in conductors shall be welded or brazed with silver alloy solder. The tensile strength of any sections of a conductor including a joint shall be at least ninety (90) per cent of the tensile strength of an equal length of an adjacent section of the conductor without a joint. The resistance of any six-inch section of a conductor including a joint shall be not more than one hundred and five (105) per cent of the resistance of an adjacent six-inch sample of the conductor without a joint.

Insulation

Each conductor shall be insulated with a single or double wrap of paper, as required by the type of cable, applied helically with an overlap. When two wraps are used, they are applied in reverse directions. The paper shall be of clear rope stock with suitable proportions of either cotton rag or chemical wood pulp. By clear rope stock is meant stock composed of manila rope or of manila rope and hemp. Jute or sisal shall not be added and shall be present only in very small proportions. The paper shall be free from sizing and loading materials.

(Revision 1)

CABLE**Paper Insulated, Lead Encased Telephone Cable****Color Code**

The colors in the insulating paper, the number of like colored pairs forming a color group, and the location of each color group for all types are given in the table below.

Actual No. of Pairs	First *Red †White	Second Blue White	Third Orange White	Fourth Green White	Fifth Red Blue	Sixth Red Green	Seventh Red White	Eighth Blue White	Ninth Orange White	Tenth Green White	Eleventh Red Blue	Twelfth Red Green	Tracer Pairs Red Orange
6	5	...	...	...	...	...	...	...	...	...	...	...	1
11	10	...	...	...	...	...	...	...	...	...	...	...	1
16	15	...	...	...	...	...	...	...	...	...	...	...	1
21	20	...	...	...	...	...	...	...	...	...	...	...	1
26	25	...	...	...	...	...	...	...	...	...	...	...	1
31	30	...	...	...	...	...	...	...	...	...	...	...	1
41	40	...	...	...	...	...	...	...	...	...	...	...	1
51	50	...	...	...	...	...	...	...	...	...	...	...	1
61	60	...	...	...	...	...	...	...	...	...	...	...	1
76	75	...	...	...	...	...	...	...	...	...	...	...	1
101	49	50	...	...	...	...	...	...	...	...	...	...	2
152	50	50	50	...	...	...	...	...	...	...	...	...	2
177	50	50	50	25	...	...	...	...	...	...	...	...	2
202	49	51	50	50	...	...	...	...	...	...	...	...	2
253	49	51	50	51	50	...	...	...	...	...	...	...	2
303	49	51	50	51	50	50	...	...	...	...	...	...	2
404	100	101	101	100	...	...	...	...	...	...	...	...	2
455	100	101	101	101	50	...	...	...	...	...	...	...	2
505	100	101	101	101	100	...	...	...	...	...	...	...	2
606	100	101	101	101	101	100	...	...	...	...	...	...	2
909	100	101	101	101	101	101	101	101	100	...	...	...	2
1,010	100	101	101	101	101	101	101	101	101	100	...	...	2
1,111	100	101	101	101	101	101	101	101	101	101	100	...	2
1,212	100	101	101	101	101	101	101	101	101	101	101	100	2

*Wire.

†Mate.

Note—Where one (1) tracer pair is required in accordance with the above table, it shall be placed in the outside layer of the cable. Where two (2) tracer pairs are required one shall be placed in the outside complete layer of the first color group and the other in the outside layer of the cable.

Twist of Pairs and Cabling

The insulated conductors shall be twisted in pairs. Adjacent pairs in each layer shall have different lengths of lay. The pairs thus formed are cabled together in layers, each layer being one pair thick. Succeeding layers are wound in reverse direction.

Core Covering

The core shall be covered with at least two wrappings of paper not less than .004-inch in thickness—laid on so that all portions of the core are covered with not less than two thicknesses of paper. The paper shall be clear rope stock or stock made from clear rope and chemical wood pulp, the wood pulp not exceeding 80% by weight.

Density of Cable

In the finished cable at least the following percentages of the volume inside the sheath excluding that occupied by the conductors and the paper covering of the core shall be occupied by the insulating paper on the conductors. This volume occupied by the insulating paper shall be calculated from the average width and thickness of this paper and the actual length of the paper used per unit of the cable.

26-S-85	45%	22-D-95	45%
24-S-9	40%	22-D-8	40%
24-D-8	50%	19-S-9	38%
22-S-9	35%	19-D-8	40%

Sheath

The core shall be enclosed in a sheath composed of an alloy of commercially pure lead and antimony, the amount of antimony by weight in any sample being not less than nine-tenths (0.9) per cent and not more than one and one-tenth (1.1) per cent.

The sheath shall be free from holes or other defects and shall be of uniform composition and thickness. The average thickness of sheath in each length of cable shall be as nearly as possible the values as given on pages 30 and 31 with such tolerances as are permitted in the best commercial practice.

Extra Pairs

The extra pairs in a cable will be the nearest unit per cent of the normal number of pairs.

Normal No. of Pairs	Extra Pairs	Normal No. of Pairs	Extra Pairs
6 to 150 Pairs	1 Pair	450 to 600 Pairs	5 Pairs
150 to 250 Pairs	2 Pairs	600 Pairs	6 Pairs
250 to 350 Pairs	3 Pairs	800 Pairs	8 Pairs
350 to 450 Pairs	4 Pairs	900 Pairs	9 Pairs
		1200 Pairs	12 Pairs

CABLE

Paper Insulated, Lead Encased Telephone Cable

Type 24-S-9

Type 22-S-9

No. of Pairs	24 B.&S. Single Paper Wrapped, .09 Mut. Cap.					No. of Pairs	22 B.&S. Single Paper Wrapped, .09 Mut. Cap.				
	Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet		Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet
6	.060	.31	261	305	3,500	6	.061	.34	305	349	3,500
11	.061	.35	320	364	3,500	11	.063	.42	410	471	3,500
16	.062	.39	380	441	3,500	16	.064	.47	490	551	3,500
26	.063	.47	487	577	4,500	26	.066	.56	646	762	3,500
51	.066	.59	710	818	4,200	51	.070	.73	973	1,124	3,000
76	.069	.70	923	1,074	3,000	76	.073	.86	1,262	1,444	2,500
101	.071	.78	1,110	1,261	3,000	101	.076	.97	1,549	1,857	2,500
152	.074	.92	1,453	1,728	2,800	152	.080	1.15	2,057	2,538	1,600
202	.077	1.04	1,792	2,142	2,200	202	.084	1.30	2,557	3,089	1,600
253	.080	1.15	2,122	2,603	1,600	253	.087	1.45	3,044	3,612	1,500
303	.082	1.24	2,423	2,904	1,600	303	.090	1.57	3,496	4,105	1,400
354	.084	1.34	2,734	3,343	1,400	354	.093	1.69	3,964	4,674	1,200
404	.086	1.41	3,019	3,628	1,400	404	.095	1.79	4,393	5,308	1,200
455	.088	1.50	3,327	3,936	1,400	455	.097	1.89	4,834	5,832	1,100
505	.089	1.57	3,598	4,253	1,300	505	.099	1.99	5,262	6,360	1,000
606	.093	1.71	4,188	4,963	1,100	606	.104	2.17	6,156	7,509	900
808	.099	1.95	5,311	6,409	1,000	808	.111	2.48	7,835	9,524	650
909	.102	2.05	5,864	7,084	900	909	.114	2.62	8,644	10,518	650
1,010	.104	2.16	6,393	7,766	800	1,010	.117	2.74	9,447	11,919	500
1,212	.109	2.35	7,474	9,163	650	1,212	.123	3.00	11,086	13,558	500

Type 26-S-85

Type 19-S-9

No. of Pairs	26 B.&S. Single Paper Wrapped, .085 Mut. Cap.					No. of Pairs	19 B.&S. Single Paper Wrapped, .09 Mut. Cap.				
	Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet		Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet
6	.060	.28	226	270	3,500	6	.063	.43	425	486	3,500
11	.060	.32	274	318	3,500	11	.065	.52	576	692	3,500
16	.061	.36	328	372	3,500	16	.067	.59	714	844	3,500
26	.062	.41	403	493	4,500	26	.070	.72	967	1,118	3,000
51	.065	.52	574	671	4,200	51	.075	.95	1,513	1,821	2,500
76	.066	.60	716	851	3,000	76	.080	1.13	2,032	2,505	1,800
101	.069	.69	881	1,032	3,000	101	.084	1.29	2,530	3,063	1,600
152	.071	.80	1,126	1,287	2,800	152	.090	1.54	3,456	4,064	1,400
202	.074	.91	1,377	1,583	2,200	202	.095	1.76	4,347	5,057	1,200
253	.076	.99	1,601	1,828	2,000	253	.099	1.95	5,202	6,300	1,000
303	.078	1.08	1,828	2,112	1,600	303	.104	2.12	6,072	7,292	900
354	.080	1.14	2,036	2,360	1,400	....	....	....	....	....	....
404	.081	1.21	2,240	2,564	1,400	....	....	....	....	....	....
455	.083	1.29	2,468	3,061	1,300	....	....	....	....	....	....
505	.084	1.34	2,652	3,351	1,100	....	....	....	....	....	....
606	.087	1.45	3,061	3,760	1,100	....	....	....	....	....	....
808	.093	1.67	3,883	4,735	1,000	....	....	....	....	....	....
909	.094	1.75	4,221	5,168	900	....	....	....	....	....	....
1,010	.097	1.84	4,636	5,583	900	....	....	....	....	....	....
1,212	.101	2.00	5,380	6,691	650	....	....	....	....	....	....

Line Supplies Section

CABLE

Paper Insulated, Lead Encased Telephone Cable

Type 24-D-8

Type 22-D-95

No. of Pairs	24 B.&S. Double Paper Wrapped, .08 Mut. Cap.					No. of Pairs	22 B.&S. Double Paper Wrapped, .095 Mut. Cap.				
	Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet		Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet
6	.061	.36	318	379	3,500	6	.061	.37	336	397	3,500
11	.062	.43	412	473	3,500	11	.063	.45	445	506	3,500
16	.064	.50	504	565	3,500	16	.065	.51	546	662	3,500
26	.066	.59	650	751	4,500	26	.067	.60	708	838	3,500
51	.070	.75	942	1,072	3,500	51	.071	.79	1,076	1,227	3,000
76	.074	.91	1,255	1,530	2,800	76	.075	.93	1,405	1,713	2,500
101	.077	1.02	1,520	1,828	2,500	101	.078	1.06	1,723	2,064	2,500
152	.082	1.22	2,027	2,382	2,400	152	.083	1.27	2,325	2,858	1,600
202	.086	1.39	2,498	3,031	1,600	202	.087	1.43	2,874	3,407	1,600
253	.089	1.54	2,940	3,508	1,500	253	.090	1.59	3,410	4,142	1,500
303	.092	1.66	3,362	4,094	1,500	303	.094	1.73	3,953	4,798	1,300
354	.096	1.79	3,828	4,640	1,500	354	.097	1.85	4,472	5,387	1,200
404	.098	1.91	4,228	5,098	1,400	404	.100	1.97	4,982	5,997	1,200
455	.101	2.01	4,656	5,526	1,400	455	.103	2.09	5,508	6,615	1,100
505	.103	2.12	5,057	5,994	1,300	505	.105	2.19	5,989	7,207	1,000
606	.108	2.30	5,867	7,085	1,000	606	.110	2.38	6,976	8,329	900
808	.116	2.64	7,466	8,942	900	808	.118	2.73	8,894	10,768	650
909	.120	2.79	8,249	9,909	800	909	.122	2.88	9,856	11,927	650
1,010	.124	2.95	9,072	10,732	800	1,010	.126	3.03	10,819	13,511	500
1,212	.130	3.20	10,543	12,774	650	1,212	.132	3.30	12,649	16,691	333

Type 22-D-8

Type 19-D-8

No. of Pairs	22 B.&S. Double Paper Wrapped, .08 Mut. Cap.					No. of Pairs	19 B.&S. Double Paper Wrapped, .08 Mut. Cap.				
	Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet		Lead Thickness, Inches	Approximate Outside Diam., Inches	Net Weight per M Feet, Pounds	Shipping Weight per M Feet, Pounds	Reel Length, Feet
6	.061	.37	336	397	3,500	6	.063	.47	469	530	3,500
11	.063	.46	455	516	3,500	11	.066	.57	646	762	3,500
16	.065	.52	556	672	3,500	16	.068	.66	800	963	2,500
26	.067	.62	731	861	3,500	26	.071	.80	1,089	1,271	2,500
51	.072	.82	1,123	1,379	3,000	51	.078	1.07	1,734	2,037	1,500
76	.076	.97	1,470	1,778	2,500	76	.083	1.28	2,328	2,896	1,500
101	.079	1.11	1,804	2,145	2,500	101	.087	1.44	2,875	3,443	1,500
152	.084	1.32	2,413	2,946	1,600	152	.094	1.74	3,954	4,664	1,200
202	.088	1.50	2,982	3,515	1,600	202	.100	1.98	4,974	5,972	1,100
253	.092	1.66	3,564	4,296	1,500	253	.106	2.21	6,031	7,249	1,000
303	.096	1.81	4,132	5,002	1,400	303	.110	2.40	6,974	8,192	1,000
354	.099	1.94	4,659	5,674	1,200	....	....	....	....	....	....
404	.102	2.06	5,193	6,208	1,200	....	....	....	....	....	....
455	.105	2.18	5,727	6,834	1,100	....	....	....	....	....	....
505	.108	2.30	6,268	7,486	1,000	....	....	....	....	....	....
606	.113	2.50	7,289	8,642	900	....	....	....	....	....	....
808	.121	2.86	9,278	11,349	650	....	....	....	....	....	....
909	.125	3.02	10,256	12,327	650	....	....	....	....	....	....
1,010	.129	3.18	11,253	13,947	500	....	....	....	....	....	....
1,212	.136	3.47	13,211	17,253	333	....	....	....	....	....	....

CABLE**Paper Insulated, Lead Encased Telephone Cable****Electrical Requirements****Dielectric Strength**

The insulation of each conductor in every length of cable when tested against all of the other conductors and the lead sheath shall be capable of withstanding without rupture for two seconds, a 60-cycle A-C potential, having approximately sine wave form whose maximum instantaneous value is not less than the following:

Type of Cable	Between Connectors	Between Connectors and Sheath	Type of Cable	Between Connectors	Between Connectors and Sheath
26-S-85	500	1,200	22-D-95	700	1,400
24-S-85	500	1,400	22-D-8	700	1,400
24-D-8	700	1,400	19-S-9	700	1,400
22-S-9	500	1,400	19-D-8	700	1,400

Insulation Resistance

Each conductor in every length of cable, when measured against all other conductors and the sheath, connected to ground, after an electrification of not more than one minute with a potential of not less than 100 nor more than 500 volts, shall show an insulation resistance equivalent to not less than 500 megohms per mile at 60° F.

The insulation resistance shall be measured at a temperature not lower than 60° F. If the cable when measured at a temperature higher than 60° F. fails to meet this requirement, no temperature correction factor shall be applied, but in such case, the cable may be retested at a temperature not lower than 60° F.

Conductor Resistance

Each conductor in every length of cable shall have a resistance equivalent to not more than the following values at 68° F.:

26 A.W. Gauge.....	230 Ohms per Mile of Cable
24 A.W. Gauge.....	145 Ohms per Mile of Cable
22 A.W. Gauge.....	92 Ohms per Mile of Cable
19 A.W. Gauge.....	46 Ohms per Mile of Cable

Capacitance

In each length of cable the average 900 cycle A.C. mutual capacitance of all pairs shall be equivalent to not more than shown on page 28. The capacitance shall be measured at a temperature not lower than 60° F. If the cable, when measured at a higher temperature fails to meet this requirement, no temperature correction factor shall be applied, but in such cases, at the option of the manufacturer, the cable may be retested at a temperature not lower than 60° F. The mutual capacitance of a pair shall be measured between the two wires of the pair, the remainder of the conductors being connected to the sheath and ground.

Guarantee

There shall be no defective pairs caused by grounds. The number of defective pairs in each cable length caused by shorts, opens, or crosses, shall be not more than shown in the table on page 29, and the capacitance and conductor resistance shall not increase nor the insulation resistance decrease beyond the limits above specified for a period of one year from date of original shipment from the factory due to defective material or manufacture. The cable shall be so manufactured that when properly installed and spliced it will be commercially free from crosstalk.

The cable furnished under these specifications is guaranteed to be of first-class material and workmanship throughout. Any length of cable proven defective in material or workmanship within one year from date of original shipment from the factory will be replaced. All such replacements will be made free of charge, F.O.B. the destination called for in original order.

Cable thus replaced shall become the property of the manufacturer and shall be either returned by the purchaser F.O.B. point of original delivery or at the option of the manufacturer, the purchaser shall credit the manufacturer with the scrap value of the replaced cable.

Defective Pair Markings

Each pair which is found by the final factory tests to be defective shall be distinctly marked with a cloth tag at each end of the length of cable. Each of these tags shall denote the type of defect and shall be securely attached to the conductors of the defective pairs. The inspection report shall show location of the tagged pairs by color groups and where there are duplicate color groups in the same cable, the report shall indicate in which of the two groups the defective pairs are located, that is, the inner or outer groups.

Shipments

Each length shall be wound on a separate reel unless otherwise stated. The reels shall be substantial and able to withstand such reasonable handling as they are liable to receive in transit. The diameter of the drum shall be large enough to prevent damage to the cable from reeling. The outer end of the cable shall be securely fastened to the inner side of the reel head so that the cable will not come loose in transit.

Each end of every length of cable shall be effectively sealed with solder to prevent the entrance of moisture.

The reel shall be plainly marked to indicate the direction in which it should be rolled so as not to loosen the cable on the reel.

In each length of cable containing defects, the outer ends shall be painted for a distance of one foot and the inner end as far as can be conveniently reached.

Jute Protected Cable

There are many situations where cables buried directly in the ground would offer advantages over other forms of construction. The life of unprotected cable sheath may be very short depending upon the particular soil conditions. To meet this need there has been developed a type of cover for the cable sheath which effectively protects the sheath from soil corrosion. This protection consists of wrappings of paper and jute which have been thoroughly impregnated with preservative compound and which are thoroughly flooded with asphaltic compounds while being applied to the cable. Cables having this type of covering are referred to as jute protected. Jute protected cables are about .2 inch larger in over all diameter than the unprotected cables for the smaller sizes and about .3 inch larger for full size cables. Any lead covered cable can be furnished jute protected if so noted on the order.

Tape Armored Cable

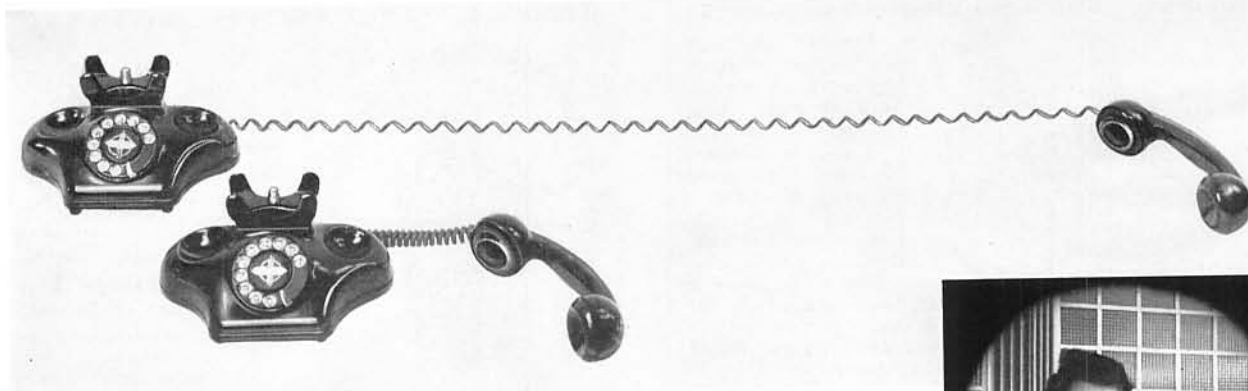
In cases where somewhat more mechanical protection is desired or where some protection against low frequency induction from power lines is desired, a steel tape armor can be furnished. This type of sheath covering is similar to that used for jute protected cables except for the addition of the steel tapes and a further covering of asphalt flooded jute. For the tape armored cable the increase in diameter varies with the size of the cable from about .3 inch to about .6 inch. Any lead covered cable can be furnished tape armored if so noted on the order.

Galvanized Tape Armored Cable

Can furnish galvanized tape armored cable for aerial use where some protection against low frequency induction from power lines is desired. Information and prices on this type of cable sheath will be supplied on request.

(Revision 1)

KELLOGG KOILED KORDS



Here's the newest idea in retractable instrument cords that combines ALL the things you and your subscribers want. They work as smooth as a coil spring and stretch out with the greatest ease from 6 to 7 times their normal 9-inch contracted length. Yet, they are always ready to retract again into a short, neat, out-of-the-way spiral. These cords save telephone breakage because they are not apt to tangle with other objects or catch under desk or table corners.

The expanding and contracting action of Kellogg Koiled Kords is entirely secured by molding the outer rubber covering into this permanent coiled shape. This patented construction makes it the finest, longest-wearing cord of this type because it does not depend upon any other mechanical means such as metal springs, formed wires, braided conductors, sewed-in rubber bands, etc., to provide the retractable action. Thus, there is no undue wearing of the insulation. The insulated tinsel conductors are molded through the center of the rubber covering where they are free from sharp bends and folds, assuring long, satisfactory cord life. Long life of the rubber sheath is assured by molding the cord in spiral form so that it is not under tension when at rest.

Kellogg Koiled Kords are substantially kink-proof and soil-proof. The coils are only $\frac{5}{8}$ inch in diameter. In ordering specify catalog numbers and make of phone. Net weight, each is 4 ounces.

Four Conductor Cords

Cat. No. KH-4A, used for Kellogg handsets. Tracer colors are red, green, orange and black. Trim lengths: handset end — black, 4 in., other three, 1 in.; instrument end—black, and orange, 10 in., red and green, 6 $\frac{1}{2}$ in.



Three Conductor Cords

Cat. No.	Used for Handset:	Tracer Colors
KH-3A	Kellogg	Red, Yellow, Green
WH-3A	Western Elec., North Elec.	Red, White, Black
SH-3A	Stromberg-Carlson	Green, Red, Orange
AH-3A	Automatic Electric	Brown, Red, Orange
LH-3A	Leich Electric	Orange, Red, Green

Two Conductor Cords

Cat. No. LR-2A, used for receivers. Extended length is 36 in., condensed length, 6 in. Trim length: 4 in., spade tips; 3 in., spike tips.

Supershyné Plug Polishing Cloth

Many transmission complaints from telephone subscribers can be traced directly to dirty plugs on switchboards.

The Supershyné Polishing Cloth cleans plugs quickly and easily. It is a specially treated cloth developed expressly for the purpose of removing dust and dirt film without harming the brass. Each cloth lasts for months. Packed singly.

Doe's Plug Burnishing Paste

For polishing cord plugs in telephone exchanges. It insures an electrically perfect contact and insulates between tip and ring. Guaranteed to be absolutely non-corrosive and electrically perfect.

Doe's Commutator Burnishing Paste

For use on the commutator of signal machines. Applied while machine is running and in service.

Specially prepared for tone test, ringing current, out of order, busy back or any other circuit where a clear distinct interruption is desired. Guaranteed to be absolutely non-corrosive and electrically perfect.

Mouthpieces

Bakelite and composition for Kellogg, Western Electric, Sterling, Chicago, Dean, Swedish American, Automatic, American Electric, Leich, Monarch and Stromberg transmitters. In ordering specify make and type of phone.

Switchboard Jack Cleaners



These brushes are recommended for cleaning switchboard jacks. Use with carbon tetrachloride while revolving on a flexible shaft or wheel drill. This is an ideal way to clean switchboard jacks and is non-injurious. Brushes are furnished in two sizes—No. 32, diameter .249, fits all Jacks approximately $\frac{1}{4}$ -inch in diameter; No. 22, diameter .221, fits all Jacks using No. 201 Kellogg plugs.

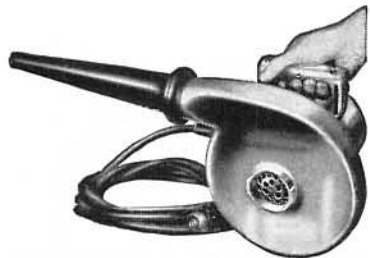
Carbon Tetrachloride

A non-inflammable liquid to be used in place of denatured alcohol. Used for cleaning contact points and jacks and for removing paint and ink residue from jack strips. Can be supplied in pints, quarts or gallons.

Line Supplies Section

CLEANERS

Ideal 3-in-1 Portable Electric Cleaners



Easily adaptable to all kinds of cleaning work. Used for both vacuum cleaning and blowing. May also be used for all general plant cleaning as well as for spraying insecticides, varnishes, shellacs, paint, etc.

Powered from a light socket, they can be used anywhere and reach the most inaccessible places. AC operation.

Five sizes are available. Attachments for the 3-in-1 Ideal Cleaners are shown in the next column.

Jumbo—Model No. 50

For extra heavy duty service, super-powered. Has a full 1 h.p., 11,000 r.p.m. motor. Air velocity 24,200 feet per minute. For 110, 220 and 250 volts, 25 to 60 cycles. Equipped with 20 feet of heavy duty 3-wire safety cord and rubber plug. Weight, 14 pounds.

Whiz—Model No. 10

For light duty cleaning work. Has ¼ h.p. universal motor. Air velocity, 15,000 feet per minute. For 32 to 250 volts, 25 to 60 cycles. Weight, 7½ pounds.

Giant—Model No. 20

For intermediate duty service. Has ⅓ h.p. universal motor. Air velocity, 15,600 feet per minute. For 32 to 250 volts, 25 to 60 cycles. Weight, 9 pounds.

Super-Giant—Model No. 30

For heavy duty service. Has ⅝ h.p. motor, air velocity, 18,720 feet per minute. For 32 to 250 volts, 25 to 60 cycles.

Hot and Cold Air—Model No. 40

For use where moisture is an industrial problem. Has a double action switch that may be set for either hot or cold air. Has ⅓ h.p. universal motor. For 32 to 250 volts, 25 to 60 cycles. Weight, 9 pounds.

Attachments for Portable Cleaners



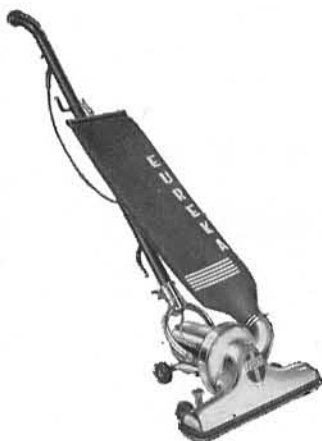
A large variety of Suction and Blowing Attachments is available for use with all the Ideal Cleaners shown except Model No. 40 which uses Blowing Attachments only. The attachments pictured here will take care of the ordinary cleaning job.

The attachments listed below fit the Ideal 3-in-1 Cleaners shown in the left hand column.

Attachments

Cat. No.	Description
1000	Paint, Powder and Liquid Sprayer (Qt. or Pt. Size)
1397	23-in. Fibre Extension Handle
1469	10-in. Floor Nozzle (Use with 1529 Handle)
1470	10-in. Snap-on Bristle Brush
1471	Round Insulated Brush, 2⅞ inches in diameter
1471-A	Round Insulated Brush, 2 inches in diameter
1472	Semi-hard Rubber Elbow
1472-A	Aluminum Elbow
1522	Adjustable Wall Brush
1529	44-in. Steel Extension Handle
1530	7-in. Switchboard Brush
1533	Flat Fibre Cleaning Tool
1534	Telephone Braid Cleaning Brush
1542	4-in. Semi-hard Rubber Insulated Brush
1544	Insecticide Sprayer (5 Pint Capacity)
1546	Flat Flue Cleaning Brush
1547	8 Foot Hose
1547-A	10 Foot Hose
1548	14-in. Floor Nozzle (Use with 1529 Handle)
1549	14-in. Snap-on Bristle Brush

Model G-31 Eureka Vacuum Cleaner



The Eureka G-31 brings greater convenience, ease of operation, cleaning effectiveness and beauty at the lowest price possible for such quality. The Eureka cleaning action works far below the surface removing greasy, sooty, "smudge" dirt as well as surface litter. Light in weight, yet is a powerful cleaner.

Equipped with no-spill dust bag, motor-driven brush, extra long 20-foot cord, wide adjustable 14-inch nozzle, soft rubber-tired rollers.

Air cooled universal ⅓ h.p., one-speed motor operates on 25 to 60 cycles. Fan is chip-proof and non-breakable. Weight is 14 pounds.

Eureka Portable Vacuum Cleaners



The Eureka Portable Cleaner is very easy to use. It is supported by a strap over the operator's shoulder and the weight with cleaning tools is under 10 pounds.

For cleaning telephone equipment by suction, use the end of the fibre hose and the bristle brush tool. When you desire to use the Eureka Portable Cleaner as a blower, simply remove the bag, attach the blower coupling, put on the hose and you then have a powerful blower for cleaning surfaces inaccessible to the

suction tools. Will not cause injury or disturb adjustment of relays.

Equipped with specially designed dust bag. Cleaning attachments including brush, extension tube and flat nose tool are available.

CLEANERS, FANS, VENTILATORS

Ad-Lee "Miracle-Air" Window Ventilator

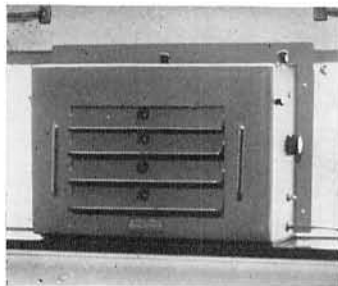


Dust-clogged equipment, long a maintenance problem may be kept in condition to provide better service by using the Ad-Lee Window Ventilator in central offices. This ventilator not only filters out dust and dirt from the fresh air as it is forced into the room but shuts out or absorbs outside noises that might interfere with the best reception for both subscriber and operator. It also recirculates and refilters the air in the room, reducing air stratification.

Here are some of the features of the Ad-Lee "Miracle-Air":

- Keeps out rain, wind and snow.
- Brings in fresh air.
- Filters out dust and pollen.
- Keeps out insects.
- Refilters and circulates room air.
- Directs the air as you wish.
- Subdues outside noises.
- Has low operating cost, equivalent to 60 watt bulb.

Special blower fans pull in the outside air at the speed desired and draw it through a viscous type filter removing dust, pollen, germs and dirt and bringing clean,



Typical Window Installation

fresh filtered air into switchboard rooms and offices increasing efficiency and adding to the comfort and well-being of the occupants.

The Ad-Lee Ventilator is inexpensive and extremely easy to install. There is no wiring and no plumbing. It fits on the window sill and comes complete with cord and plug for a regular electric light socket. All necessary side moldings are furnished except the glass panels that fill out the window space between the ventilator and the sides of the window frame. These glass panels are not included because windows vary in size.

Five adjustable louvers on the front of the Miracle-Air direct the flow of air up or down as desired. Equipped with a durable rheostat to increase or decrease the flow of air as desired. A damper enables outside air to be all or partially cut off when desired.

The attractive steel weatherproof cabinet is finished in opalescent brown baked enamel. Special finishes are available. A.C. motors are standard equipment and are guaranteed against defective workmanship for a year. D.C. motors will be supplied on special order. The size over all is 21½ inches wide, 12 inches deep and 14 inches high. Shipping weight is 50 pounds.

Telefan Air Circulator



Especially designed to increase operator comfort in telephone operating rooms by providing controlled air motion. Quiet operation and long life construction are built-in qualities. Many offices use these fans for winter air circulation as well as summer cooling. In winter air motion prevents stratification of heated air and the resultant cold floors.

A patented vane arrangement in the Telefan removes the twist or curl which ordinarily causes rapid dissipation of the air stream, the Telefan air stream therefore travels a much greater distance. A four-speed control permits selection of speeds ranging from a gentle breeze to a gale.

Protector over the fan provides safety no matter where the fan is placed for the most efficient distribution of air.

The large motor is designed especially for use in fans and the 22-inch, two-blade polished aluminum fan is the result of many years of study to produce maximum efficient air motion and quietness of operation. Furnished complete with a 10-foot R.C. cord. The motor is enclosed in a polished aluminum housing; the cage and air control are finished in black. 2.1 ampere, 160 watts input. Size is 26½x15¼x28¼ inches. Shipping weight is 49 pounds.

Cope Fan Guards



Round Floor Type

Type. If not specified the Round Floor Type will be shipped. Furnished less fan.

Description	Shipping Wt. Each
Fan Guard for 16-inch Fans	21 lbs.
Fan Guard for 12-inch Fans	16 lbs.

Shipping Wt. Each
21 lbs.
16 lbs.

Cylinder Bellows



Made entirely of wood. No chance for short circuits. Ideal for dusting out switchboard relay racks and places where cloths or brushes are liable to cause injury to contacts or disturb adjustment of relays.

Cat. No. 1 Length, 20 inches Wt., each, 10½ ounces

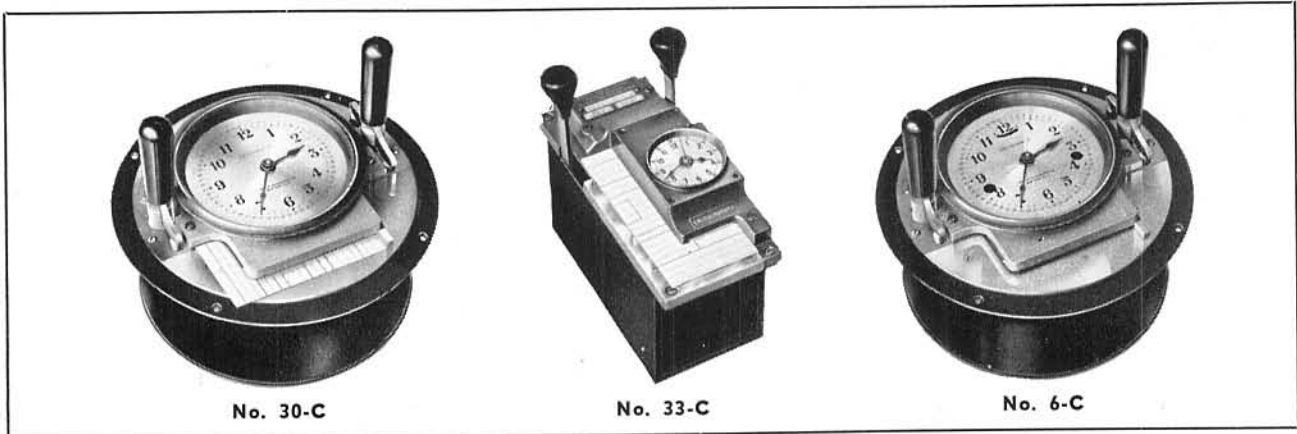
CALCULAGRAPHS

For Timing and Recording Telephone Messages

By depressing a lever when the telephone conversation begins and another when it ends the operator secures a printed card record that determines the correct toll fee. Prevents loss by definitely and permanently establishing time intervals for toll circuits.

Round type calculagraphs can be furnished in either

the Type A or Type C case. If the calculagraph is to be mounted on a pedestal Type A case should be specified. Whenever the calculagraph is to be sunk in a switchboard shelf the Type C case should be ordered. The Type C case is 8¾ inches in diameter and 4 inches deep from the bottom of the flange—may be installed in place of four Type A keys.



Model No. 33—Electric

Records elapsed time in minutes and seconds for maximum periods of 30 minutes and time of day in hours and minutes. The time of day record is printed with a 24 hour dial thus eliminating the A.M. and P.M. jumps at noon and midnight. A sweep second hand enables the operators to tell accurately when a call is approaching the initial period by glancing at the visible dial.

Toll tickets up to 2¼ inches in width may be used. Equipped with a self-starting synchronous motor designed to operate on 20 volts, 60, 50 or 25 cycles or on 115 volts, 60 or 50 cycles regulated A.C. Size is 7½ in. long x 3¾ in. wide and 3¾ in. deep.

No. 33 may be placed in the large round opening made in a switchboard for Nos. 6 or 30 by using an adapter plate or it may be mounted on a pedestal by using a pedestal adapter.

Cat. No.	Description	Case Style	Mounting	Weight Each
33-C	Model 33	C	Flush with Keyshelf	11½ lbs.

Model No. 30—Electric

Records elapsed time in minutes and seconds for maximum periods of 30 minutes and time of day in hours and minutes. Also available with a 24 hour time of day imprint, eliminating the A.M. and P.M. jump at noon and midnight. Toll tickets up to 2¼ inches in width may be used.

Equipped with self-starting synchronous motor for 20 volts, 60, 50 or 25 cycles or for 115 volts, 60 or 50 cycles, regulated A.C.

Models 30-XC and 30-XA are the same as Models 30-C and 30-A except have a date printing device.

Cat. No.	Description	Case Style	Mounting	Weight Each
30-C	Model 30	C	Flush with Keyshelf	20 lbs.
30-A	Model 30	A	Portable less Pedestal	20 lbs.
30-XC	Model 30-X	C	Flush with Keyshelf	20 lbs.
30-XA	Model 30-X	A	Portable less Pedestal	20 lbs.

Model No. 6—Spring Drive

Records elapsed time in minutes and quarter minutes with 5 second indicator after each minute. Maximum period is one hour. At the same time records time of day in hours and minutes.

Model Nos. 6-XC and 6-XA are the same as Model Nos. 6-C and 6-A except have date printing device.

Cat. No.	Description	Case Style	Mounting	Weight Each
6-C	Model 6	C	Flush with Keyshelf	20 lbs.
6-A	Model 6	A	Portable less Pedestal	20 lbs.
6-XC	Model 6-X	C	Flush with Keyshelf	20 lbs.
6-AA	Model 6-X	A	Portable less Pedestal	20 lbs.

Calculagraph Pedestals

Adjustable from 26 to 40 inches from floor to ticket plate. Calculagraphs to be mounted in a pedestal are furnished in a Type A case.

If a Calculagraph mounted in the Pedestal is desired, specify the catalog number of the Calculagraph Model wanted. The various models are shown on this page.

Cat. No.	Description
A	Pedestal for Type A Calculagraph



Calculagraph Snap-On Ink Ribbons

When fitting ribbon to a calculagraph the hooks are attached to the ribbon spools. The tin reel on which the ribbon is wound may be held in one hand while the ribbon is unwinding from this reel and being wound on one of the spools of the calculagraph, thus avoiding the smearing of ink on the hands.

Standard color is blue record but other colors can be furnished. Furnished on metal reels in a square box.

CLOCKS, COUNTERS

Dorson Toll Timer



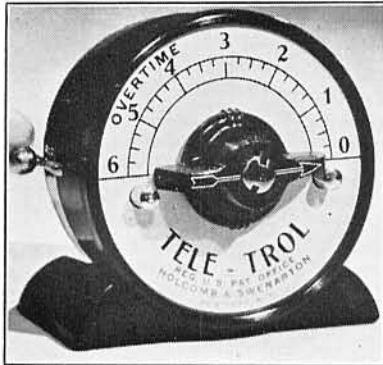
Designed to give an inexpensive, accurate and permanent record of any toll call. The time stamp records a clear impression showing date and time of day. Toll dial records minutes only. A simple turn of the wheel sets date, month, A.M. or P.M.

Furnished in two-piece chromium plated aluminum case. Rigid cushioned base will not slip or scratch. A slight pressure on the base inks the printing type when impression is to be made.

Has 40-hour lever clock movement.

Cat. No.	Description	Height Over-All	Weight Each
H	Style H, Hand Set	5 1/4 in.	2 lbs.
K	Style K, Key Set	5 1/4 in.	2 lbs.

Tele-Trol



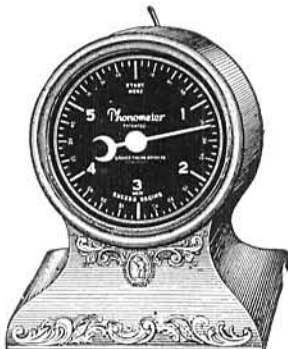
A new inexpensive timing device. When making a call touch the lever when your party answers and an automatic chime warns you before the 3-minute (long distance) period expires. Dial times up to 6 minutes. The operator starts the Tele-Trol by touching a lever and at the end of the call presses it again. The elapsed time, as shown on

the dial is then recorded on the toll ticket by the operator.

Dial times up to 6 minutes and indicator starts and stops at the touch of a lever.

Cat. No.	Description	Size	Weight
66	Tele-Trol	3 1/4 x 3 1/4 in.	13 oz.

Phonometer



An accurate dependable device adaptable for timing toll calls by the smaller exchange. Easy to operate—touch the lever when the long distance call is put through and again at the end of the conversation. The operator then writes the elapsed time on the toll ticket.

The dial times up to 6 minutes.

No. AB-2 Hand Counter



A Hand Tally Counter, useful for inventory, counting poles, calls, traffic work, etc. Quickly set back to zero by one turn of the knob. Can be operated with either hand. Has rounded corners so as not to irritate the hand of the user, or wear the pocket when carrying it. Counts up to 10,000. Size is 2x1 1/2x2 inches. Weight is 1/2 pound.

No. 8 Straight Counter



Designed to record incoming or outgoing telephone calls but can be used for many purposes.

The socket plate is intended to go flush into the keyboard slightly to the right of the operator and to remain there permanently. The counter can be then inserted and removed at will. At such periods as it is decided to make a count, counter is placed in socket plate in front of each operator and upon receipt of each call the operator

presses the lever. This counter registers up to 100,000. Size is 1 3/8x1x1 3/8 inches. Weight is 5 ounces each.

No. A-8-T Set Back Ratchet Counter



This counter is suitable where a hand operated set back counter is desired, and can be furnished with the drive shaft projecting either on right or left hand side. Furnished with 3, 4 or 5 figure wheels and thumb lever. Size is 2 3/8x1 1/2x1 1/4 inches. Weight is 1/2 pound.

Sanitary Paper Neckbands

Designed to replace the cotton tape and allow the operator to have a fresh neckband daily. It is formed from a specially treated paper which preserves its softness and adds to its absorptive qualities. Shipping weight, 5 pounds per 1000.

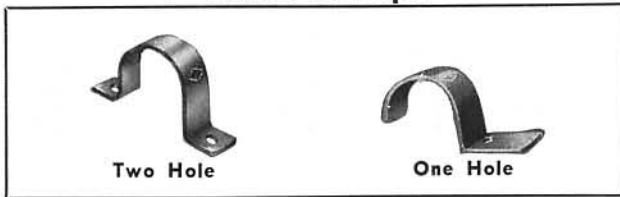
The neckband is attached to the operator's breastplate transmitter with a sure-grip clamp which securely clamps the paper band and allows instantaneous adjustment to suit the individual operator's requirements. A convenient, metal dispensing cabinet to be hung on the wall can also be supplied on order.

Cat. No.	Description
C-100	Paper Neckbands, wt. per 1000, 5 lbs.
C-101	Quick Action Clamp. Order in pairs.
C-102	Dispensing Wall Cabinet, wt. each, 7 lbs.

Line Supplies Section

CLAMPS, CONNECTORS

Cable Clamps



A very efficient fastening where lighter construction is to be used and where it will not be subjected to severe strains. Made of cold rolled mild steel annealed and galvanized after forming.

One Hole

Cat. No.	Cable Size	Conduit or Pipe Size	Size of Screw Hole	Std. Pkg.	Weight Per 100
$\frac{3}{16}$ O.G.	$\frac{3}{16}$ in.	....	$\frac{3}{16}$ in.	500	1 lb.
$\frac{1}{8}$ O.G.	$\frac{1}{8}$ in.	....	$\frac{3}{16}$ in.	500	1 lb.
3/0	$\frac{1}{2}$ in.	....	$\frac{3}{16}$ in.	500	1 1/4 lbs.
1	$\frac{3}{4}$ in.	$\frac{1}{2}$ in.	$\frac{3}{16}$ in.	500	4 1/2 lbs.
2-A	1 in.	$\frac{3}{4}$ in.	$\frac{3}{16}$ in.	250	7 lbs.

Two Hole

Cat. No.	Cable Size	Conduit or Pipe Size	Size Steel	Std. Pkg.	Weight Per 100
4-0	$\frac{1}{8}$ in.	$\frac{1}{8}$ in.	$\frac{1}{2}$ x.044 in.	500	9 lbs.
2-0	$\frac{3}{8}$ in.	$\frac{1}{4}$ in.	$\frac{1}{2}$ x.044 in.	500	10 lbs.
0	$\frac{1}{4}$ in.	$\frac{3}{8}$ in.	$\frac{3}{8}$ x.054 in.	500	17 lbs.
1-A	$\frac{7}{8}$ in.	$\frac{1}{2}$ in.	$\frac{1}{8}$ x.060 in.	500	23 lbs.
2	$1\frac{1}{8}$ in.	$\frac{3}{4}$ in.	$\frac{3}{4}$ x.080 in.	250	19 lbs.
3-A	$1\frac{1}{4}$ in.	1 in.	$\frac{7}{8}$ x $\frac{1}{8}$ in.	100	15 lbs.
3	$1\frac{1}{2}$ in.	....	$\frac{7}{8}$ x $\frac{1}{8}$ in.	100	16 lbs.

Toggle Bolts

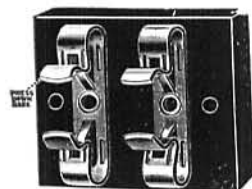


For making attachments to hollow tile, brick or lath walls. Made with two wings that engage a trunnion nut and a spring which forces the wings outward when the head has passed through the wall. One end of the spring is extended to prevent rotation of the head while turning in the screw. Furnished complete with round head bolt.

Additional sizes available on special order.

Diam. Inches	Length	Drill Holes	Spread of Wings	Std. Pkg.	Weight Per 100
$\frac{1}{8}$	2 in.	$\frac{3}{8}$ in.	$1\frac{1}{16}$ in.	100	2 lbs.
$\frac{1}{8}$	3 in.	$\frac{3}{8}$ in.	$1\frac{1}{16}$ in.	100	2 1/4 lbs.
$\frac{1}{8}$	4 in.	$\frac{3}{8}$ in.	$1\frac{1}{16}$ in.	100	2 3/4 lbs.
$\frac{3}{16}$	3 in.	$\frac{1}{2}$ in.	$1\frac{1}{8}$ in.	100	3 3/4 lbs.
$\frac{3}{16}$	4 in.	$\frac{1}{2}$ in.	$1\frac{1}{8}$ in.	100	4 1/2 lbs.
$\frac{3}{16}$	5 in.	$\frac{1}{2}$ in.	$1\frac{1}{8}$ in.	100	5 1/8 lbs.

Detroit Connecting Blocks



This connector consists of two No. 9-C binding posts mounted on a molded composition base. Will take No. 10 B.& S. Gauge wire.

Length Over All	Width	Thickness of Base
2 1/2 in.	1 7/8 in.	3/8 in.

Reliable Telephone Bridging Connectors



A slotted bronze bolt connector for bridging drop wire to open line wire, cross arm protector taps, and open wire taps at cable terminals. Designed to give high pressure on both wires. Connectors for galvanized iron wire have a weather-resisting coating which minimizes galvanic corrosion. A heavy washer separates copper from iron wire on plated connectors.

Cat. No.	Type of Connections	Maximum Wire Size	Std. Pkg.	Weight Per 100
109	Iron to Iron	12 BWG	100	3 lbs.
109-W	Iron to Copper	12 BWG-17 B&S	100	3 lbs.
128-V	Copper to Copper	8 B&S	100	2 lbs.
104-V	Copper to Copper	8 B&S	100	2 lbs.

C-R Service Connectors

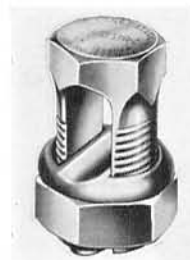


For connecting copper, bronze or copper weld drop or service wires to galvanized iron or copper line wires.

Made in two types, tinned for galvanized iron to copper wire connections and plain brass for copper to copper wire connections. The tinned connector should always be used on galvanized iron wire. The head, slot and one washer are heavily coated with tin which prevents electrolytic and corrosive action between the zinc coating of the iron wire and the copper wire.

Cat. No.	Description	Type of Connection	Maximum Wire Size	Wt. Per 100 Lbs.
1	N.P. Brass	Cop. to Cop.	14 B&S-17 B&S	2
2	Brass	Cop. to Cop.	12 B&S-14 NBS	2 1/2
2-T	Tinned Brass	Iron to Cop.	14 BWG	2 1/2
3	Brass	Cop. to Cop.	10 B&S-12 NBS	5
3-T	Tinned Brass	Iron to Cop.	12 BWG	5
4-A	Galv. Steel	Iron to Iron	9 BWG	5 1/2
6-A	Steel & Brass	Iron to Cop.	9 BWG-17 B&S	11

Kearney Connectors



Simple and inexpensive means of making bridge or test connections. Galvanic action between iron and copper is eliminated by the use of a plated separating washer which places like metals together and assures maximum pressure distribution.

Cat. No.	Type of Connections	Maximum Wire Size	Weight Per 100
86-7	Copper to Copper	12 NBS-12 B&S	2 1/2 lbs.
986-7	Copper to Bronze	12 NBS-17 B&S	2 1/2 lbs.
89-2	Copper to Copper	10 NBS-10 B&S	3 lbs.
989-2	Copper to Bronze	10 B&S-17 B&S	3 1/2 lbs.
2449-7	Iron to Ironite	12 BWG-19-18 BWG	2 1/2 lbs.
2451-7	Iron to Iron	12 BWG-12 BWG	2 1/2 lbs.
5694-7	Iron to Bronze	12 BWG-17 B&S	2 1/2 lbs.

CLIPS, TEST

Mueller Universal Test Clips and Insulators



No. 24-A Clip



No. 45 Clip with
No. 47 Insulator

Test clips save time in electrical work requiring quick temporary connections. May be used over and over again. Rubber insulators are a convenient protection against electric shocks and prevent clips from shorting on each other. Half the insulators are furnished in red and half in black to indicate polarity.

With Screw Connection

Cat. No.	Description	Spread of Jaws	Weight Per 100
45	Pee Wee Clip Only, Cadmium Plated	3/8 in.	2 lbs.
47	Rubber Insulator for No. 45 Clip	...	2 lbs.
48-B	Clip Only, Cadmium Plated	1/2 in.	2 lbs.
49	Rubber Insulator for No. 48-B Clip	...	3 lbs.
27	Clip Only, Cadmium Plated	5/8 in.	4 lbs.
29	Rubber Insulator for No. 27 Clip	...	5 lbs.
24-A	25-Amp. Clip Only, Lead Plated	1 in.	7 lbs.
24	50-Amp. Clip Only, Solid Copper	1 in.	7 lbs.
26	Rubber Insulator for No. 24 or 24-A Clip	...	8 lbs.
21-A	50-Amp. Clip Only, Lead Plated	1 1/4 in.	15 lbs.
85	Crocodile Clip Only, Cadmium Plated	1/2 in.	2 lbs.
87	Rubber Insulator for No. 85 Clip	...	1 lb.

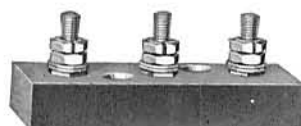
Reliable Test Clips



Used for making temporary connections to insulated wires. Made of heavy nickel silver with hard, sharp insulating puncturing points and perfectly registering teeth. Illustration shows No. 1.

- No. 1—Fitted with screw, nut, and washer for attaching to instrument cord.
- No. 2—Same as No. 1 but with the screw, nut and washer omitted. Preferred where connection to cord is to be soldered.
- No. 3—Same as No. 1 but without the spike.
- Nos. 1-2-3—Shipping weight, 3 lbs. per 100. No. 5—2 lbs. per 100.

Connecting Blocks

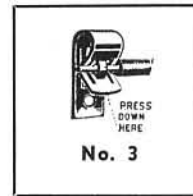


No. Points	Size Block	Weight
2	2x1x1 3/8 inches	1/2 lb.
3	3x1x1 3/8 inches	3/4 lb.

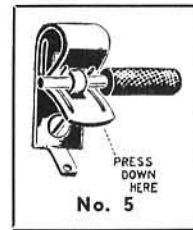
Used for connecting inside and outside wires where telephone protectors are mounted outdoors. Heavy binding posts, spun over, on special low absorption porcelain.

Fahnestock Binding Posts

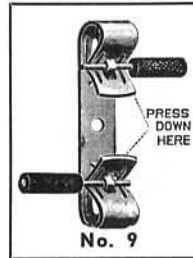
When ordering please specify catalog number and type desired.



No. 3



No. 5



No. 9

No. 3

Will take No. 10 B.&S. Wire. Length over-all, 1 1/8 inches. Width, 3/4-inch. Screw hole for No. 8 screw.

Cat. No.	Type
3	Brass
3	Bronze
3	Nickel Brass
3	Nickel Bronze

No. 5

Will take No. 10 B.&S. Wire. Has projecting lug to which a wire can be soldered. Length over-all, not including soldering lug, 1 1/8 inches. Width, 3/8-inch. Screw hole for No. 8 screw.

Cat. No.	Type
5	Brass
5	Bronze
5	Nickel Brass
5	Nickel Bronze

No. 9

Will take No. 10 B.&S. Wire. Length over-all, 2 1/8 inches. Width, 3/4-inch. Screw hole for No. 8 screw.

Cat. No.	Type
9	Brass
9	Bronze
9	Nickel Brass
9	Nickel Bronze

Fahnestock Test Connectors

No. 30

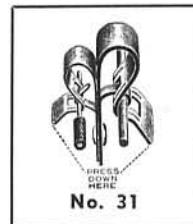


No. 30

Consists of two large copper bronze spring metal clips riveted together. Both snap over the line. Made for different sizes of wire. Used for test poles or for party line work. Length over-all, 1 1/8 inches. Width, 5/8-inch.

In ordering state kind and size of wires to be connected.

No. 31

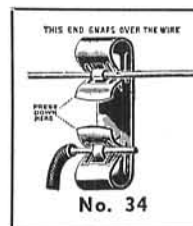


No. 31

Consists of one large and one small clip riveted together. The large clip snaps over the line wire. The small clip does not snap over and will take up to and including No. 10 B.&S. Used for attaching drop or jumper wires to line on junction poles or party lines. Length over-all, 1 1/8 inches. Width, 5/8-inch.

In ordering state kind and size of wires to be connected.

No. 34



No. 34

One end snaps over the line. Made in only one size. Snaps over a No. 12 B.W.G. wire.

Other end does not snap over wire but will take any size wire up to No. 9 B.W.G.

Length over-all, 2 3/4 inches. Width, 5/8-inch. Bronze.

Line Supplies Section

CONDUIT, CLAY

A permanent protection for telephone cables. Clay conduit is manufactured from special high-grade clays, ground and moulded into form, then vitrified into a flint like rock by over 2000 degrees of heat, and salt glazed to provide permanently smooth glass-like duct surfaces.

Permanence—Permanent because it will not soften, swell, deform or disintegrate on exposure to heat, moisture, frost, steam or chemical attack. It is also free from compounds that would harmfully affect the cable sheath.

Strength—of high compressive strength, clay conduit will safely carry all normal street loads and stand up under severe traffic vibration. It permits immediate back-filling of trenches.

Flexibility—The comprehensive range of shapes and sizes assures extreme flexibility in construction, fewer manholes, less splicing and bending of cables and lower installation costs. The coefficient of friction is low—hence cable pulling is safe and easy.

Maintenance—Repairs to cable may be made quickly and the duct line restored to its original condition by the use of split conduit. Salvage or replacement of cables can be carried out at any time with no damage and little expense. There is no depreciation and little maintenance—service is continuous and dependable.

Quality and Service—Rigorous inspection assures the highest quality and full stocks, large manufacturing facilities and skillful labor assure prompt shipments. Scientific shipping methods assure the arrival of the conduit on the job in good condition.

entific shipping methods assure the arrival of the conduit on the job in good condition.

Types of Clay Conduit

Single Duct Clay Conduit

Adapted to laterals and made in round or square bore with rounded corners. It is scarified lengthwise on four sides to provide anchorage for joint mortar.

Made in three sizes of bore, 3¼, 3½ and 4¼-inch. Specifications are shown in the table.

Multiple Duct Clay Conduit

Provides longer lengths and a multiplicity of duct holes, available in all shapes. Through dowel holes permit positive alignment. Economical and easy to install, and especially adapted to all telephone work. Scarifications around the outside at a short distance from each end provide anchorage for joint mortar. The bore of the duct holes is square with rounded corners.

Made in three sizes of bores, 3¼, 3½ and 4¼-inch. Specifications are shown in the table.

Split Clay Conduit

Made in all single and multiple duct forms. These split sections make it easy to replace or repair conduit lines and may also be used to enclose cable joints or splices in place of building manholes.

Specifications are shown in the table.

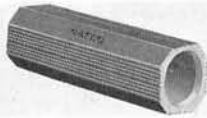
Underground Clay Conduit — Standard Shapes and Sizes

No. of Duct Holes	Standard Bore	Actual Bore	Outside Dimensions	No. of Dowel Holes	Standard Length	Duct Ft. per Piece	Length of Short Pieces	Weight per Duct Ft.	Minimum Carload—Duct Feet
Single Duct									
Single Duct	3¼" round	3⅜"	4½" x 4½"	0	18"	1½ ft.	6", 9", 12"	8 lbs.	7,500
Single Duct	3½" round	3⅝"	5" x 5"	0	18"	1½ ft.	6", 9", 12"	10 lbs.	6,600
Single Duct	4¼" round	4⅜"	5⅝" x 5⅝"	0	18"	1½ ft.	6", 9", 12"	12 lbs.	5,400
Single Duct	3¼" square	3⅜"	4¾" x 4¾"	4	18"	1½ ft.	6", 9", 12"	10 lbs.	6,300
Single Duct	3½" square	3⅝"	5" x 5"	0	18"	1½ ft.	6", 9", 12"	11 lbs.	5,700
Single Duct	4¼" square	4⅜"	5⅝" x 5⅝"	4	18"	1½ ft.	6", 9", 12"	14 lbs.	4,500
Multiple Duct									
2-Duct	3¼" square	3⅜"	4¾" x 8¾"	2	24"	4 ft.	6", 8", 12"	8½ lbs.	7,000
3-Duct	3¼" square	3⅜"	4¾" x 12¾"	4	24"	6 ft.	6", 8", 12"	8½ lbs.	7,200
4-Duct	3¼" square	3⅜"	8¾" x 8¾"	5	36"	12 ft.	6", 9", 12", 24"	7½ lbs.	8,400
6-Duct	3¼" square	3⅜"	8¾" x 12¾"	2	36"	18 ft.	6", 9", 12", 24"	7½ lbs.	9,000
8-Duct	3¼" square	3⅜"	8¾" x 16¾"	3	36"	24 ft.	6", 9", 12", 24"	7 lbs.	9,000
9-Duct	3¼" square	3⅜"	13" x 13"	4	36"	27 ft.	6", 9", 12", 24"	7 lbs.	9,500
2-Duct	3½" square	3⅝"	5⅝" x 9⅝"	2	24"	4 ft.	6", 8", 12"	9½ lbs.	6,600
3-Duct	3½" square	3⅝"	5⅝" x 13¾"	4	24"	6 ft.	6", 8", 12"	9½ lbs.	7,000
4-Duct	3½" square	3⅝"	9⅝" x 9⅝"	5	36"	12 ft.	6", 9", 12", 24"	8½ lbs.	7,800
6-Duct	3½" square	3⅝"	9⅝" x 13¾"	2	36"	18 ft.	6", 9", 12", 24"	8 lbs.	8,100
2-Duct	4¼" square	4⅜"	6" x 11⅝"	2	24"	4 ft.	6", 8", 12"	12 lbs.	5,200
3-Duct	4¼" square	4⅜"	6" x 16¼"	4	24"	6 ft.	6", 8", 12"	12 lbs.	5,400
4-Duct	4¼" square	4⅜"	11⅝" x 11⅝"	5	36"	12 ft.	6", 9", 12"	11 lbs.	6,000
6-Duct	4¼" square	4⅜"	11⅝" x 16⅝"	2	36"	18 ft.	6", 9", 12"	10 lbs.	6,300
9-Duct	4¼" square	4⅜"	16⅝" x 16⅝"	4	24"	18 ft.	6", 9", 12"	10 lbs.	6,800
Splits									
Single Duct	3¼" and 3½" round and 3½" square				18"	6", 9", 12"			
2 and 3-Duct	3¼" and 3½" square				18"	6", 9", 12"			
4 and 6-Duct	3¼" and 3½" square				18"	6", 9", 12"			
9-Duct	3¼" square				18"	6", 9", 12"			
Minimum Car, 60,000 lbs.						Maximum Car, 75,000 lbs. (approximate)			

CONDUIT, CLAY

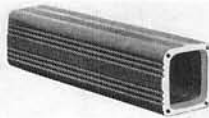
Standard Shapes

Single Duct—Round



Single Duct — 3¼, 3½ and 4¼-inch round bore, 18 inches long.

Single Duct—Square



Single Duct — 3¼, 3½ and 4¼-inch square bore, 18 inches long.

Two Duct



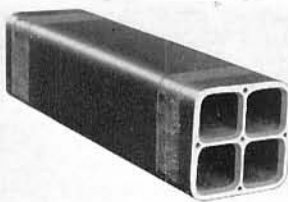
Two Duct — 3¼, 3½ and 4¼-inch square bore, 24 inches long.

Three Duct



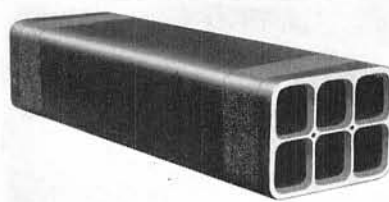
Three Duct — 3¼, 3½ and 4¼-inch square bore, 24 inches long.

Four Duct



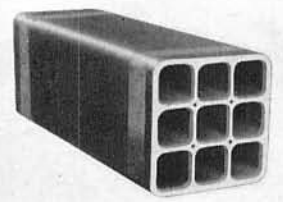
Four Duct — 3¼, 3½ and 4¼-inch square bore, 36 inches long.

Six Duct



Six Duct — 3¼, 3½ and 4¼-inch square bore, 36 inches long.

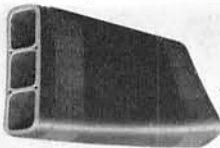
Nine Duct



Nine Duct—3¼, 3½-in. sq. bore, 36 in. long. 4¼-in. sq. bore, 24 in. long.

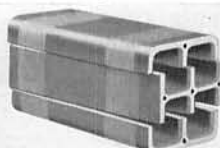
Special Shapes

Transposition



Transposition Conduit — for changing the height of conduit lines. 2, 3 and 6 duct, square bore, 24 inches long. 3¼-inch bore, 22½° turn; 3½-inch bore, 18° turn and 4¼-inch bore, 15° turn.

Split



Split Conduit — for quick repairs. Single duct, 3¼ and 3½-inch square bore, 18 inches long; 2, 3, 4, 6 and 9 duct, 3¼ and 3½-inch square bore, 18 inches long.

Branch



Branch Conduit — permits the division of multiple duct main lines into two or more branch lines—24 inches long. 2, 3, 4 and 9-way for 2 branches; 3 and 6-way for 3 branches; 6-way for 2 branches (2 or 3-way).

Mitered



Mitered Conduit — for curve construction, 3 degree, 10 ft. radius, approximate length 6x6¼ inches; 2, 3 and 6-way, edge or flat position, 4 and 9-way in one position.

Pipe Connectors



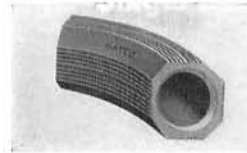
For connecting clay conduit lines to iron pipe lines as in pole risers or to enter buildings.

These connectors are made of cast iron, one end shaped to receive the end of the clay conduit line while the opposite end of the connector is tapped and threaded to receive the iron pipe line.

The 3¼-inch bore is threaded for 3-inch pipe and the 4¼-inch bore for 4-inch pipe. Also furnished plain (not threaded) on special order.

Bore Inches	No. of Ducts	Shipping Weight	Bore Inches	No. of Ducts	Shipping Weight
3¼	1	12 lbs.	4¼	1	16 lbs.
3¼	2	20 lbs.	4¼	2	30 lbs.
3¼	3	27 lbs.	4¼	3	41 lbs.
3¼	4	31 lbs.	4¼	4	52 lbs.

Single Duct Clay Conduit Bends



Single duct bends can be furnished in all standard bores in either 45 degree or 90 degree angles and in 12, 18, 24, or 36-inch radii. These curves can be furnished kerfed for splitting apart or without the kerfing.

Dowel Pins



Steel dowel pins are used in the ends of multiple duct clay conduit for lining up adjacent sections. Two pins are required for each piece of conduit.

Cat. No.	Diameter of Steel	Length	Diameter of Collar	Weight Per 100
9050	⅝ in.	3⅞ in.	⅝ in.	8 lbs.

Adhesive Joint Tape

Used for wrapping clay conduit joints before mortaring or pouring compound.

Width	Length Per Roll	Weight Per 1000 Yards
4 in.	25 yards	54 lbs.
6 in.	25 yards	81 lbs.

Line Supplies Section

CONDUIT, FIBRE

Standard Fibre Conduit, Drive Joint

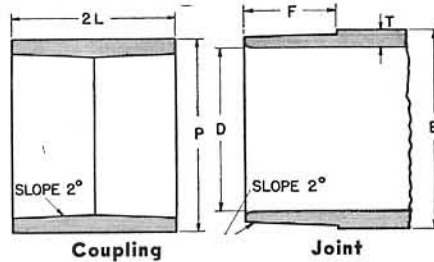


Standard—for Use with Concrete Encasement

Fibre conduit affords cable protection with no deformation or reduction in capacity through decades of service. Made of waterproof fibrous pulp, thoroughly impregnated with a preservative and waterproofing compound—not affected by heat, cold or acids which may be present in the ground. It is light in weight and is made in lengths that can be laid efficiently. Maximum protection to the cable is afforded both in the process of drawing and afterward. The bore is smooth, preventing any injury to the cable sheath.

The conduit ends are cut to a taper that fits snugly with a tapered sleeve or coupling which is furnished with each length of conduit. The fibre is sufficiently flexible to pass minor obstructions by slight deviations from straight runs. May readily be cut with lathe tools or saw.

This same type fibre conduit is also available with a thicker wall for installation without a concrete encasement.

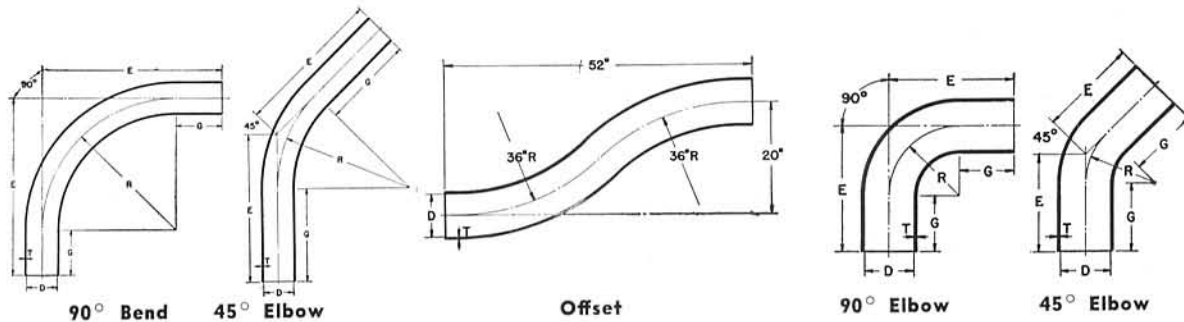


D Bore Diameter	T Wall Thickness Inches	F Joint Inches	Std. Length Feet	Drive Joint		Approx. Weight per 100 ft.
				2L Inches	P Minimum Inches	
1 in.	.20	.94	5	2.0	1.7	100 lbs.
1 1/2 in.	.25	1.31	5	2.75	2.45	120 lbs.
2 in.	.25	1.43	5	3.0	2.97	150 lbs.
2 1/2 in.	.25	1.43	8	3.0	3.48	180 lbs.
3 in.	.25	1.69	8	3.5	3.99	220 lbs.
3 1/2 in.	.25	1.69	8	3.5	4.56	270 lbs.
4 in.	.26	1.94	8	4.0	5.12	320 lbs.
4 1/2 in.	.28	1.94	8	4.0	5.73	400 lbs.
5 in.	.30	1.94	5	4.0	6.38	490 lbs.
6 in.	.40	1.94	5	4.0	7.47	710 lbs.

Bends and Elbows

Fibre conduit bends and elbows are accurately made with special forms to the required radius and degree. Furnished with standard drive joints, couplings included. All bends are 5 feet long. All elbows have short tangent beyond necessary length for angle required. Special angle, special radius, split bends or elbows can be furnished to order.

Please specify angle and radius when ordering.



D Bore Diam.	T Wall Thick.	Bends				Elbows			
		18 in. Radius 90°		24 in. Radius 45°		36 in. Radius 90°		36 in. Radius 45°	
		E	G	E	G	E	G	E	G
1 in.	3/16	34	16	31	23	35	11	31	20 1/2
1 1/2 in.	1/4	34	16	31	23	35	11	31	20 1/2
2 in.	1/4	34	16	31	23	35	11	31	20 1/2
2 1/2 in.	1/4	..	..	..	..	35	11	31	20 1/2
3 in.	1/4	..	..	..	..	35	11	31	20 1/2
3 1/2 in.	5/16	..	..	..	..	..	..	..	..
4 in.	3/8	..	..	..	..	..	..	..	..
4 1/2 in.	3/8	..	..	..	..	..	..	..	..
5 in.	3/8	..	..	..	..	..	..	..	..
6 in.	3/8	..	..	..	..	..	..	..	..

Dimensions are in inches.

Radius	90°		45°	
	E	G	E	G
5 3/4	11 1/4	5 1/2	8	5 1/2
8 1/4	14 1/4	6	9 1/2	6
9 1/2	15 1/2	6	10	6
10 1/2	16 1/2	6	10 1/2	6
13	19 1/4	6 1/4	11 1/2	6 1/4
15	21 1/4	6 1/4	12 1/2	6 1/4
16	22 1/2	6 1/2	13 1/4	6 1/2
18	24 1/2	6 1/2	14	6 1/2
24	30 1/2	6 1/2	16 1/2	6 1/2
....

CONDUIT

Standard Fibre Conduit Fittings

Adapters



Adapters from metal pipe to fibre conduit — available in combinations from 1 to 6 inches. Standard adapter has a drive joint at the fibre end and is threaded for metal pipe the size specified at the other end. Sizes and types of connections must be specified.

Reducers

Reducers from one size conduit to another are available in all combinations from 1 to 6 inches. Fitted with drive joint at each end. Sizes and types of conduit, joints, etc., to be connected must be specified in detail.

Fibre Caps

For sealing spare ducts or exposed conduit ends, etc. Drive joint is standard. Made for conduit sizes 1 to 6 inches.

Fibre Bushings

Available for all conduit sizes 1½ to 5 inches.

End Bells



For use at conduit terminals, in manholes, at substations, etc., provide a wide radius flare which facilitates cable bending and protects the cable sheath from abrasion. The strength of end bells insures against breakage under all conditions. Available for conduit sizes from 1 to 6 inches. Furnished with standard drive joints.

Fibre Conduit Spacers

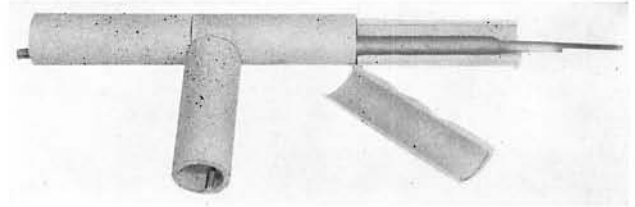
For built-up fibre conduit installations, grooved spacers of fireproof composition are available for one, two, three or four conduit wide assemblies. These spacers are cast accurately and can be furnished for conduit sizes from 2 to 4½ inches.

An inexpensive, satisfactory means of carrying all forms of lead covered cable and wires — made of selected Yellow Pine and treated with the best creosote, 15 pounds per cubic foot.

Wood conduit is light, lessening transportation charges and because it is light it is easy to handle and install. It is unbreakable and can be opened up to allow the cable to be repaired and then closed up without any special tools or skilled labor.

The bore is smooth allowing the cable to slip through the ducts without the use of lubricants. The creosote process provides full protection against rot, decay or insects.

Sold in single ducts or in multiples up to twelve duct conduit. The single duct type has mortised and tenoned



Cable Splice in Tel-Tile Conduit

Tel-Tile makes it possible for all telephone men to obtain the advantages of laying cables underground without the expense of manholes, cable pulling and sealing compounds.

As Tel-Tile may be laid in a shallow ditch from 12 to 18 inches deep installation costs are small. Thorough tests over a period of eight years have shown this method of building underground telephone leads to be the best and cheapest for main leads where more than brackets are needed.

This hard, burnt clay tile is made especially for laying underground cable. The walls are of sufficient strength and density to hold under extreme stress and strain. Moisture may enter freely but drains off to be absorbed by the earth. Freezing and thawing have no effect on the conduit. It is unnecessary to lay the tile deep except at road crossings or under ditches.

Tel-Tile consists of one-foot lengths of 3-inch inside diameter tile with ½-inch thick walls, slotted on the inside so that they may be broken in halves lengthwise. When laying the tile the workman goes along the ditch, taps each tile lightly once or twice with a hammer to split it and lays the big half in the ditch with the stamped lettering all pointing in one direction. The cable is then laid right in the open tile and the top half of each tile is placed back on the bottom half from which it was broken. The rough edges of the two halves fit together tightly and when covered with earth provides protection for the cable.

Cable may easily be added or the original cable repaired in a Tel-Tile system. Just uncover the tile, take off the top half, lay the second cable beside the first or make the necessary repairs, put the top tiles on again and cover it up.

Pairs may be run from the cable into buildings or residences with 2-conductor lead covered cable enclosed in Tel-Tile. The tile may be shaped with a hammer to make the connection with the main lead as shown in the illustration above.

Furnished in one-foot lengths, shipping weight per 100 feet, 550 pounds.

Creosoted Wood Conduit

joints and the multiple duct type is finished with smooth joints. Shipped wrapped in burlap and coated with pitch for a finished installation.

Special split ducts can be furnished for placing around cable already installed.

Single Duct			
Furnished in 2 to 10-foot lengths.			
Bore Inches	Weight Per 100 Feet	Bore Inches	Weight Per 100 Feet
2	290 lbs.	3½	600 lbs.
2½	375 lbs.	4	650 lbs.
3	460 lbs.	4½	700 lbs.

Multiple Duct
Furnished in 1.4 to 6-foot lengths and in bores from 2 to 4 inches. Weight for 3-inch conduit averages 3 pounds per duct foot.

Line Supplies Section

CHAIRS, OPERATORS

Especially designed to give operators the proper sitting posture without conscious effort. They have form-fitting seats and backs that are adjustable both vertically and laterally to fit the small of the back snugly. There is but one way to sit in this chair — the correct way. Arranged so that occupant can maintain the correct posture comfortably and restfully without fatigue.

Equipped with foot ring and gliders. Bases are 1¼-inch tubular steel with screw spindle height arrangement available in three size ranges. Standard finish of metal parts is olive green. Mahogany or Walnut finishes are available. Upholstery may be black, blue, green or brown. Casters can be supplied at no extra charge when specified.



Model WC

Seat is saddle-shaped combination wood and cane. Back is genuine leather over curled hair and cotton padding.

When ordering specify finish desired for metal parts as well as upholstery. The metal may be mahogany or walnut and the upholstery may be black, blue, green or brown.



Model GL

Seat is rectangular, saddle-shaped for comfort. Seat and back are upholstered in genuine leather over curled hair and cotton padding.

When ordering specify finish desired for metal parts as well as upholstery. The metal may be mahogany or walnut and the upholstery may be black, blue, green or brown.



Model APC

Seat is saddle-shaped, 5-ply, varnish finished wood veneer, perforated. Back is upholstered in leather cloth over curled hair and cotton padding.

When ordering specify finish desired for metal parts as well as upholstery. The metal may be mahogany or walnut and the upholstery may be black, blue, green or brown.



Model APL

Seat is saddle-shaped, 5-ply veneer, perforated, covered with perforated genuine leather over padding. Back is upholstered in genuine leather over curled hair.

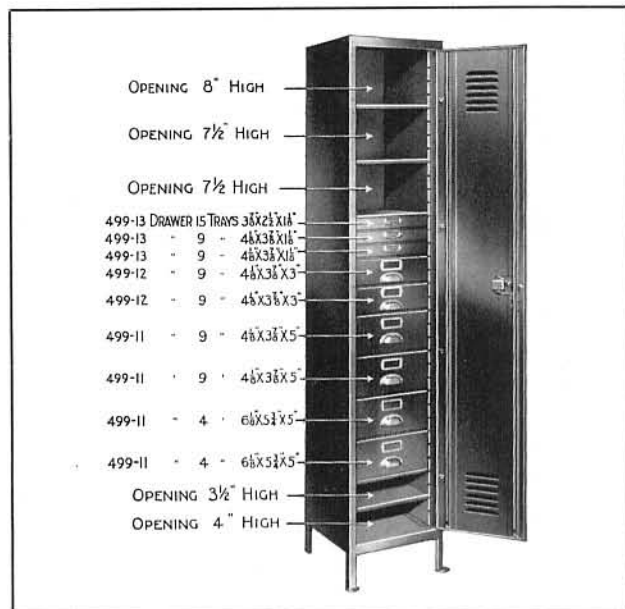
When ordering specify finish desired for metal parts as well as upholstery. The metal may be mahogany or walnut and the upholstery may be black, blue, green or brown.

General Specifications

Cat. No.	Seat Height Adjustment Range	Diameter of Foot Ring	Ring Height from Floor	Weight Each	Cat. No.	Seat Height Adjustment Range	Diameter of Foot Ring	Ring Height from Floor	Weight Each
1822-WC	18 to 22 in.	17¼ in.	6½ in.	28 lbs.	1822-GL	18 to 22 in.	17¼ in.	6½ in.	28 lbs.
2428-WC	24 to 28 in.	17¼ in.	8¼ in.	31 lbs.	2428-GL	24 to 28 in.	17¼ in.	8¼ in.	31 lbs.
2832-WC	28 to 32 in.	17¼ in.	12½ in.	33 lbs.	2832-GL	28 to 32 in.	17¼ in.	12½ in.	33 lbs.
1822-APC	18 to 22 in.	17¼ in.	6½ in.	28 lbs.	1822-APL	18 to 22 in.	17¼ in.	6½ in.	28 lbs.
2428-APC	24 to 28 in.	17¼ in.	8¼ in.	31 lbs.	2428-APL	24 to 28 in.	17¼ in.	8¼ in.	31 lbs.
2832-APC	28 to 32 in.	17¼ in.	12½ in.	33 lbs.	2832-APL	28 to 32 in.	17¼ in.	12½ in.	33 lbs.

CABINETS

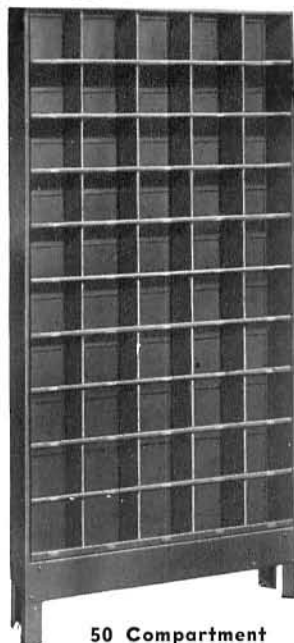
Material Cabinet No. 847



The No. 847 Cabinet has 5 shelf openings and 9 drawers. Shelves are adjustable on 2-inch centers permitting drawers to be moved to different locations and making it possible to adjust shelves for equipment of all sizes. Compartment sizes are shown above.

Dimensions: 15½x15x78 inches. Height includes 6-inch legs.

Finished in Lyon Green. Flat Key lock. Shipped set up. Shipping weight each, 279 lbs.



50 Compartment

Head Set Cabinet

Head Set Cabinets are available in three sizes—50 compartment (No. 2182-11), 30 compartment (No. 2183-11), 15 compartment (No. 2184-11). The No. 2182-11 Cabinet is five compartments wide and ten compartments high—the No. 2183-11 Cabinet is three wide and ten high—the No. 2184-11 is three wide and five high. The compartments are 7 inches wide, 8¾ inches deep and 6¾ inches high.

Openings are numbered horizontally beginning with 0 in the upper left with 1 directly below it, etc. Top openings in second column is next number after bottom opening in first column.

Cat. No.	Description	Width Inches	Depth Inches	Height Over All Inches	Height Base Inches	Shipping Weight Each
2182-11	50 Comp't	35¼	8¾	74¾	11	162 lbs.
2183-11	30 Comp't	21¼	8¾	74¾	11	109 lbs.
2184-11	15 Comp't	21¼	8¾	36	No Base	40 lbs.

Cord Cabinet No. 848

The No. 848 Cabinet constructed for great strength and durability. It is equipped with seven 6-inch cord hooks and has two clips on each side to hold wedge blocks. Door swings wide, permitting full view and easy access to any part of the cabinet.

Six-inch legs increase sanitation, allowing plenty of room for cleaning around the cabinet.

Overall dimensions are 15½x15x78 inches. Height includes 6-inch legs. Finished in Lyon Green baked enamel. Fitted with built-in flat key lock (three keys and master keyed). Shipped set up as illustrated. Shipping weight each, 133 lbs.



Steel Lockers

Lockers are sturdily constructed from high quality steel and ranged in types and sizes to meet any requirements. Doors swing wide for easy access to interior.

Single Tier Type—One shelf, 4 single prong and one double prong ceiling hook. Size overall, 12x12x66 inches. Legs are 6 inches long. Shipping weight each, 52 lbs.

Double Tier Type—4 single prong and one double prong ceiling hook—no shelf. Size each locker, 12x12x36 inches. Shipping weight each, 31 lbs.

7-Compartment Type—7 small private compartments (each 12x15x20 inches in size), and one large coat compartment (21x20x60 inches in size). Keys to each small opening will also fit large door but no other small door. Size overall, 36 inches wide by 20 inches deep by 78 inches high. Shipping weight, 230 lbs.

8-Compartment Type—8 private compartments (each 12x18x20 inches), and 2 coat compartments (each 18x20x60 inches). Large openings fitted with coat rods. Keys matched same as 7-Compartment. Size overall, 54 inches wide by 20 inches deep by 78 inches high. Shipping weight, 320 lbs.

Attendant's Tool Locker—May be had in sections of 6, 12 or 18 lockers. Openings are 12x18x12 inches. Each opening has hasps for padlock. Built-in lock extra. Shipped set up. Six cabinet locker weighs 84 lbs., 12 cabinet locker weighs 144 lbs. and the 18 cabinet locker weighs 216 lbs.

Other Steel Products

Shelving	Tool Cabinets	Benches
Fuse Cabinets	Storage Cabinets	Tables
PBX Exchange Cabinets	Wardrobe Cabinets	Desks
	Wire Boxes	Chairs

Write for details and prices.

Line Supplies Section

EXTINGUISHERS, FIRE

Pyrene Fire Extinguishers Wall Bracket Type



Pyrene Fire Extinguishers are ideal for telephone companies. Easy to operate, women can handle them easily. They stop the fire before it can spread—thereby helping to maintain continuous telephone service. Pyrene Extinguishers are approved by the Underwriters' Laboratories and are the most effective type for smothering any class of fire in its incipient stage; particularly fires in flammable liquids or electrical equipment. The Pyrene liquid is a non-conductor of electricity and will not injure electrical apparatus.

The double-acting pump with patented rotating pickup will discharge a steady, continuous stream 25 to 30 feet, regardless of what position the extinguisher is held.

Pyrene Extinguishers are made in a standard brass finish. They can be furnished in chrome or nickel plate or colored Duco finishes to match interior decorative schemes. When ordering Duco finish, specify color and furnish sample.

Cat. No.	Capacity	Type	Shipping Weight
C-11	1 Pint	Wall Bracket	5 lbs.
C-21	1 Quart	Wall Bracket	7½ lbs.
C-31	1½ Quart	Wall Bracket	10 lbs.

Pyrene Fire Extinguishing Liquid

For refilling vaporizing liquid type extinguishers. Non-conductor of electricity. Non-corrosive. Will not freeze at 50° below zero F.

Cat. No.	Description	Std. Pkg.	Weight Std. Pkg.
CR-1	1 Pint can	20	39½ lbs.
CR-2	1 Quart can	20	76½ lbs.
CR-3	1½ Quart can	10	56½ lbs.
CR-4	1 Gal. can	4	58½ lbs.



Pyrene Fire Extinguishers Heavy Duty Unit



Vaporizing Liquid Pressure Type

This extinguisher consists of a top and bottom casting made of high-pressure brass to which is fastened an inner and outer shell of heavy gauge, seamless drawn tubing forming two chambers. The inner chamber contains air pressure and the outer chamber contains Pyrene Fire Extinguishing Liquid. These two chambers are sealed tightly against each other. When the operating valve wheel is turned, air pressure enters the liquid chamber, thus expelling a continuous stream of liquid through a flexible metal hose, rubber insulated.

An efficient pump is built into this extinguisher to renew air pressure. For convenience, in addition, an air valve permits a service air line to be used where available.

The open face pressure gauge at the top indicates the air pressure in the inner chamber at all times. An inspection glass is also provided so that the liquid level may be observed. The normal level is the center of this glass.

To recharge, unscrew the filler cap, pour in one gallon of Pyrene Fire Extinguishing Liquid, replace the filler cap, open the small disc valve and pump to 100 lbs. pressure, close the small disc valve and the extinguisher is ready for use.

To operate the extinguisher, grasp the hose in right hand and with left hand operate wheel which simultaneously controls the flow of air and liquid at a quarter turn. The stream ranges from 30 to 40 feet.

Inspected and labeled by the Underwriters' Laboratories and approved by the Associated Factory Mutual Laboratories.

Cat. No.	Description	Height	Diam.	Shipping Weight
C-43	1 gal., Polished Copper	24 in.	6 in.	39½ lbs.

Guardene Fire Extinguishers



The 2½-gallon Guardene Soda-Acid Extinguisher will extinguish incipient fires in free-burning materials—such as wood, rubbish and textiles—where the cooling and quenching effect of water is of first importance. This extinguisher ejects a stream 40 feet in any direction.

The three container units—shell, dome and bottom—are made of finest quality cold-rolled copper. As a further safeguard against corrosion, the interior is completely coated with a lead-alloy. Each extinguisher is tested to withstand a pressure of 350 pounds complying with Underwriters' Laboratories requirements.

To operate, tip the Guardene up-side-down. To stop the flow, turn it right-side-up. Must be recharged immediately after use and should be protected against frost.

Insurance authorities require annual inspection and recharging of Soda-Acid Extinguishers. Guardene Charges contain the highest grade Sulphuric Acid and Soda Bicarbonate packed in air-tight containers, acid bottles sealed with safety closure. Weight, charged ready for use is 37½ pounds.

Cat. No.	Description	Height	Capacity	Shipping Weight
S13	Copper, Polished	24 in.	2½ gal.	19½ lbs.
SR1	Soda-Acid Recharge Only	....	2½ gal.	2½ lbs.

Phomene Fire Extinguishers



Although similar in size and appearance to the 2½-gallon Soda-Acid Extinguisher the character of the stream and its method of fire attack are entirely different. While the 2½-gallon Soda-Acid discharges only 2½ gallons of solution, the 2½ gallon Phomene releases 22 gallons of tough fire-killing foam.

The foam spreads over the burning surface—liquid or solid—cuts off the supply of oxygen, and forms a tough, air-tight, and fireproof blanket. Once extinguished, the fire cannot reignite because the foam blanket is still there—a very important feature in extinguishing highly inflammable liquid fires such as oil, gasoline, naphtha, tar, wax, grease, shellac, and other flammable solvents.

The Foam Type Extinguisher, utilizing two foam-making solutions, has a removable inner container of seamless drawn copper, coated with a corrosion-resisting lead alloy. Complete charging directions and instructions for use are on the name plate of each extinguisher. Inspected and labelled by the Underwriters' Laboratories. Weight, charged ready for use, is 37 pounds.



Cat. No.	Description	Capacity	Shipping Weight
P-13	Polished Copper	2½ gals.	25 lbs.
PR-1	Extra Phomene Recharge Only	2½ gals.	5½ lbs.

FIRST AID KITS

Uniflex First Aid Kits

Uniflex First Aid Kits are designed especially to meet the requirements of public utilities. Telephone, industrial, rail and oil companies generally prefer this type of kit because it provides a quick, simple and more effective way of giving First Aid. Most important is the ease in maintaining clean, accessible First Aid Materials at all times. This applies whether they are used by maintenance or operating crews, in an office or by an individual employee.

Uniflex Kits Have These Features:

1. Made of 20-gauge steel to stand rough handling.
2. Dust-proof construction keeps contents clean.
3. Water-tight gasket keeps out all moisture.
4. Special hooks on back of kits make hanging easy anywhere.
5. First Aid Instructions given on inside cover of kit, told in terse phrases — what to do in different emergencies and which units to use.

No. 100-T Pocket First Aid Kit



Kit is prepared with the standard assortment shown below. For refills, Uniflex Units are purchased and individual dressings are added to kit. If desired, any of the listed Uniflex items may be substituted, but must be purchased separately.

Contents of Standard No. 100-T Kit	Number Individual Dressings in Kit	Cat. No. Replacement Unit	Number of Individual Dressings in Refill Unit
1-in. Handi-Tapes	6	A-1	16
2-in. Bandage Compresses	2	A-4	4
Iodine Swabs	3	A-12	10
Vivo Tubes	3	A-14	10
Burn-A-Lay (Tubes)	1	A-15	6

No. 510-W Uniflex First Aid Kit



Standard contents are listed below. No. 510-W Kit may be made up with any of the listed Uniflex Units so long as the total units involved equal 10 "A" units or the equivalent. Prices on special kits will depend on price of Uniflex Units selected, plus cost of empty kit.

Contents of Standard No. 510-W Kit	Number Individual Dressings in Kit	Cat. No. Replacement Unit	Number of Individual Dressings in Refill Unit
1-in. Handi-Tapes (2 Units)	32	A-1	16
4-in. Bandage Compress	1	A-8	1
1-in. Gauze Bandage	4	A-31	4
2-in. Gauze Bandage	2	A-32	2
Iodine Swabs	10	A-12	10
Vivo Tubes	10	A-14	10
Burn-A-Lay (Tubes)	6	A-15	6
Triangular Bandage, 40-inch	1	A-35	1
Compressed Gauze, 24x72 inches	1	A-11	1

Larger kits with more complete assortments can be furnished. Further details on complete line of Replacement Units also available on request.

Uniflex Replacement Units

Uniflex Units Have These Advantages:

1. Each unit is in a sturdy cardboard container holding one or more individual dressings.
2. All liquids are in sealed ampoules or vials.
3. Printed instructions for use are on each container.
4. All units are of same width and breadth and of a standard thickness or multiples thereof and will fit any standard unit type first aid kit.
5. The unit number, size and contents of container appear on the edge of each, making it easy to quickly locate dressings.
6. The Uniflex principle of standard-size prepared units enables the purchaser to select contents of each kit (except No. 100) to fit his individual requirements.

Following Uniflex Units Are Available

A-1—16 Handi-Tapes. Medium, borated, non-ravel gauze pad on perforated strip of adhesive plaster, $1\frac{1}{2} \times 3\frac{3}{8}$ in. Complete dressing for minor wounds.

A-4—Four 2-inch Bandage Compresses. Gauze pad 2-in. square, sewn to center of muslin bandage strip 36 in. long, forming complete dressing for leg and arm wounds. Pads can be unfolded to double width. Safety pins for fastening are enclosed.

A-8—One 4-inch Bandage Compress. Gauze pad, 4-in. square, sewn to center of muslin bandage strip 84 in. long, forming complete dressing for leg and arm wounds. Pads can be unfolded to double width. Safety pins for fastening are enclosed.

A-11—One Compressed Gauze. Folded and compressed piece of absorbent sterile gauze, 24x72 inches for dressing large wounds.

A-12—Ten Iodine Swabs. For sterilization of wounds and instruments. Sealed glass tube prevents spilling or evaporation. Cloth applicator swab over tip absorbs liquid when tip is broken.

A-13—Ten Mercurochrome Swabs. Same as above except containing Mercurochrome.

A-14—Ten Vivo Tubes. Aromatic Inhalant for use as stimulant. Liquid is absorbed by cloth end when glass tip is broken.

A-15—Six Tubes Burn-A-Lay ($\frac{1}{8}$ Oz.). A smooth insulating ointment for all types of superficial burns. In collapsible tubes.

A-16—Six Tubes Borated Petrolatum ($\frac{1}{8}$ Oz.). Pure petrolatum base containing boric acid. For treatment of burns and alleviating eye injuries. Collapsible tubes.

A-18—Six Creosote Burn Wash—Sealed Vials. Treatment for Creosote burns.

A-21—One Wire Splint. Flexible, heavy woven wire gauze for giving temporary support in case of fracture, etc.

A-31—Four 1 in. x 6 yd. Bandages. Fine mesh sterile absorbent gauze — in strips for bandages to cover other dressings or for support. Can also be used in pad form directly over wounds.

A-32—Two 2 in. x 6 yd. Bandages. Fine mesh sterile absorbent gauze. In strips for bandages to cover other dressings or for support. Can be used directly over wounds.

A-35—One Triangular Bandage—40 in. A piece of strong plain muslin folded in the approved cravat style for slings, supporting bandages and outer bandages, for tying splints and many other uses.

Line Supplies Section

POLE LINE HARDWARE

House Brackets

Hot Galvanized



Used with porcelain knobs for telephone service drops. Furnished less knobs and bolts. There are three 5/8-inch mounting holes in the bracket. No. 1 1/2x16 galvanized R.H. wood screws are recommended for mounting the bracket to wood frame buildings; 1/4x1-inch Dryvin lead anchors for brick or masonry walls. See table below for bolts necessary to mount knobs. For knobs see Page No. 67.

Cat. No.	Size Steel	Std. Pkg. Quantity	Weight Per 100
J-1200	1 3/4 x 3/16 in.	200	57 lbs.

Pole Brackets

Hot Galvanized

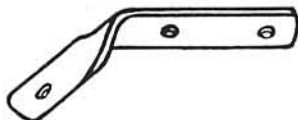


Used with porcelain knobs for telephone service drops. Furnished less knobs and bolts. There are three 5/8-inch mounting holes in the bracket. 3/8x4-inch lag screws are recommended for mounting the bracket to pole. See table below for bolts necessary to mount knobs. For knobs see Page No. 67.

Cat. No.	Size Steel	Std. Pkg. Quantity	Weight Per 100
J-1202	2 x 1/4 in.	125	92 lbs.

Corner Brackets

Hot Galvanized



There are two 5/8-inch mounting holes in the bracket. 3/8x2 1/4-inch lag screws are recommended for mounting to wood buildings; 3/8x2-inch Dryvin lead anchors for brick or masonry walls. See table below for bolts necessary to mount knobs. For knobs see Page No. 67.

Cat. No.	Size Steel	Length	Std. Pkg. Quantity	Weight Per 100
J-2584	1 1/4 x 1/4 in.	8 in.	25	55 lbs.
J-2585	1 3/2 x 3/2 in.	10 3/4 in.	25	108 lbs.

Size Bolts For Mounting Knobs to House or Pole Brackets

No. Knobs	Size Knob	Type of Bolt	Size Bolt
1	2-groove	Stove Bolt	5/8x2 inch
2	2-groove	Stove Bolt	5/8x3 1/2 inch
1	4-groove	Machine Bolt	3/8x3 inch
2	4-groove	Machine Bolt	3/8x5 1/2 inch

Stove bolts are described below, machine bolts are shown on Page No. 50 and knobs on Page No. 67.

Flat Head Stove Bolts

Used for fastening porcelain knobs and brackets. See table above.

Cat. No.	Size	Std. Pkg.	Wt. Per 100
J-8232	5/8x2 in.	2000	6 1/2 lbs.
J-8233 1/2	5/8x3 1/2 in.	1000	8 1/2 lbs.
J-8243	3/8x3 in.	500	12 lbs.
J-8245 1/2	3/8x5 1/2 in.	500	18 lbs.

Span Brackets

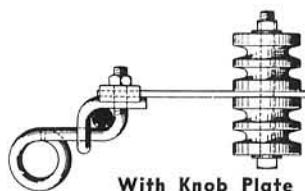
Hot Galvanized



Fastens to the strand and is used to take off service drops between poles. Consists of a No. J-1095 suspension clamp fastened with a bolt to a spreader strap. Has two 1/2-inch holes for mounting knobs. See table, left hand column. For knobs see Page No. 67.

Cat. No.	Description	Wt. Per 100
J-7910	Span Bracket	139 lbs.

Kearney Span Brackets



With Knob Plate

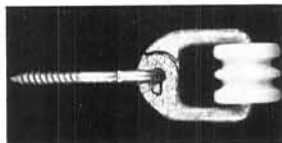
Used for making service connections between poles. A bridle ring is formed on one end of the clamping bolt member allowing the drop wires to be pulled away at any angle.

Consists of two interlocking bolts which clamp securely on the smallest messenger and a reinforcing plate which provides a seat for the knob-plate which is provided in No. 7545. Furnished less knob.

Cat. No.	Description	Wt. Per 100
7545	With Knob Plate	55 lbs.
7548	Less Knob Plate	45 lbs.

Pearl Drop Wire Brackets

Hot Galvanized

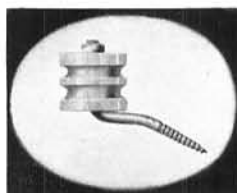


Furnished complete with knob ready to install. The unbreakable wire screw hook and malleable castings are hot galvanized, insuring long life. To install, screw in hook, hang on two piece yoke assembled into insulator. Packed in cartons of 25.

Cat. No.	Used For	Size Yoke	Weight Per 100
200-Double Groove	Duplex Telephone Wires	3/8 in.	60 lbs.

Angle Screws

Furnished Less Knobs

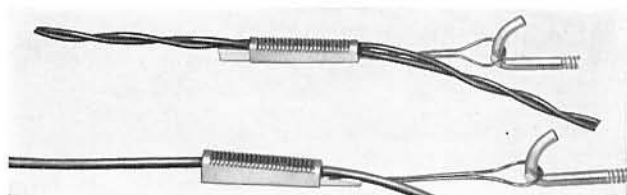


Provides a convenient and economical fastening for drop wiring on frame or brick buildings. By inclining the angle of the screw the porcelain knob may be set at any desired angle. Knobs must be ordered separately. See Page No. 67.

Cat. No.	Type	Length of Screw	Length of Shank	Use Knob No.	Weight Per 1000
J-1211-S	5/8 in.	2 1/4 in.	2 1/4 in.	6061-2 Groove	12 lbs.
J-1211-L	3/8 in.	2 in.	3 1/2 in.	6062-4 Groove	20 lbs.

POLE LINE HARDWARE

Reliable Drop Wire Clamps

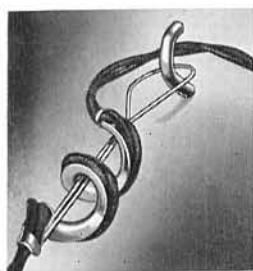


Used for attaching twisted pair or parallel drop wire to poles and buildings, permits free swinging at the tie, places all the wear on the hardware and eliminates all sharp bends.

The Type P and Type R clamps are wedge-shaped, with a copper wire loop at one end for hooking over a drive hook, masonry hook or porcelain knob. When using twisted pair, it is essential to parallel the wires through the clamp. Type R clamp is for heavy duty drop wire.

Cat. No.	No. Per Carton	Std. Pkg. Quantity	Weight Per 100
P Clamp	25	500	77 lbs.
R Clamp	25	500	83 lbs.

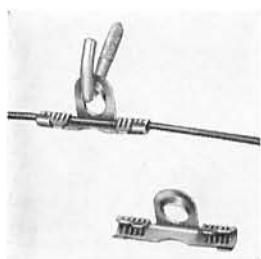
Kearney Snub-R-Grip Wire Holders



For use with both twisted pair and parallel drop wire. Permits slacking off or pulling up drop by merely pushing slack through "snub-action" spiral. The spiral channel is smooth and preserves the insulation as the strain is evenly distributed throughout its length.

Cat. No.	Description	Length	Weight Per 100
6715-3	Steel, Sleeve on Bail	8½ in.	12 lbs.

Parallel Drop Wire Clips



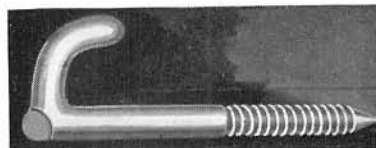
For use at intermediate attachments of parallel drop wire. Fits drive hooks, masonry hooks and knob adapters. Easy to install—the wire is placed in supporting grooves and the small tongues of the clip are crimped down as shown in the illustration. The pressure grips the wire firmly but does not injure the insulation.

Cat. No.	Description	Weight Per 100
S-1	Drop Wire Clip	5 lbs.

Knob Adapters

Consists of copper wire formed to fit around telephone knobs and to engage drop wire clips. Used in conjunction with the replacement of twisted pair drop wire with parallel drop wire as they permit the use of existing installed fixtures.

Drive Hooks



Easy to install — formed head permits driving. Final seating is made by screwing in the hook.

Cat. No.	Description	Length	Weight Per 100
6766-1	Small Drive Hook	3½ in.	10 lbs.
J-3316	Large Drive Hook	5¼ in.	27 lbs.

Screw Hooks



Galvanized — used for attaching drop wires to buildings in conjunction with type P clamps or other drop wire fixtures.

Cat. No.	Description	Wt. Per 100
53-G	4 in. Wood Screw House Hook	10¾ lbs.

Dryvin Masonry Hooks



Galvanized hooks with hammer drive, lead expansion shields. Requires hole ¾-inch in diameter and 1¼ inches deep. Furnished with nails.

Description	Std. Pkg. Quantity	Weight Per 100
Dryvin Hammer-Drive Masonry Hook	50	12½ lbs.

Drop Wire Hooks

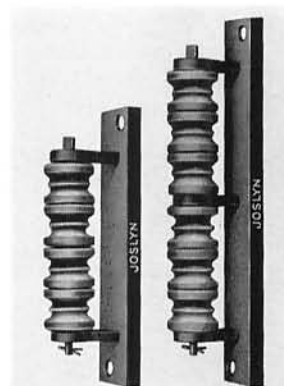
Hot Galvanized



Used in conjunction with type P clamps and similar fixtures for attachment of drop wire. Consists of a hook formed as illustrated. Use ¾x2½-inch lag screws or No. 18x2-inch R.H. wood screws for attachment.

Distributing Brackets

Hot Galvanized



Knob racks are used for distributing twisted pair telephone wires. Stamped steel eyes are welded to 1¼x¾-inch channel.

The J-72 two-groove knobs furnished with these racks are held in place by a ¾-inch bolt. A ½-inch hole is provided in each end for ½-inch lag screws. The extension from the pole to the center of the insulators is 2⅝ inches.

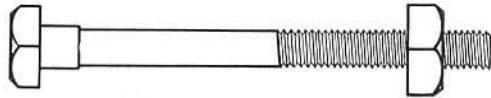
Cat. No.	No. Knobs	Length Over All	Weight Per 100
2900-73	4	10 in.	288 lbs.
2901-74	6	13 in.	395 lbs.
2902-75	8	16 in.	496 lbs.

Line Supplies Section

POLE LINE HARDWARE

Machine Bolts

Hot Galvanized

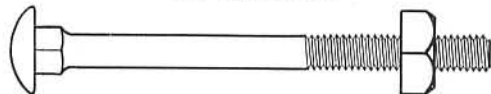


Larger sizes of through or cross arm bolts are used for attaching cross arms to poles. Have rolled threads, square heads and nuts. To determine the correct length allow 3/4-inch for nut and washer, add the thickness of the cross arm to the pole diameter less depth of gain. Length is measured from inside of head to tip of bolt.

Cat. No.	Size	Thread Length	Std. Pkg. Quantity	Weight Per 100
J-8603	3/8 x 3 in.	3 in.	500	12 1/2 lbs.
J-8603 1/2	3/8 x 3 1/2 in.	3 in.	500	14 1/4 lbs.
J-8604	3/8 x 4 in.	3 in.	500	15 3/8 lbs.
J-8604 1/2	3/8 x 4 1/2 in.	3 in.	500	16 1/2 lbs.
J-8605	3/8 x 5 in.	3 in.	500	18 1/8 lbs.
J-8605 1/2	3/8 x 5 1/2 in.	3 in.	500	19 1/4 lbs.
J-8606	3/8 x 6 in.	3 in.	500	20 1/2 lbs.
J-8704 1/2	1/2 x 4 1/2 in.	3 in.	250	33 1/4 lbs.
J-8705	1/2 x 5 in.	3 in.	250	33 1/2 lbs.
J-8706	1/2 x 6 in.	3 in.	250	40 lbs.
J-8712	1/2 x 12 in.	6 in.	100	69 lbs.
J-8808	5/8 x 8 in.	6 in.	100	82 lbs.
J-8810	5/8 x 10 in.	6 in.	50	98 lbs.
J-8812	5/8 x 12 in.	6 in.	50	112 lbs.
J-8814	5/8 x 14 in.	6 in.	50	129 lbs.

Carriage Bolts

Hot Galvanized



Used for attaching braces to the cross arm. Rolled threads, square nuts. For correct length, order bolts 3/4-inch longer than the thickness of cross arm.

Cat. No.	Size	Thread Length	Std. Pkg. Quantity	Weight Per 100
J-8633	3/8 x 3 in.	1 3/4 in.	500	13 lbs.
J-8633 1/2	3/8 x 3 1/2 in.	1 3/4 in.	500	14 3/8 lbs.
J-8634	3/8 x 4 in.	1 3/4 in.	500	15 1/2 lbs.
J-8634 1/2	3/8 x 4 1/2 in.	1 3/4 in.	500	17 1/8 lbs.
J-8635	3/8 x 5 in.	1 3/4 in.	500	18 1/4 lbs.
J-8635 1/2	3/8 x 5 1/2 in.	1 3/4 in.	500	19 1/2 lbs.
J-8644 1/2	1/2 x 4 1/2 in.	3 in.	250	33 1/2 lbs.
J-8645	1/2 x 5 in.	3 in.	250	35 3/8 lbs.
J-8646	1/2 x 6 in.	3 in.	250	40 lbs.

Double Arming Bolts

Hot Galvanized

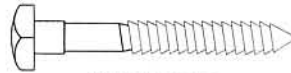


Threaded full length—rolled threads. Furnished with four nuts. For correct length allow 1 1/4 to 1 1/2 inches for washers and nuts, add twice the thickness of cross arm plus diameter of the pole less depth of gains.

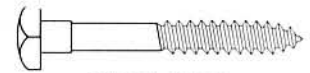
Cat. No.	Size	Std. Pkg. Quantity	Weight Per 100
J-8842	1/2 x 12 inches	50	85 lbs.
J-8844	1/2 x 14 inches	50	94 lbs.
J-8846	1/2 x 16 inches	50	103 lbs.
J-8848	1/2 x 18 inches	50	112 lbs.
J-8862	5/8 x 12 inches	50	138 lbs.
J-8864	5/8 x 14 inches	50	154 lbs.
J-8866	5/8 x 16 inches	50	168 lbs.
J-8868	5/8 x 18 inches	50	183 lbs.

Lag Screws

Hot Galvanized



Fetter Drive



Gimlet Point

Used to fasten cross arm braces to pole. The fetter drive type is more popular as it may be driven into the wood without tearing the fibres. By adding a few turns it is securely seated.

Fetter Drive

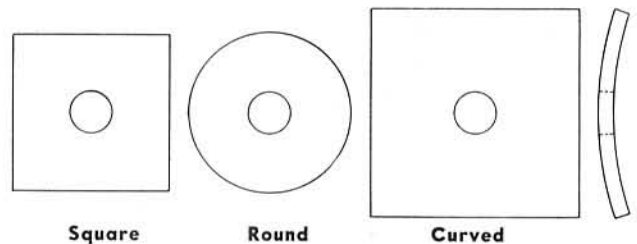
Cat. No.	Size	Std. Pkg. Quantity	Weight Per 100
J-8742 1/2	3/8 x 2 1/2 inches	1000	8 5/8 lbs.
J-8743	3/8 x 3 inches	1000	10 lbs.
J-8743 1/2	3/8 x 3 1/2 inches	1000	11 1/4 lbs.
J-8744	3/8 x 4 inches	500	12 5/8 lbs.
J-8744 1/2	3/8 x 4 1/2 inches	500	14 lbs.
J-8753	1/2 x 3 inches	500	18 1/4 lbs.
J-8753 1/2	1/2 x 3 1/2 inches	500	20 1/2 lbs.
J-8754	1/2 x 4 inches	500	22 3/4 lbs.
J-8754 1/2	1/2 x 4 1/2 inches	500	25 lbs.

Gimlet Point

Cat. No.	Size	Std. Pkg. Quantity	Weight Per 100
J-8772 1/2	3/8 x 2 1/2 inches	1000	8 5/8 lbs.
J-8773	3/8 x 3 inches	1000	10 lbs.
J-8773 1/2	3/8 x 3 1/2 inches	1000	11 1/4 lbs.
J-8774	3/8 x 4 inches	500	12 3/4 lbs.
J-8774 1/2	3/8 x 4 1/2 inches	500	14 lbs.
J-8783	1/2 x 3 inches	500	17 1/2 lbs.
J-8783 1/2	1/2 x 3 1/2 inches	500	19 1/2 lbs.
J-8784	1/2 x 4 inches	500	21 1/2 lbs.
J-8784 1/2	1/2 x 4 1/2 inches	500	23 1/2 lbs.

Washers

Hot Galvanized



Square

Round

Curved

Square Washers

Cat. No.	Size Inches	Size Hole Inches	Size Bolt Inches	Weight Per 100
J-1073	2x2x 1/8	3/8	1/2	14 1/2 lbs.
J-1074	2x2x 1/8	1/2	5/8	14 1/4 lbs.
J-1075	2 1/4 x 2 1/4 x 3/8	1/2	5/8	25 lbs.
J-1076	2 1/4 x 2 1/4 x 3/8	1/2	3/4	25 lbs.
J-1078	3x3x 3/8	7/8	5/8 & 3/4	46 1/2 lbs.
J-1077	3 1/2 x 3 1/2 x 3/8	1	3/4 & 7/8	122 lbs.
J-1080	4x4x 3/8	7/8	5/8 & 3/4	85 lbs.
J-1473	4x4x 1/2	7/8	5/8 & 3/4	210 lbs.

Round Washers

Cat. No.	Size	Size Hole	Size Bolt	Weight Per 100
J-1085	1 1/4	3/8	3/8	2 1/4 lbs.
J-1086	1 3/8	3/8	1/2	4 1/2 lbs.
J-1088	1 3/4	3/8	5/8	8 1/2 lbs.
J-1089	2	3/8	3/4	11 1/2 lbs.

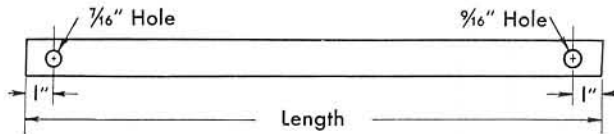
Square Curved Washers

Cat. No.	Size	Size Hole	Size Bolt	Weight Per 100
J-6821	2 1/4 x 2 1/4 x 3/8	1/2	5/8	25 lbs.
J-113	3x3x 1/4	1/2	5/8	76 lbs.
J-6823	3x3x 1/4	1/2	3/4	63 lbs.
J-116	3 1/4 x 3 1/4 x 1/4	1/2	5/8	77 lbs.
J-133	3 1/4 x 3 1/4 x 1/4	1/2	3/4	63 lbs.
J-6829	4x4x 1/4	7/8	3/4	115 lbs.

POLE LINE HARDWARE

Flat Cross Arm Braces

Hot Galvanized

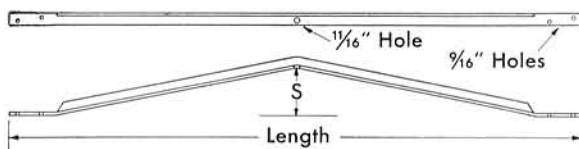


Braces are punched at one end with a $\frac{1}{16}$ -inch hole for $\frac{3}{8}$ -inch carriage bolt, and on the other end with a $\frac{1}{16}$ -inch hole for $\frac{1}{2}$ -inch lag screw.

Cat. No.	Length Inches	For Arms with Brace Bolt Spacing	Std. Pkg. Quan.	Weight Per 100
J-7020	$1\frac{1}{2} \times 1\frac{1}{2} \times 20$	25	20	131 lbs.
J-7022	$1\frac{1}{2} \times 1\frac{1}{2} \times 22$	28	20	144 lbs.
J-7024	$1\frac{1}{2} \times 1\frac{1}{2} \times 24$	32	20	157 lbs.
J-7026	$1\frac{1}{2} \times 1\frac{1}{2} \times 26$	33	20	170 lbs.
J-7028	$1\frac{1}{2} \times 1\frac{1}{2} \times 28$	36-38	20	183 lbs.
J-7122	$1\frac{1}{4} \times 1\frac{1}{4} \times 22$	28	20	182 lbs.
J-7124	$1\frac{1}{4} \times 1\frac{1}{4} \times 24$	32	20	198 lbs.
J-7126	$1\frac{1}{4} \times 1\frac{1}{4} \times 26$	33	20	215 lbs.
J-7128	$1\frac{1}{4} \times 1\frac{1}{4} \times 28$	36-38	20	231 lbs.
J-7130	$1\frac{1}{4} \times 1\frac{1}{4} \times 30$	42	20	248 lbs.

Cross Arm Back Braces

Hot Galvanized

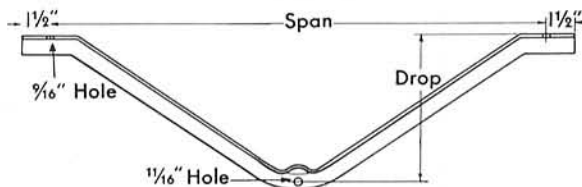


Used for bracing cross arms at corners and terminal poles. Made of open hearth steel angle, punched with $\frac{1}{16}$ -inch center hole for $\frac{3}{8}$ -inch machine bolt and two $\frac{1}{16}$ -inch holes at each end for $\frac{1}{2}$ -inch carriage bolts.

Cat. No.	Length	S Inches	Size Angle Inches	Std. Pkg.	Weight Per 100
J-6966	6 ft.	6	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	5	1060 lbs.
J-6967	7 ft., 10 in.	6	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	5	1660 lbs.
J-6969	9 ft., 1 in.	$6\frac{1}{2}$	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	5	1825 lbs.

Angle Cross Arm Braces

Hot Galvanized

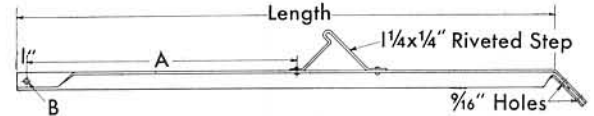


Fastened to the arm by $\frac{1}{2}$ -inch machine bolts at each end and to the pole by a $\frac{3}{8}$ -inch through bolt.

Cat. No.	Size Angle Inches	Span Inches	Drop Inches	Std. Pkg.	Weight Per 100
J-1505	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	37	12	5	720 lbs.
J-1506	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	42	12	5	795 lbs.
J-1507	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	48	14	5	882 lbs.
J-1514	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	48	18	5	976 lbs.
J-1508	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	60	18	5	1103 lbs.
J-1510	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	60	18	5	1300 lbs.
J-1511	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	66	20	5	1431 lbs.
J-1512	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	72	22	5	1546 lbs.
J-1513	$2 \times 2 \times \frac{3}{16}$	72	22	5	1779 lbs.

Alley Arm Braces

Hot Galvanized

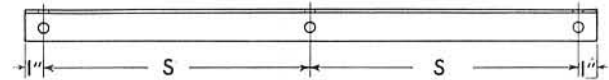


Furnished with lineman's step. Punched with $\frac{1}{16}$ -inch holes for lag screws and machine bolts.

Cat. No.	Size of Angle Inches	Length	A Inches	B Inches	Weight Per 100
J-1521	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	5 ft.	30	$\frac{3}{16}$	1100 lbs.
J-1522	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	5 ft.	30	$\frac{3}{16}$	1300 lbs.
J-1523	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	6 ft.	30	$\frac{3}{16}$	1288 lbs.
J-1525	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{3}{16}$	7 ft.	30	$\frac{1}{16}$	1788 lbs.
J-1526	$2 \times 2 \times \frac{1}{4}$	10 ft.	50	$\frac{1}{16}$	3400 lbs.

Vertical Braces

Hot Galvanized

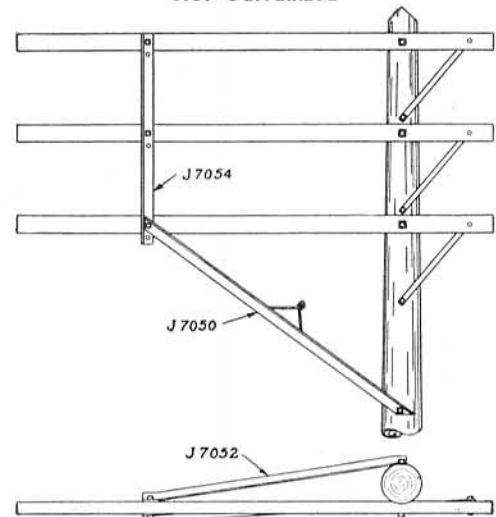


Used to clear buildings or trees by extending the load to one side of the pole, the angle iron vertical brace is used between cross arms in connection with alley arm brace. Designed to take care of 2, 3 or 4 arms. Punched with $\frac{1}{16}$ -inch holes for $\frac{1}{2}$ -inch machine bolts.

Cat. No.	Size Stock Inches	No. of Arms	S Spacing Arms	Weight Per 100
J-1533	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	2	18 in.	260 lbs.
J-1534	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	3	18 in.	620 lbs.
J-1535	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	4	18 in.	840 lbs.
J-1536	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	2	24 in.	390 lbs.
J-1537	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	3	24 in.	720 lbs.
J-1538	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	4	24 in.	1160 lbs.

Extension Fixture Braces

Hot Galvanized



Used to clear buildings or trees without the use of high poles. A.T.&T. Standard.

Cat. No.	Description	Length Overall	Size Angle Inches	Size Holes Inches	Weight Per 100
J-7050	Diagonal	83 in.	$2 \times 2 \times \frac{3}{16}$	$\frac{1}{16}$ & $\frac{3}{16}$	1800 lbs.
J-7051	Back	$54\frac{1}{2}$ in.	$2 \times 2 \times \frac{1}{4}$	$\frac{1}{16}$ & $\frac{3}{16}$	1450 lbs.
J-7052	Back	$66\frac{7}{16}$ in.	$2 \times 2 \times \frac{1}{4}$	$\frac{1}{16}$ & $\frac{3}{16}$	1840 lbs.
J-7054	Vertical	$30\frac{3}{8}$ in.	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{1}{4}$	$\frac{3}{16}$	740 lbs.

Line Supplies Section

POLE LINE HARDWARE

Transposition Brackets Single Point Type

Hot Galvanized



Nos. 450 and 451 Brackets are made of $1\frac{1}{4} \times \frac{7}{8}$ -inch steel and are provided with a $\frac{3}{8}$ -inch round hole for a 2-inch No. 14 R.H. galvanized wood screw used to prevent the bracket from pulling to one side on the arm. The bracket is clamped on the arm by a carriage bolt and all brackets have holes for Cat. No. 1193 $\frac{1}{2}$ -inch Western Union Steel Insulator Pins shown on page 8. Furnished less pins, screws, insulators and bolts.

(For bolts see catalog Page No. 50; insulators, No. 66; screws, No. 50.)

Cat. No.	For Arm Size	Carriage Bolt Size	Std. Pkg.	Weight Per 100
J-450	$3\frac{1}{4} \times 4\frac{1}{4}$ in.	$\frac{3}{8} \times 4\frac{1}{2}$ in.	10	240 lbs.
J-451	$2\frac{3}{4} \times 3\frac{3}{4}$ in.	$\frac{3}{8} \times 4$ in.	10	220 lbs.

Western Union Single Circuit Type

Hot Galvanized



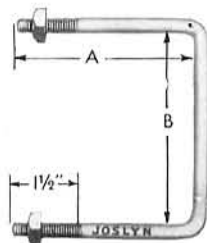
Provided with a $\frac{3}{8}$ -inch hole for a 2-inch No. 14 R.H. galvanized wood screw used to prevent the bracket from pulling to one side on the arm. See Page No. 50 for screws.

Furnished complete with wood cob and $\frac{3}{8} \times 4$ -inch carriage bolt.

Cat. No.	For Arm Size	Weight Per 100
J-8269	$2\frac{3}{4} \times 3\frac{3}{4}$ in.	288 lbs.
J-8270	$3 \times 4\frac{1}{4}$ in.	288 lbs.
J-8272	$3\frac{1}{4} \times 4\frac{1}{4}$ in.	288 lbs.

U-Bolts For Brackets

Hot Galvanized



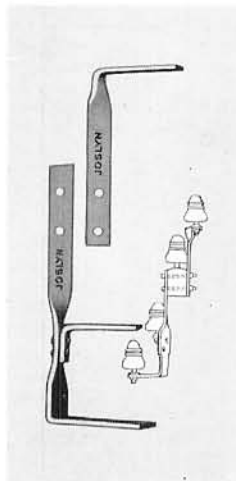
The thread size of Nos. J-0300 and J-0301 is $\frac{1}{2}$ -inch and of Nos. J-0306 and J-0302 is $\frac{3}{8}$ -inch.

Furnished complete with two square nuts.

Cat. No.	Diam. Steel Inches	For Arm Size Inches	Weight Per 100
J-0300	$\frac{1}{2}$	$2\frac{3}{4} \times 3\frac{3}{4}$	29 lbs.
J-0301	$\frac{1}{2}$	$3\frac{1}{4} \times 4\frac{1}{4}$	33 lbs.
J-0306	$\frac{3}{8}$	$2\frac{3}{4} \times 3\frac{3}{4}$	41 lbs.
J-0302	$\frac{3}{8}$	$3\frac{1}{4} \times 4\frac{1}{4}$	46 lbs.

Transposition Brackets Four Point Type

Hot Galvanized

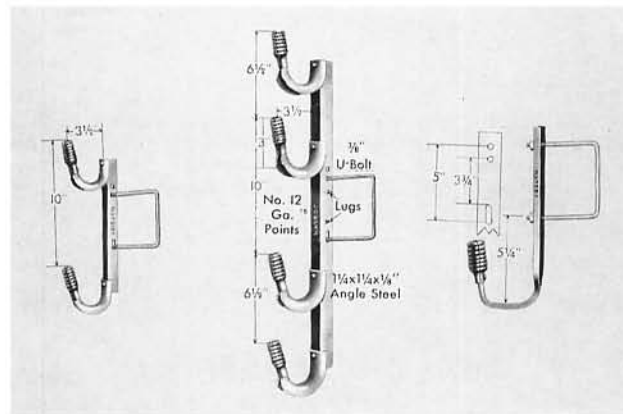


Made of $1\frac{1}{2} \times \frac{3}{8}$ -inch steel and is used for 4-wire transpositions. Fastened to the arm by two $\frac{1}{2} \times 5$ -inch machine bolts, spaced $2\frac{3}{8}$ inches apart, and has holes for Cat. No. 1193— $\frac{1}{2}$ -inch Western Union Steel Pins shown on page 8. Furnished in two parts as shown less pins, insulators and bolts. For insulators see Page No. 66 and for bolts No. 50.

Cat. No.	For Arm Size, Inches	Std. Pkg.	Weight Per 100
J-8275	$3\frac{1}{4} \times 4\frac{1}{4}$	5	680 lbs.

U-Bolt Type

Hot Galvanized



No. J-20

No. J-21

No. J-18

These brackets have pressed steel threads for insulators with 1-inch pin holes. No. J-18 is $\frac{3}{4} \times \frac{3}{8} \times 19$ -inch channel, used for light work and No. J-19 is $1 \times \frac{1}{2} \times \frac{1}{8}$ -inch channel for heavy duty.

Furnished with $\frac{3}{8}$ -inch U-Bolts for $3\frac{1}{4} \times 4\frac{1}{4}$ -inch cross arms unless otherwise specified. Can also be furnished for $2\frac{3}{4} \times 3\frac{3}{4}$ -inch cross arms.

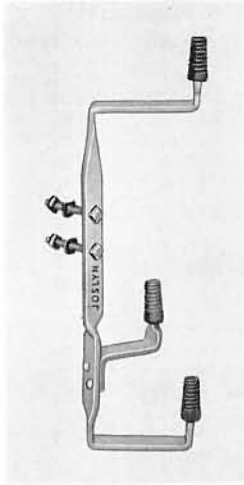
Bracket No. J-21 provides for a wire spacing of $6\frac{1}{2}$ and 10 inches and No. J-20 provides for a wire spacing of 10 inches. Points of Nos. J-21 and J-20 are 12-gauge.

When ordering please specify size of cross arm on which bracket is to be mounted.

Cat. No.	No. of Wires	Extension	Size Back	Weight Per 100
J-18	1	$3\frac{7}{8}$ in.	.....	104 lbs.
J-19	1	$3\frac{7}{8}$ in.	.....	148 lbs.
J-20	2	$3\frac{1}{2}$ in.	1 in.	206 lbs.
J-21	4	$3\frac{1}{2}$ in.	$1\frac{1}{4}$ in.	435 lbs.

POLE LINE HARDWARE

Transposition Brackets



Western Union Phantom Circuit Type Hot Galvanized

No. J-8271 is standard with the Western Union Telegraph Company.

Furnished complete with wood cobs and two 1/2x4-inch galvanized machine bolts with clipped washers.

Cat. No.	Machine Bolt Size	Weight Per 100
J-8271	1/2x4 in.	810 lbs.

Break Iron Brackets

Hot Galvanized



Used for dead ending and breaking communication system wires for a take off. Furnished complete with pins and a 1/2-x6-inch machine bolt with clipped washer.

Cat. No.	Pin Spacing	Size Wood Cob	Pin Extension	Weight Per 100
9280	6 1/2 in.	1 in.	4 1/4 in.	447 lbs.

Wire Holders

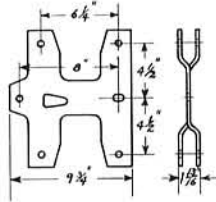


Assembled with a lead alloy which will not deteriorate and which will develop the full strength of the unit. The porcelain is of the best quality and the corners are well

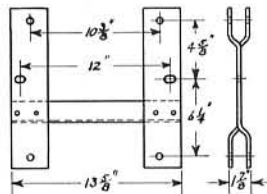
rounded to prevent breakage. Galvanized screw is No. 20x2-inch.

Cat. No.	Size of Wire Hole	Std. Pkg. Quantity	Weight Per 100
J-1980	9/16 x 3/4 in.	50	56 lbs.

Transposition Break Iron Brackets One-Piece Type Hot Galvanized



No. H-9286



No. H-9287

Furnished in two sizes. As illustrated, diagonally opposite ends are offset so that proper clearance is obtained for transposing the wires. Furnished less pins and mounting bolts.

Cat. No.	Type	Size Steel	Size Mtg. Holes	Size Pin Holes	Weight Per 100
H-9286	Double	3/8 in.	1 1/8 x 1 in.	1 1/8 in.	660 lbs.
H-9287	Riveted	3/8 in.	1 1/8 x 7/8 in.	1 1/8 in.	1100 lbs.

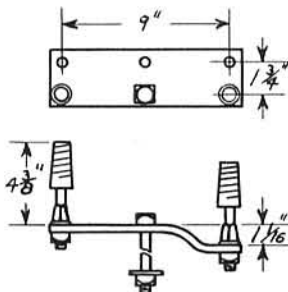
Wall Brackets Hot Galvanized



Made of pressed steel and furnished with one-inch pressed steel threads. 1 1/2-inch mounting holes.

Cat. No.	Description	Std. Pkg. Quantity	Weight Per 100
J-5	Wall Bracket	25	52 lbs.

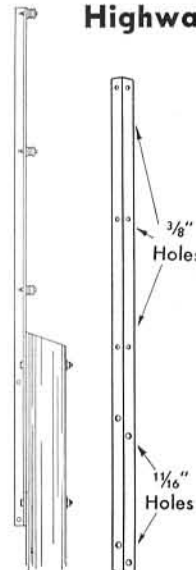
Two-Piece Type Hot Galvanized



Two No. H-9285 are needed for a transposition. Furnished complete with forged steel pins and one 5/8x6 1/2-inch machine bolt with washer. Mounting holes are 1 1/8-inch.

Cat. No.	Diam. Pin Holes	Weight Per 100
H-9285	1 1/8 in.	470 lbs.

Highway Cross-Over Brackets Hot Galvanized



Used to extend the height of a pole to carry drop wires across a road.

No. J-1207 consists of a 1 1/2x-1 1/2x 1/4-inch steel angle 7 1/2 feet long with six 3/8-inch holes for mounting porcelain knobs and two 1 1/8-inch mounting holes for 5/8-inch bolts. Holes spread 10 inches apart.

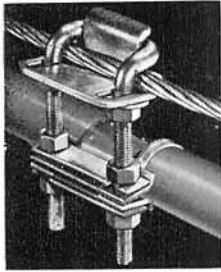
No. M-781336 consists of a galvanized steel channel, 6 1/2 feet long.

Cat. No.	Length	Wt. Per 100
J-1207	90 inches	1755 lbs.
M-781336	78 inches	921 lbs.

Line Supplies Section

POLE LINE HARDWARE

Kearney Grade Clamps



These specially designed grade clamps maintain the same clearance between messenger strand and cable that has been fixed by the cable rings used — at the same time they prevent the cable from sliding when the messenger is set on a grade. The cable is gripped firmly without injury to the lead sheath.

A wide range of clearances is provided by the adjustable feature on each of the three sizes of clamps.

The copper strap band is tinned — all other metal parts are galvanized to assure long service.

Cat. No.	Maximum Cable Size	Wt. Per 100
7551	100 Pair — 22 gauge	80 lbs.
7551-1	400 Pair — 22 gauge	88 lbs.
7551-2	900 Pair — 22 gauge	96 lbs.

Diamond Steel Grade Clamps



Used two on each side of a pole to overcome a tendency of cables to slide when the messenger is set on a grade. Made of cold rolled steel strip, hot galvanized. The three lower bolts grip the lead cable and are included. Order upper bolts and guy clamp from page 55.

Size of Clamp Inches	Minimum Cable Diameter	Maximum Cable Diameter	Std. Pkg.	Weight Per 100
2½-A	1½ in.	1⅞ in.	25	110 lbs.
2½-B	1⅞ in.	1⅞ in.	25	112 lbs.
2½-C	1⅞ in.	2⅞ in.	25	114 lbs.
3	2⅞ in.	3 in.	25	130 lbs.
3½	2¾ in.	3½ in.	20	140 lbs.
4	3¼ in.	4 in.	15	165 lbs.

Diamond Malleable Iron Grade Clamps

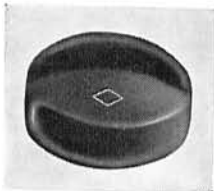


Made of refined malleable iron, hot galvanized. Each clamp is supplied with four ½-inch, high tensile bolts.

Size	Minimum Cable Size Inches	Maximum Cable Size Inches	Weight Per 100
1 in.	1⅞	1¼	425 lbs.
1⅜ in.	1⅞	1¾	460 lbs.
2 in.	1¾	2¼	560 lbs.
2½ in.	2⅞	2⅞	625 lbs.
2¾ in.	2¾	3¼	635 lbs.

Strand Connectors

Hot Galvanized



Used to connect dead ends of messenger strands when they occur between poles — results in great economy in pole line construction. The dead ends of wire strands are looped in opposite directions and held with guy clamps.

Cat. No.	Size Connector	Width of Groove	Hole Diameter	Weight Each
77	3x3½ in.	1 in.	⅝ in.	1 lb.

Wire Rope Clips

Hot Galvanized

Made of malleable iron bases and steel bolts.



Cat. No.	Size Strand	Wt. Per 100
J-1048	¼ in.	14 lbs.
J-1049	⅝ in.	19 lbs.
J-1050	¾ in.	30 lbs.
J-1051	⅞ in.	48 lbs.
J-1052	1 in.	60 lbs.

Tubase Guy Clips

Hot Galvanized

Drop forged — the two square shouldered bolts are a press fit in the square holes of the upper base, making a rigid assembly; two clamping members, two nuts.

This clip may be installed either way on the strand. The long grooves make a snug fit on the strand, provide maximum gripping surface and hold the strand firmly in line.



Cat. No.
J-3014
J-3056
J-3038
J-3022

Size Strand	Wt. Per 100
¼ inch	40 lbs.
⅝ inch	57 lbs.
¾ inch	80 lbs.
1 inch	80 lbs.

Crosby Clips

Hot Galvanized

Drop Forged — maximum grip is exerted without injury to the strand.

Cat. No.	Size Strand	Wt. Per 100
J-1038	¼ in.	30 lbs.
J-1039	⅝ in.	30 lbs.
J-1040	¾ in.	34 lbs.
J-1041	⅞ in.	70 lbs.
J-1042	1 in.	70 lbs.
J-1043	1 in.	100 lbs.



Wall Straps

Hot Galvanized



Loop Type



Guyeye Type

Used for dead ending messenger or span wires on buildings or walls — mounted with ½-inch lag screws or bolts through ⅝-inch holes.

Cat. No.	Type	Length Over All	Width	Thickness	Weight Per 100
H-8892	Loop	8 in.	1¼ in.	¼ in.	105 lbs.
H-8895	Guyeye	16⅞ in.	1½ in.	¼ in.	264 lbs.
H-8896	Guyeye	24¾ in.	1½ in.	¼ in.	351 lbs.

Cable Reinforcing Links

Hot Galvanized

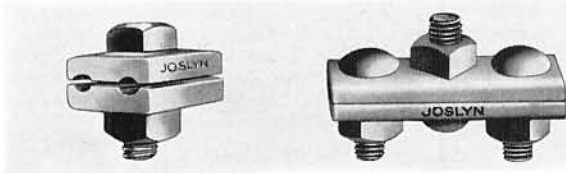


One is used on each side of the cable suspension clamp to relieve side strains at corners in the line. Fastened to the pole by ½-inch lag screws through the

double eye.

Cat. No.	Size Steel	Length	Wt. Per 100
J-7929	½ inch	8⅞ inch	110 lbs.

POLE LINE HARDWARE

Guy Clamps
Hot Galvanized

No. J-1061

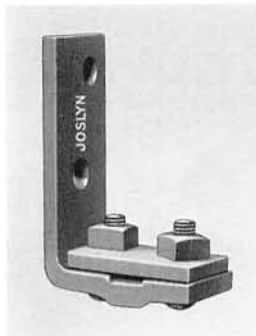
No. J-934

Rolled from structural bridge steel. The great holding power of "No-Slip" Guy Clamps is due to the diagonal ridges in the grooves which fit the lay of the strand and provide a much larger bearing surface than the smooth groove.

Nos. J-930 and J-1033 are generally considered standard.

All sizes with three or more bolts are shipped with center bolt reversed.

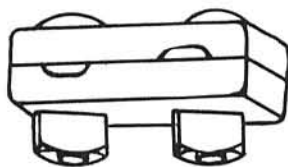
Cat. No.	Description	Length Inches	Bolt		Strand Size Inches	Pkg. Std.	Weight Per 100
			Size Inches	Size Inches			
J-1061	1-Bolt	1 5/8	1/2	5/16	3/8 & 1/4	100	62 lbs.
J-1030	2-Bolt	3 3/8	1/2	5/16	3/8 & 1/4	50	132 lbs.
J-934	3-Bolt	6	1/2	5/16	3/8 & 1/4	25	230 lbs.
J-930	3-Bolt, Std.	6	5/16	5/16	3/8 & 3/8	25	246 lbs.
J-931	3-Bolt, Std.	6	5/8	5/16	3/8 & 3/8	25	284 lbs.
J-933	4-Bolt, Hvy.	8	5/8	5/16	3/8 & 3/8	25	366 lbs.
J-929	3-Bolt	4	5/16	5/16	3/8 & 3/8	50	176 lbs.
"No-Slip" Groove							
J-1031	3-Bolt	4	5/16	5/16	3/8 & 3/8	50	176 lbs.
J-1033	3-bolt, Std.	6	5/16	5/16	3/8 & 3/8	25	246 lbs.
J-1032	3-Bolt, Hvy.	6	5/8	5/16	3/8 & 3/8	25	284 lbs.

Universal Messenger Hangers
Hot Galvanized

Forged from open hearth steel with a curved wire groove which permits its use on corners as well as on straight runs.

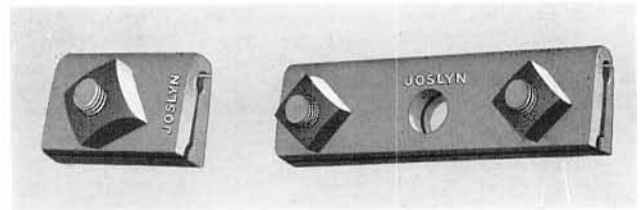
Two 1/2-inch clamp bolts hold the messenger securely in place. The hanger is mounted by means of a 5/8-inch through bolt and a 1/2-inch lag screw.

Cat. No.	Size Stock	Size Strand	Std. Pkg.	Per 100 Weight
J-1070	1/2 x 2	3/8 or larger	50	322 lbs.
J-1071	3/8 x 1 3/4	5/16 or smaller	75	238 lbs.

Cross Over Clamps
Hot Galvanized

Used for clamping messengers together when they cross each other at right angles or where cables turn corners, or branch cables leave the main points some distance away from the supporting pole. Bolts furnished are 1/2-inch oval shoulder, clamp bolts.

Cat. No.	Size—Inches	Size Strand	Std. Pkg.	Weight Per 100
J-7930	1 1/2 x 3 1/4 x 1/2	5/16 to 1/2 in.	125	160 lbs.

Cable Suspension Clamps
Hot Galvanized

No. J-1095

No. J-1096

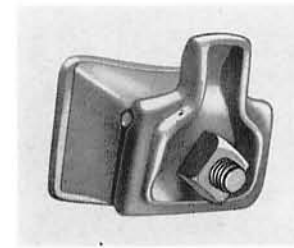
Securely grips messenger strand. Made of rolled, open hearth steel 1 1/8 inches wide x 3/8-inch thick.

In attaching to the pole a nut and square washer are placed between the clamp and pole to provide clearance for the cable. When cables are to be mounted on both sides of the pole a 5/8-inch double arming bolt is usually used instead of the through bolt.

The one-bolt type is furnished without a bolt, the 5/8-inch through bolt being used for both attaching the clamp to the pole and tightening the clamp on the strand.

The three-bolt type is furnished with two 1/2-inch high carbon steel track bolts, the center hole being left blank for the 5/8-inch through bolt.

Cat. No.	Description	Length Inches	Size Strand Inches	Std. Pkg.	Weight Per 100
J-1095	One-bolt	2 1/2	1/4 to 5/16	100	73 lbs.
J-1096	Three-bolt	5 3/4	1/4 to 5/16	50	198 lbs.

Non-Breakable Messenger Hangers
Hot Galvanized

Made of malleable iron with back curved to fit pole. It is mounted on a standard 5/8-inch through bolt. The vertical finger keeps the messenger in place while it is being pulled taut, after which the strand is dropped into the groove and the nut tightened.

Cat. No.	Size Strand	Std. Pkg.	Wt. Per 100
J-1045-1	5/16 inch or smaller	50	165 lbs.
J-1046-1	3/8 inch or larger	50	175 lbs.

Reinforcing and Safety Straps for
Suspension Clamps
Hot Galvanized

No. J-7905 is used to support the messenger bolt at points of extreme stress, such as long spans.

No. J-7906 is a safety strap which will prevent the cable from falling should the messenger give way. The upper hole fits over the messenger bolt, and the lower end is fastened to the pole by a 1/2-inch lag screw.

No. J-7907 is a combination of Nos. J-7905 and J-7906.

Cat. No.	Description	Size Steel	Std. Pkg.	Weight Per 100
J-7905	Reinforcing Strap	1 1/2 x 1/8 in.	200	32 lbs.
J-7906	Safety Strap	1 3/4 x 1/8 in.	25	64 lbs.
J-7907	Combination Strap	1 3/4 x 1/8 in.	25	100 lbs.

Line Supplies Section

POLE LINE HARDWARE

Thimbleye Bolts

Hot Galvanized

For attaching guys to poles. Eliminates strain plates, guy hooks, lags, nails and extra strand. Bolts 10 inches and shorter have 4 inches of thread; longer bolts have 6 inches of thread. All angle bolts are 45°. All 5/8-inch bolts have 1/8-inch eyes and 3/4-inch bolts have 1/2-inch eyes.

The shoulder type improved eyebolt for down guys is superior mechanically to the standard type. The shoulder prevents the curved portion being drawn into the pole and also prevents crushing the wood fibers. All angle bolts are 45°. Eye will accommodate strand with a maximum diameter of 1/2-inch.

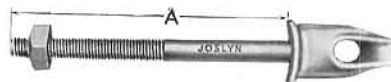
Straight Bolts



Standard package is 50.

Cat. No.	Size Inches	Weight Per 100	Cat. No.	Size Inches	Weight Per 100
J-8049	5/8 x 6	112 lbs.	J-8060	3/4 x 8	174 lbs.
J-8050	5/8 x 8	131 lbs.	J-8061	3/4 x 10	198 lbs.
J-8051	5/8 x 10	148 lbs.	J-8062	3/4 x 12	223 lbs.
J-8052	5/8 x 12	165 lbs.	J-8063	3/4 x 14	247 lbs.
J-8053	5/8 x 14	183 lbs.	J-8064	3/4 x 16	272 lbs.
J-8054	5/8 x 16	200 lbs.	J-8065	3/4 x 18	296 lbs.
J-8055	5/8 x 18	218 lbs.	J-8066	3/4 x 20	332 lbs.

Shoulder Type Straight Bolts



Cat. No.	Size	Std. Pkg.	Weight Per 100
J-8406	5/8 x 6 inches	50	133 lbs.
J-8408	5/8 x 8 inches	50	152 lbs.
J-8410	5/8 x 10 inches	50	168 lbs.
J-8412	5/8 x 12 inches	50	185 lbs.
J-8414	5/8 x 14 inches	50	203 lbs.
J-8416	5/8 x 16 inches	50	220 lbs.
J-8418	5/8 x 18 inches	50	236 lbs.
J-8420	5/8 x 20 inches	50	253 lbs.

Angle Bolts



Standard package is 50.

Cat. No.	Size Inches	Weight Per 100	Cat. No.	Size Inches	Weight Per 100
J-8149	5/8 x 6	116 lbs.	J-8159	3/4 x 6	154 lbs.
J-8150	5/8 x 8	135 lbs.	J-8160	3/4 x 8	180 lbs.
J-8151	5/8 x 10	152 lbs.	J-8161	3/4 x 10	204 lbs.
J-8152	5/8 x 12	169 lbs.	J-8162	3/4 x 12	229 lbs.
J-8153	5/8 x 14	187 lbs.	J-8163	3/4 x 14	253 lbs.
J-8154	5/8 x 16	204 lbs.	J-8164	3/4 x 16	278 lbs.
J-8155	5/8 x 18	222 lbs.	J-8165	3/4 x 18	302 lbs.

Guy assemblies can be made up on the ground and mounted on the pole afterward.

Shoulder Type Angle Bolts



Cat. No.	Size	Std. Pkg.	Weight Per 100
J-8006	5/8 x 6 inches	50	133 lbs.
J-8008	5/8 x 8 inches	50	152 lbs.
J-8010	5/8 x 10 inches	50	168 lbs.
J-8012	5/8 x 12 inches	50	185 lbs.
J-8014	5/8 x 14 inches	50	202 lbs.
J-8016	5/8 x 16 inches	50	219 lbs.
J-8018	5/8 x 18 inches	50	236 lbs.
J-8020	5/8 x 20 inches	50	252 lbs.

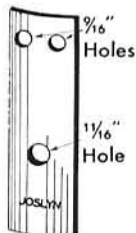
Lift plates for 5/8-inch standard thimbleye bolts have 1/8-inch holes and should be used on shoulder eyebolts where loads are excessive and guys are steep.

Lift Plates for Angle Thimbleye Bolts

Hot Galvanized

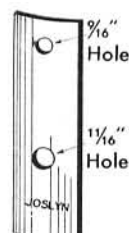
Mounted with 1/2-inch lag screws to increase load capacity of angle thimbleye bolts. All plates are 2 1/2 x 7 inches curved on a 3-inch radius. Plates for 5/8-inch eye-

bolts have 1/8-inch round holes; plates for 3/4-inch eyebolts have 1 x 1/8-inch oval holes. Packed in boxes of 100.



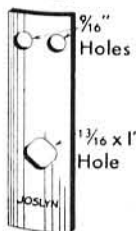
3-Hole Plates for 5/8-inch Eyebolts

Cat. No.	Thickness	Weight Per 100
J-7885	3/16 in.	94 lbs.
J-7886	1/4 in.	127 lbs.
J-7887	5/16 in.	145 lbs.



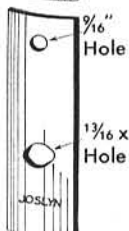
2-Hole Plates for 5/8-inch Eyebolts

Cat. No.	Thickness	Weight Per 100
J-7896	3/16 in.	94 lbs.
J-7897	1/4 in.	127 lbs.



3-Hole Plates for 3/4-inch Eyebolts

Cat. No.	Thickness	Weight Per 100
J-7889	3/16 in.	94 lbs.
J-7890	1/4 in.	127 lbs.
J-7891	5/16 in.	145 lbs.



2-Hole Plates for 3/4-inch Eyebolts

Cat. No.	Thickness	Weight Per 100
J-7893	3/16 in.	94 lbs.
J-7894	1/4 in.	127 lbs.

POLE LINE HARDWARE

Drop Forged Thimbleye Nuts

Hot Galvanized

Used on the threaded end of cross arm bolts, eye bolts, double arming bolts, straight and angle thimbleye bolts and other attachments where it is desired to convert a standard threaded bolt to a thimbleye bolt.



Thimbleye

Thimbleye Nuts

Cat. No.	Bolt Size	Maximum Strand Size	Std. Pkg.	Weight Per 100
J-6509	1/2 in.	1/2 in.	100	80 lbs.
J-6510	5/8 in.	1/2 in.	100	80 lbs.
J-6511	3/4 in.	1/2 in.	100	77 lbs.



Twineye

Twineye Nuts

Cat. No.	Bolt Size	Maximum Strand Size	Std. Pkg.	Weight Per 100
J-6515	5/8 in.	5/8 in.	100	145 lbs.
J-6516	3/4 in.	5/8 in.	100	144 lbs.

Drop Forged Thimbleyelets

Hot Galvanized

Used under the head or nut of machine bolts.



Cat. No.	Bolt Size	Maximum Strand Size	Std. Pkg.	Weight Per 100
J-6550-C	5/8 in.	5/8 in.	100	124 lbs.
J-6551	3/4 in.	5/8 in.	100	124 lbs.

Angle Thimbleyes

Hot Galvanized

Used with through bolts for down guys — eliminates the use of strain plates, guy hooks, guy thimbles, nails and lag screws and saves from 3 to 5 feet of guy strand.



Cat. No.	Diameter Bolt	Maximum Strand Size	Std. Pkg.	Weight Per 100
J-6500	5/8 in.	1/2 in.	100	118 lbs.
J-6501	3/4 in.	1/2 in.	100	118 lbs.

Guy or Jay Hooks

Hot Galvanized

Used to keep guys from slipping down. The one-bolt is recommended as it can adjust itself to the angle of the messenger whereas the two-bolt cannot and is inclined to tear the lag screws out of the pole. 1/2-inch or 5/8-inch through bolts are used for mounting. No. J-1016 is illustrated.



Cat. No.	Description	Size	Mounting Holes	Std. Pkg.	Weight Per 100
J-1016	1 bolt	1 1/4 x 1/4 x 3 in.	1/8 in.	200	32 lbs.
J-1017	1 bolt	1 1/2 x 3/8 x 3 1/2 in.	1/8 in.	200	58 lbs.
J-1018	2 bolts	1 1/2 x 3/8 x 6 in.	1/8 in.	100	86 lbs.
J-1019	1 bolt	1 3/4 x 3/8 x 4 in.	1/8 in.	100	73 lbs.

Guy Attachments

Hot Galvanized

For attaching guys to poles. Rounded, 3/4-inch strand bearing surface eliminates need for wire rope thimble and prevents injury to strand. Will take strand up to 1/2-inch diameter.

Eye extends at 45° angle from pole. Has 1/8 and 1/4-inch holes for mounting with 5/8-inch through bolt and 1/2-inch lag. Also used with bolt and thimbleye nut on guy stub.



Cat. No.	Size	Std. Pkg.	Weight Per 100
J-6505	2 x 1/4 in.	50	210 lbs.

Guy Hook Strain Plates

Hot Galvanized

Serves the double function of preventing the guy strand from slipping down the pole and from biting into the pole. The guy hook is firmly welded to the plate. Has one 1/4-inch hole for 5/8-inch through bolt, two 1/8-inch holes for 3/8-inch lag screws and four 3/16-inch holes for 10d nails.



Cat. No.	Size	Std. Pkg.	Weight Per 100
J-6577	4x8 in., No. 14 Ga.	100	139 lbs.

Wire Rope Thimbles

Hot Galvanized

Wire rope thimbles should be used on all oval eye anchor rods to give the guy wire reinforcement at rod eye and eliminate short kinks in bending.



Cat. No.	Size	Size Strand	Size Guy Rod	Weight Per 100
J-1057	3/8 in.	1/4 to 5/8 in.	1/2 to 5/8 in.	9 1/4 lbs.
J-1058	1/2 in.	3/8 to 7/8 in.	5/8 to 3/4 in.	22 lbs.
J-1059	5/8 in.	1/2 in.	1 in.	44 lbs.

Line Supplies Section

POLE LINE HARDWARE

Pole Shims
Hot Galvanized



Six or more Guy Shims are required per pole, depending on its diameter. Prevents strand from cutting into wood. Has two 1/4-inch mounting holes for 10d nails.

Cat. No.	Size Inches	Std. Pkg. Quan.	Weight Per 100
J-1035	1 3/2 x 3/2 x 8	500	43 lbs.
J-1036	1 1/4 x 1/4 x 8	400	54 lbs.

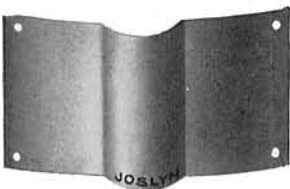
Standard Strain Plates
Hot Galvanized



Used for the same purpose as guy shims but give better protection to the pole, cost less and are cheaper to install than shims. From two to four plates are required er pole, depending on its diameter. Has four 3/2-inch mounting holes for 10d nails.

Cat. No.	Size Inches	Std. Pkg. Quan.	Weight Per 100
J-1034	4x8, No. 14 Ga.	100	83 lbs.

Moulding Strain Plates
Hot Galvanized



Used to prevent the guy strand from cutting or crushing the ground wire moulding. This plate is formed to fit over standard one-inch ground wire moulding. Has four 3/2-inch mounting holes for 10d nails.

Cat. No.	Size Inches	Std. Pkg. Quan.	Weight Per 100
J-6576	4x8, No. 14 Ga.	100	83 lbs.

Butt Plates or Hub Guards
Hot Galvanized



Used on a corner pole to protect it from the hubs of wagons and trucks. The dimensions given are those of the flat plate before bending; the guard is bent to a 7 1/2-inch radius. All holes are 1/6-inch diameter for 1/2-inch lag screws, there being three holes on each side of the No. J-1037 Guard and five on the No. J-1237.

Cat. No.	Size	Wt. Per 100
J-1037	16x18x 1/4 inches	1040 lbs.
J-1237	16x30x 1/4 inches	2550 lbs.

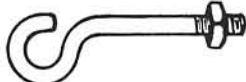
Guard Arm Braces
Hot Galvanized



Used for supporting guard arms at points on poles where a cable is suspended.

Cat. No.	Size of Steel	Hole Diameter		Shipping Wt. Per 100
		Straight End	Bent End	
H-9240	18x1 3/2 x 1/4 in.	1/8 in.	1/8 in.	170 lbs.

Guard Arm Hooks
Hot Galvanized



Used in attaching drop wires to guard arms. Threaded, with nut. Length overall is 5 7/8 inches.

Cat. No.	Diam. of Steel	Diam. of Eye		Weight Per 100
		1/2 in.	7/8 in.	
H-9245	1/2 in.	7/8 in.	7/8 in.	45 lbs.

Insulator Hook Bolts
Hot Galvanized



An effective way to build long span telephone lines.

Cat. No.	Size Steel	Shank	Extension From Pole	Weight Per 100
J-2592	5/8 in.	10 in.	6 3/8 in.	297 lbs.

Messenger Dead-Ends
Hot Galvanized



For dead-ending, stub guying, etc. May be used in combination with guy loops and straight-a-way loops. Mounting holes are 1 1/4-inch for 5/8-inch bolts.

Cat. No.	Maximum Load	Weight Per 100
11	10,000 lbs.	125 lbs.

Messenger Dead-Ends with Guy Thimbles
Hot Galvanized



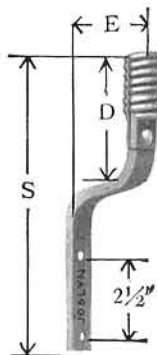
Takes the place of two fixtures — a straight-a-way and a down guy combined. Both have thimbleys with proper curvature to prevent kinking of the guy strand. The bolt holes are in a position to allow this fixture to be used in combination with guy loops. Mounting holes are 1 1/4-inch for 5/8-inch bolts.

Cat. No.	Maximum Load	Weight Per 100
100	10,000 lbs.	209 lbs.

POLE LINE HARDWARE

Channel Pole Brackets

Hot Galvanized



Channel Pole Brackets are furnished with 1-inch pressed steel threads.

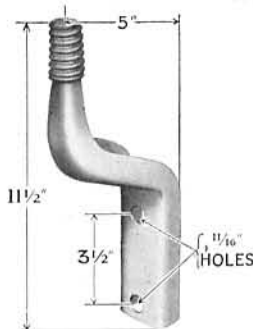
No. J-11 is made of 3/4-inch channel and No. J-12 is made of 1-inch channel. No. J-11 extends 3-inches from the pole and No. J-12 extends 3 1/2-inches.

They are fastened to the pole by means of lag screws.

Cat. No.	Length Over All Inches	Drop Inches	Channel "D" Size Inches	Hole Size Inches	Weight per 100
J-11	9	4	3/4	1 1/8	70 lbs.
J-12	10	4 1/2	1	1 1/8	116 lbs.

Pressed Steel Pole Brackets

Hot Galvanized

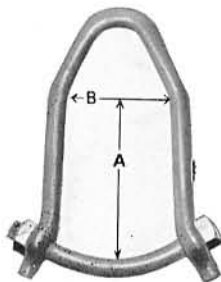


Will hold a load of 400 pounds on a dead end. Made of No. 9 gauge open hearth steel with 1-inch lead thread.

Cat. No.	Extension	Hole Size	Weight per 100
J-052	5 inches	1 1/8 in.	229 lbs.

Upset Type Steel Clevises

Hot Galvanized



Made of 1/8-inch diameter steel with 3/8-inch curved bolt. Ultimate strength, 8000 pounds. The stock is first formed to a U shape and then heated and forged, both ends at once; therefore, both arms are of equal length. The clevis fits the insulator, can be installed easily and because it is symmetrical, does not throw unequal strain on the insulator.

Cat. No.	Dimensions		Weight per 100
	A	B	
J-701	3 in.	1 1/2 in.	65 lbs.
J-702	4 in.	1 1/2 in.	70 lbs.
J-703	3 in.	1 3/4 in.	66 lbs.
J-704	4 in.	1 3/4 in.	75 lbs.
J-52	2 1/2 in.	1 5/8 in.	61 lbs.
J-705	3 in.	2 in.	68 lbs.
J-706	4 in.	2 in.	80 lbs.
J-707	3 in.	2 1/4 in.	81 lbs.
J-708	4 in.	2 1/4 in.	84 lbs.
J-709	5 in.	2 1/4 in.	86 lbs.
J-710	3 in.	2 1/2 in.	75 lbs.
J-711	4 in.	2 1/2 in.	83 lbs.
J-712	5 in.	2 1/2 in.	89 lbs.

Insulated Fork Bolts

Hot Galvanized



No. J-86 with Lag Screw

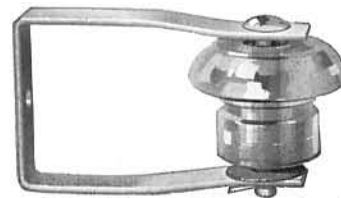
Insulated Forks are made of open hearth steel, 1 1/2-inches wide by 1/4-inch thick. Used as span wire supports; provided with No. J-24 insulator. All bolts are 1/2-inch in diameter.

No. J-24 Insulator is 1 7/8-inches in diameter and 1 7/8-inches high with 3/8-inch groove. From center of insulator pin to back of fork, 2 1/2-inches.

Cat. No.	Description	Weight per 100
J-79	Insulated Fork Only	130 lbs.
J-86	Insulated Fork; 1/2 x 4-inch Lag Screw	153 lbs.
J-87	Insulated Fork; 1/2 x 4 1/2-inch Machine Bolt	163 lbs.
J-89	Insulated Fork; 1/2 x 8-inch Machine Bolt	175 lbs.
J-90	Insulated Fork; 1/2 x 10-inch Machine Bolt	190 lbs.
J-91	Insulated Fork; 1/2 x 12-inch Machine Bolt	199 lbs.
J-92	Insulated Fork; 1/2 x 14-inch Machine Bolt	209 lbs.

Dead End Shackles

Hot Galvanized



Used for dead-ending. The shackle is made to clamp around a 3 1/4 x 4 1/4-inch cross arm and is held in position by a 3/8-inch lag screw.

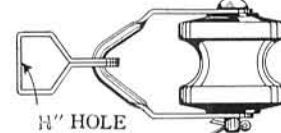
The glass insulator is cushioned from the metal of the bolt and yoke by a lead sleeve and lead washer.

Glass or porcelain insulator should be ordered separately.

Cat. No.	Description	Weight Per 100
J-8290	Shackle Complete less Insulator	250 lbs.
J-109	Glass Insulator for No. J-8290	175 lbs.
J-0612	Porcelain Insulator	170 lbs.

Swinging Brackets

Hot Galvanized



Used for service drops—will readily adapt itself to any angle. Furnished complete with insulator which is held by a 3/8-inch pin and cotter pin in the 3/8 x 3/4-inch

bale. Bale swings freely in the Clevis which is made of 1 3/4-inch x No. 11 gauge steel. Clevis part is fastened by the nut of the pole bolt.

Cat. No.	Insulator No.	Type of Insulator	Weight Per 100
J-1626	J-100	Dry Process	119 lbs.
J-1624	J-150	Wet Process	119 lbs.

"Farmyard" Service Brackets

Hot Galvanized

Used for dead ending and drops. Can be used equally well on poles or buildings. Furnished complete with insulator which is held in place permanently with a spun copper rivet.

Bracket is mounted with a 3/8-inch carriage or machine bolt or two 1/4-inch lag screws.

Dead end strength, 1800 pounds.



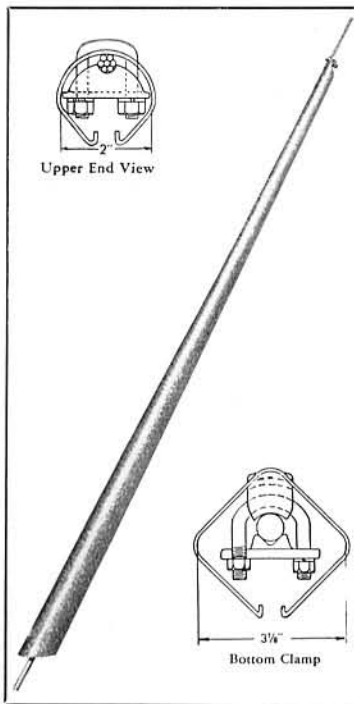
Cat. No.	Insulator No.	Weight per 100
J-111	J-100	125 lbs.

Line Supplies Section

POLE LINE HARDWARE

Joslyn Guy Guards

Hot Galvanized



The tapered, cylindrical guy wire protector is used largely in densely populated districts for greater protection to pedestrians and children. It is a good will builder in another way, too, as it materially improves the appearance of the guy wire.

The protector completely covers and conceals the anchor and clamp. To install, clamp the bottom fitting to the guy rod, slip the guard down over the guy clamps, engaging the tongue of the fitting, then clamp the top fitting to the guy strand.

The swivel type clamps make it unnecessary to remove any bolts or nuts while attaching the two clamps. These

clamps, which are easy to install apply the pressure firmly and directly to the guy strand and rod.

Clamp parts are made of open hearth steel, either stamped or forged for greater strength. Guards are seamed along the lower edge for rigidity and are hot galvanized after fabrication.

Both light and heavy type guards are provided with the same U-bolt clamps and both types are $3\frac{7}{8}$ inches wide at the lower end, allowing ample room for guy clamps.

Cat. No.	Type	Length	Width at Top	Width at Bottom	Gauge Steel	Weight Per 100
J-1617	Light	7 ft.	2 in.	$3\frac{7}{8}$ in.	18	1200 lbs.
J-1618	Light	8 ft.	2 in.	$3\frac{7}{8}$ in.	18	1350 lbs.
J-1604	Heavy	7 ft.	3 in.	$3\frac{7}{8}$ in.	16	1600 lbs.
J-1605	Heavy	8 ft.	3 in.	$3\frac{7}{8}$ in.	16	1800 lbs.

Bierce Guy Guards

Hot Galvanized

Sure-Grip Guy Guards are half round—fastened by means of a hook clamp to the guy rod, with one U-clamp to the strand on the 7-foot and two U-clamps on the 8-foot protector. The hook clamp which simplifies installation is hooked on the guy wire with the protector in a vertical position. The protector is then brought down on the guy wire and clamped in place with a U-clamp. Holds surely on $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$ or 1-inch guy rods.

Made of 14 gauge steel formed in a semi-circular shape.

Cat. No.	Length	Gauge Steel	Wt. Per 100
J-1667	7 ft.	14 gauge	1050 lbs.
J-1668	8 ft.	14 gauge	1200 lbs.

Matthews Guy Guards

Hot Galvanized



Stazrite Guy Guards cover and make visible and safe guy rods and guy wires. At the same time complete ventilation is provided around the guy strand preventing the accumulation of wet leaves, moisture, snow and ice which would accelerate corrosion.

Easily installed without special tools. Consists of one piece only which when installed becomes an integral part of the guy. Clamping member is integral with the sheet metal of the guard which will lock it on the guy wire. So designed the galvanizing on the guard and the strand will not be scarred or crushed when attaching the guard to one bolt of the guy clamp.

Available in two types—"Half Round" and "Full Round."

Cat. No.	Description	Length	Diam.	Metal	Wt. Per 100
7514	Half Round	7 ft.	3 in.	14 gauge	950 lbs.
1483	Half Round	8 ft.	3 in.	14 gauge	1100 lbs.
7016	Full Round	7 ft.	3 in.	16 gauge	1200 lbs.
8016	Full Round	8 ft.	3 in.	16 gauge	1300 lbs.
8118	Full Round	8 ft.	3 in.	18 gauge	1100 lbs.



U-Cable Guards and Straps

Hot Galvanized

Protects cables entering the ground at the base of poles or sides of buildings.

Made from 14-gauge sheet steel, formed into a U shape. This U shape provides the additional strength necessary against collision and the rounded surface protects the pedestrian.

Cat. No.	Length	Inside Width	Std. Pkg.	Weight Per 100
J-984	8 ft.	$1\frac{1}{8}$ in.	5	600 lbs.
J-985	6 ft.	$1\frac{1}{8}$ in.	5	480 lbs.
J-986	5 ft.	$2\frac{3}{8}$ in.	5	770 lbs.
J-987	8 ft.	$2\frac{3}{8}$ in.	5	1250 lbs.
J-988	5 ft.	$3\frac{3}{8}$ in.	5	1350 lbs.
J-989	8 ft.	$3\frac{3}{8}$ in.	5	1800 lbs.

Mounting Straps

The Strap is made from flat steel and is shaped to fit the guard.

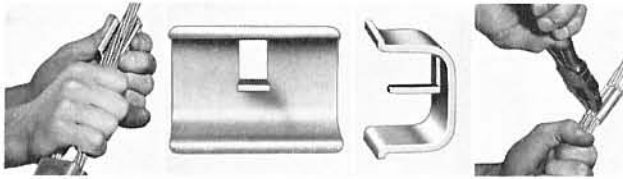
The Nos. J-995 and J-996 are fastened with $\frac{1}{4}$ -inch lag screws.

The No. J-997 strap is mounted to the pole with $\frac{3}{8}$ -inch lag screws.

Cat. No.	Size Steel	Used With Cable Guards	Diam. Holes	Std. Pkg.	Weight Per 100
J-995	$\frac{1}{8} \times \frac{3}{4}$ in.	J-985	$\frac{3}{8}$ in.	700	14 lbs.
J-996	$\frac{1}{8} \times \frac{3}{4}$ in.	J-986-7	$\frac{3}{8}$ in.	300	19 lbs.
J-997	$\frac{3}{8} \times 1$ in.	J-988-9	$\frac{3}{8}$ in.	100	60 lbs.

POLE LINE HARDWARE

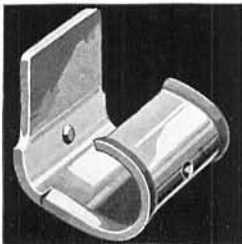
Matthews Wire Clips



Used to eliminate the cost of serving guy strand or drop service wire. The patented tongue is pushed between the two wires and then the lips are pulled together by a pair of pliers. This clamps the wires against the tongue so that there is no slippage or loosening under 150 pounds of pull.

Cat. No.	Material	Size of Strand	Weight Per 100
22	Aluminum	1/4 in.	2 1/2 lbs.
23	Aluminum	5/16 in.	2 1/2 lbs.
24	Aluminum	3/8 in.	2 1/2 lbs.
25	Aluminum	7/16 in.	3 lbs.
26	Aluminum	1/2 in.	3 lbs.
32	Galv. Iron	1/4 in.	4 1/2 lbs.
33	Galv. Iron	5/16 in.	4 1/2 lbs.
34	Galv. Iron	3/8 in.	4 1/2 lbs.
35	Galv. Iron	7/16 in.	5 lbs.
36	Galv. Iron	1/2 in.	5 lbs.

Kearney Guy Wire Clips

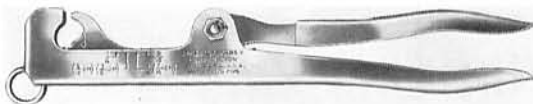


Used to serve up strand ends. Copper, aluminum or galvanized iron clips are available.

Half formed to fit the strand so that with the use of linemen's pliers, the time required for installing is approximately one-fourth that of serving the strand ends.

Cat. No.	Material	Size of Strand	Strand Rating	Weight Per 100
400	Aluminum	1/4 in.	4M	2 lbs.
36	Aluminum	5/16 in.	6M	2 lbs.
37	Aluminum	3/8 in.	10M	2 1/2 lbs.
38	Aluminum	7/16 in.	16M	2 1/2 lbs.
401	Aluminum	1/2 in.	25M	2 3/4 lbs.
39	Aluminum	5/16 in.	...	2 3/4 lbs.
402	Galvanized Iron	1/4 in.	4M	3 lbs.
336	Galvanized Iron	5/16 in.	6M	3 lbs.
337	Galvanized Iron	3/8 in.	10M	3 1/2 lbs.
338	Galvanized Iron	7/16 in.	16M	3 1/2 lbs.
403	Galvanized Iron	1/2 in.	25M	4 lbs.
339	Galvanized Iron	5/16 in.	...	4 lbs.

Kearney Guy Wire Clip Tool



Provides an efficient means of quickly installing Guy Wire Clips. Made of stamped steel. A latch ring is provided for hanging on the lineman's belt.

Cat. No.	Description	Wt. Each
2102	Guy Wire Clip Tool	3 lbs.

Kearney Strand Bands

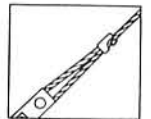


Used to secure the strand ends which extend beyond the guy clamp on messenger strand dead ends, messenger strand splices, guy and strain insulator installations, etc. They also take the place of friction tape or iron wire in securing the ends of steel strand wire when cutting it.

The band consists of a piece of stamped aluminum or copper formed with a reverse bend along the edge. By placing this reverse bend over the opposite edge and bending this edge back upon itself a tight interlocking seam is formed. Ordinary pliers are used to crimp into a secure, form fitting ferrule.

Catalog Number	Aluminum	Copper	Size of Strand	Type	Weight Per 100	
					Aluminum	Copper
5904-1	6869-1	1/4 in.	One Strand	1/2 lb.	1 1/2 lbs.	
5905-1	6870-1	5/16 in.	One Strand	1/2 lb.	2 lbs.	
5906-1	6871-1	3/8 in.	One Strand	3/4 lb.	2 1/4 lbs.	
5907-1	6872-1	7/16 in.	One Strand	3/4 lb.	2 3/4 lbs.	
5908-1	6873-1	1/2 in.	One Strand	1 lb.	3 lbs.	
5904-2	6869-2	1/4 in.	Two Strand	3/4 lb.	2 lbs.	
5905-2	6870-2	5/16 in.	Two Strand	3/4 lb.	2 1/4 lbs.	
5906-2	6871-2	3/8 in.	Two Strand	1 lb.	2 3/4 lbs.	
5907-2	6872-2	7/16 in.	Two Strand	1 lb.	3 1/4 lbs.	
5908-2	6873-2	1/2 in.	Two Strand	1 1/4 lbs.	3 1/2 lbs.	

Servisleeves



Hot Galvanized

Used to serve up strand ends—quickly installed by slipping the sleeve over the guy wire, belled end toward the clamp and driving it down over the loose end of the strand. Six inches of loose strand should be left extending beyond the clamp. Retains its original shape and maintains a rigid grip on the guy strand.

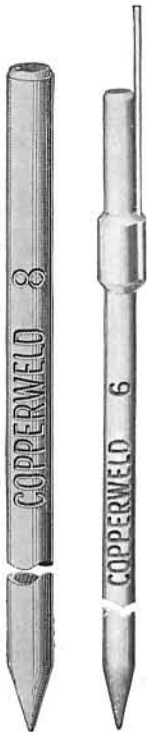
Cat. No.	Strand Size	Length Over All	Weight Per 100
H-7451	5/16 in.	1 1/4 in.	2.2 lbs.
H-7452	1/4 in.	1 3/8 in.	3.4 lbs.
H-7453	7/16 in.	1 1/2 in.	5.5 lbs.
H-7454	3/8 in.	1 3/4 in.	7.8 lbs.
H-7455	7/16 in.	2 in.	11. lbs.
H-7456	1/2 in.	2 1/4 in.	14.3 lbs.

Line Supplies Section

POLE LINE HARDWARE

Copperweld Ground Rods

Without Wires



The Copperweld Ground Rod is non-rusting. Its heavy exterior layer of pure copper is inseparably molten-welded to the steel core, assuring dependability and long life.

The rod is rigid and easy to drive. The core, of specially selected steel, provides "stiffness" sufficient for driving in any soil.

When a Copperweld Ground Rod is used with a copper ground wire, the connection is copper to copper. There is no danger of harmful corrosion or increased rod-to-wire contact resistance.

The top end of the Copperweld Ground Rod is chamfered to reduce "mushrooming" during driving. Clamp may be slipped over the top of the rod after driving.

The top 5 inches of the Copperweld Ground Rod is tinned to facilitate soldering, if soldered connections are desired.

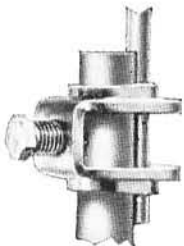
Cat. No.	Size	Standard Bundle	Weight Per 100
J-8315	3/8 in. x 5 ft.	10	200 lbs.
J-8316	3/8 in. x 6 ft.	10	240 lbs.
J-8287	3/8 in. x 7 ft.	10	280 lbs.
J-8325	1/2 in. x 5 ft.	10	340 lbs.
J-8326	1/2 in. x 6 ft.	10	410 lbs.
J-8327	1/2 in. x 7 ft.	10	480 lbs.

With Annealed Copper Pigtails

The cold drawn Copperweld 3/8-inch Ground Rod is as stiff as ordinary half-inch rod. In the five and six-foot lengths it is as easy to drive as a larger diameter ground rod, and provides an economical, dependable non-rusting ground.

Cat. No.	Size	Pigtail	Std. Pkg.	Weight Per 100
J-7105	3/8 in. x 5 ft.	18 inches	10	225 lbs.
J-7106	3/8 in. x 6 ft.	18 inches	10	265 lbs.
J-7107	3/8 in. x 7 ft.	18 inches	10	305 lbs.
J-7205	3/8 in. x 5 ft.	36 inches	10	235 lbs.
J-7206	3/8 in. x 6 ft.	36 inches	10	275 lbs.
J-7207	3/8 in. x 7 ft.	36 inches	10	315 lbs.

Reliable Ground Wire Clamps



Made of Everdur for copper and copperweld ground rods or made of steel, galvanized and tinned for steel ground rods. Maintains high pressure contact directly between wire and rod — giving maximum conductivity to joint.

Cat. No.	Material	Rod Size Inches	Ground Wire Size B&S Max.	Min.	Weight Per 100
E48	Everdur	3/8 or 1/2	# 1	# 14	10 lbs.
S48	Steel	3/8 or 1/2	# 4	# 14	10 lbs.
E58	Everdur	1/2 or 5/8	# 3/0	# 8	16 lbs.
S58	Steel	1/2 or 5/8	# 1/0	# 14	16 lbs.
E68	Everdur	5/8 or 3/4	# 3/0	# 8	18 1/2 lbs.
S68	Steel	5/8 or 3/4	# 1/0	# 14	18 1/2 lbs.

Ground Rods

Hot Galvanized

Without Wire



The unwired type has a drilled hole 5/16-inch in diameter for inserting the ground wire, which also facilitates soldering.

Cat. No.	Size	Standard Bundle	Weight Per 100
J-1102	3/8 in. x 5 ft.	20	190 lbs.
J-1103	3/8 in. x 6 ft.	20	230 lbs.
J-1104	1/2 in. x 5 ft.	20	334 lbs.
J-1105	1/2 in. x 6 ft.	20	400 lbs.
J-1106	1/2 in. x 7 ft.	10	468 lbs.
J-1120	1/2 in. x 8 ft.	10	534 lbs.
J-1107	5/8 in. x 6 ft.	10	600 lbs.
J-1108	5/8 in. x 7 ft.	10	700 lbs.
J-1109	5/8 in. x 8 ft.	10	800 lbs.
J-1110	5/8 in. x 10 ft.	5	1000 lbs.

With Wire

The Wired Type has five turns of .104-inch tinned copper wire (free end 18 inches long) soldered to the upper end of the rod, insuring a perfect electrical connection.

Cat. No.	Size	Standard Bundle	Weight Per 100
J-1098	1/2 in. x 5 ft.	10	342 lbs.
J-1099	1/2 in. x 6 ft.	10	408 lbs.
J-1100	5/8 in. x 6 ft.	10	608 lbs.
J-1148	5/8 in. x 8 ft.	10	808 lbs.

Copperweld Ground Wire Clamps



Standard Type
With Safety Set Screw



Type "B"
With Safety Set Screw

Bronze Ground Wire Clamps are designed for use with copper and Copperweld Ground Rods. These clamps eliminate the need for soldered connections and provide dependable electrical and mechanical connections between the grounding wires and the ground rods.

These clamps are regularly available with either the safety set screw or the square head bolt. Hexagonal wrenches are furnished free with clamps equipped with the safety set screw.

Standard Type—Cast Bronze Body

Cat. No.	With Safety Set Screw	With Square Head Bolt	Size Rod	Takes Ground Wire Size	Weight Per 100
J-8390	J-8490	3/8 in.	6 to 12 A.W.G.	25 lbs.	
J-8391	J-8491	1/2 in.	4 to 10 A.W.G.	30 lbs.	
J-8392	J-8492	5/8 in.	3/8 in. Strand to 8 A.W.G.	55 lbs.	

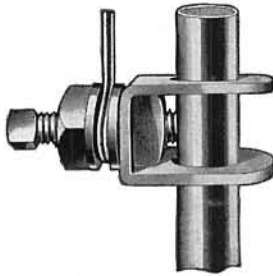
Type "B"—Drawn Bronze Body

Cat. No.	With Safety Set Screw	With Square Head Bolt	Size Rod	Takes Ground Wire Size	Weight Per 100
J-5490	J-5590	3/8 in.	6 to 14 A.W.G.	8 lbs.	
J-5491	J-5591	1/2 in.	2 to 10 A.W.G.	13 lbs.	

POLE LINE HARDWARE

Kling Ground Clamps

Hot Galvanized

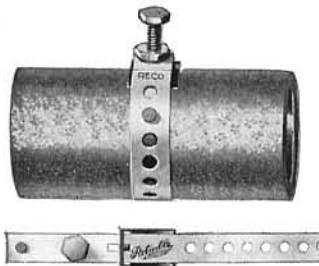


For connecting ground wires to 1/2-inch and 5/8-inch ground rods. The set screw has a cup point which bites a circle into the rod forming a perfect electrical contact. The nut arrangement forms a positive lock and will accommodate any size of ground wire, either iron or copper.

Clamps should be attached before rod is driven.

Cat. No.	Description	For Rod Diameter	Weight Per 100
J-8341	Kling Ground Clamp	1/2 in.	13 lbs.
J-8342	Kling Ground Clamp	5/8 in.	15 1/2 lbs.

Adjustable Ground Clamps



The most approved method of making ground connections at subscriber's stations where water pipes are available and it is inconvenient to solder ground wires onto ground rods. Made of tinned copper strips, round edged with close fitting threads.

Cat. No.	Fits	Weight Per 100
1	3/8, 1/2, 3/4 and 1 1/4-inch pipe	6 lbs.

Ground Cones



Made of heavy, continuous copper with all joints welded. There is nothing to rust or corrode, no soldered connections to come apart. Pure granular charcoal is used as a filler and aids in attracting and holding moisture about the ground.

They provide a large surface discharge area and are easily installed with an ordinary earth auger.

Furnished in two types, the cylinder type with solid walls and the more popular cone type with perforated walls.

Cat. No.	Type	Length	Diameter	Discharge Area	Weight Each
1	Cylinder—Solid	1 ft.	4 in.	340 sq. in.	4 lbs.
2	Cylinder—Solid	2 ft.	4 in.	678 sq. in.	6 lbs.
3	Cone—Perforated	1 ft.	4 in.	340 sq. in.	4 lbs.
4	Cone—Perforated	2 ft.	4 in.	678 sq. in.	6 lbs.

Pole Steps

Hot Galvanized

Used for stepping large wood poles, especially where terminal is located. Made of the best grade of open hearth steel, hot dip galvanized.

Hook Head



Fetter drive, made with a ring 6 inches from the outer end to indicate the depth to which the step should be driven into the pole.

Cat. No.	Size	Std. Pkg.	Weight Per 100
J-1116	9/16 x 9 inches	100	73 lbs.
J-1117	5/8 x 9 inches	100	84 lbs.
J-1118	3/4 x 10 inches	100	95 lbs.

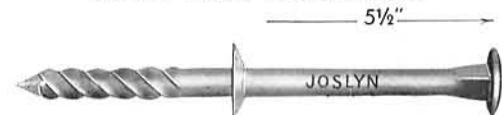
Long Hook Head



Fetter drive — used at points on the pole where line-man stands to work. The 3-inch hook prevents the foot from slipping off the end of the step.

Cat. No.	Size	Std. Pkg.	Weight Per 100
J-6126	5/8 x 10 inches	100	116 lbs.

Button Head and Shoulder



Gimlet point, made with button head and a shoulder 5 1/2 inches from the head.

Cat. No.	Size	Std. Pkg.	Weight Per 100
J-1119 1/2	5/8 x 10 inches	100	105 lbs.

Button Head



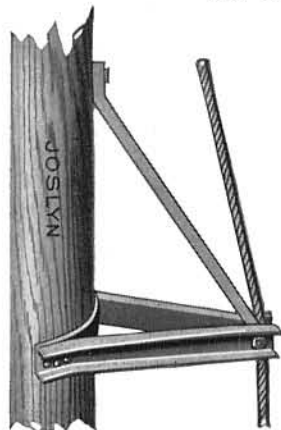
Gimlet point pole step, made with button head.

Cat. No.	Size	Std. Pkg.	Weight Per 100
J-6129	5/8 x 9 1/4 inches	100	94 lbs.

Line Supplies Section

POLE LINE HARDWARE

Pole Struts
Hot Galvanized



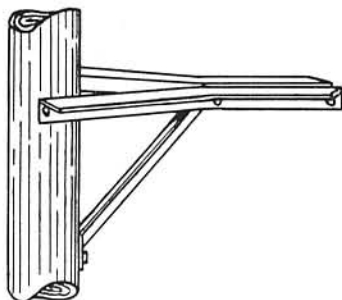
Used where it is impossible to secure space sufficient for normal guying. Where the angle is not too great or the pull not overly strong the pole can be made self-supporting with pole struts.

Slack spans should be used on both sides of poles trussed in this manner and the poles should be set in concrete, 1 foot deeper than standard. Two struts are required for each pole. Braces are 1x1/2x1/8 inch channels. Fastened to the pole by 1/2-inch lag screws.

Cat. No.	Size of Pole	Extension From Pole	Size Channel Horizontal Legs	Weight Per 100
J-0501	7 in.	11 in.	2x1/2x1/8 in.	580 lbs.
J-0500	11 in.	11 in.	2x1/2x1/8 in.	580 lbs.
J-0502	14 in.	15 in.	2x1/2x1/8 in.	840 lbs.

Cable Extension Arms

Hot Galvanized



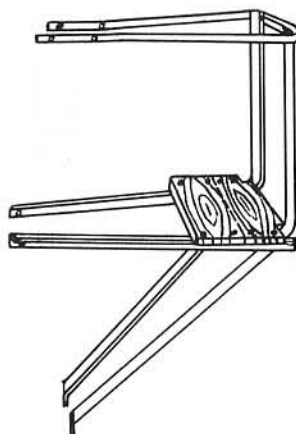
Used where it is necessary to extend cables from the pole. They are mounted at the top with one 3/8-inch through bolt. The "T" iron brace is fastened by 1/2-inch lag screws. Cables are attached by means of a short 3/8-inch machine bolt with a washer under the head. The bolt head and washer ride on top of the angles with the

shank of the bolt between the two sides.

A three-bolt cable suspension clamp No. J-1096 is attached on the machine bolt under the arm in a flat position. When drawn tight the machine bolt clamps the entire assembly firmly together. Extension of the cable from the pole can be varied 8 1/2 inches with No. H-8920 and 18 inches with No. H-8921. Mounting bolts and nuts are not included.

Cat. No.	Extension From Center of Pole	Angle Size	Weight Per 100
H-8920	26 in.	3 x 2 1/2 x 1/4 in.	3050 lbs.
H-8921	44 1/2 in.	3 1/2 x 2 1/2 x 3/16 in.	6050 lbs.

Pole Balconies
Hot Galvanized



Frame braces and guard rails are made of open hearth steel, hot galvanized. The wooden platform is made of thoroughly seasoned oak, painted with two coats of standard green pole paint.

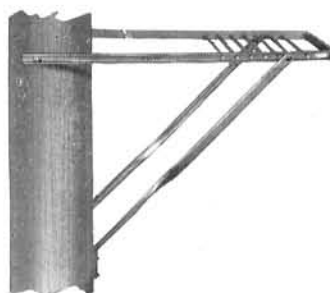
Numbers H-9035 and H-9045 are the same except that the railing on No. H-9035 is constructed for fastening to a telephone terminal box and the railing on No. H-9045 fastens to the pole.

The upright braces are 1 1/2 x 1 1/2 x 3/16-inch steel; the platform supports are 1 3/4 x 1 3/4 x 3/16-inch angle steel and the guard rail is 1 1/4 inches wide flat steel. The complete balcony includes all bolts for fastening the parts together but not the bolts for attaching to the pole. There are two 3/16-inch holes, two 1/8-inch holes and two 3/16-inch holes for mounting to the pole with lag screws.

Cat. No.	Size of Platform	Weight Each
H-9035	14x30 inches	63 lbs.
H-9045	14x30 inches	67 lbs.

Pole Seats

Hot Galvanized



Although light in weight, this type of seat is very rigid and strong. The frame and braces are made of 1x1/2-inch channel iron and the cross bars on the seat are of 3/8-inch square bars with the edge up, which provides a rough surface and prevents slipping. Sufficient space between the cross bars prevent ice and snow from collecting.

Six 1/2-inch lag screws are required for attaching to the pole. They are designed to fit a 10-inch diameter pole but may be fitted to 8 or 12-inch diameter poles.

Cat. No.	Size of Seat	Extension From Center of Pole	Weight Each
J-285	15x12 inches	2 ft., 4 in.	13.3 lbs.
J-287	12x12 inches	2 ft., 8 in.	12.6 lbs.

Chance Adjustable and Pivot Type Pole Platforms

Adjustable Type

Made with chain tightener for attachment to poles. Braces fold for easy transportation. Plank and brace are spruce, castings are bronze and chain is welded steel. The breaking load at the end of the platform away from the pole is 1000 pounds.

Cat. No.	Description	Size of Platform	Weight
M4901-2	Pole Platform Only	1 3/8" x 11" x 6'	38 lbs.
M4901-36	Pole Platform with Rope Railing	1 3/8" x 11" x 6'	53 lbs.

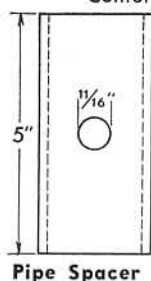
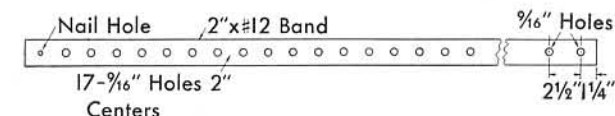
Pivot Type

Can be rotated through an angle of 180 degrees making both ends of the cross arm accessible with the same setting on the pole. Plank is Douglas Fir, brace is spruce, castings are bronze and chain is welded steel. The breaking load at the end of the platform away from the pole is 1000 pounds.

Cat. No.	Description	Size of Platform	Weight
M4901	Swivel Platform Only	1 3/8" x 10" x 6'	56 lbs.
M4901-10	Swivel Platform with Rope Railing	1 3/8" x 10" x 6'	68 lbs.

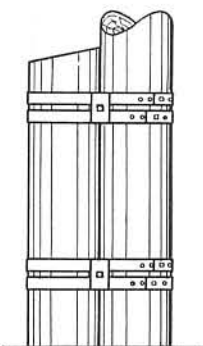
POLE LINE HARDWARE

Stubbing Bands Hot Galvanized



Pipe Spacer

Stubbing Bands are installed by nailing the end to the pole, wrapping the band around the pole and stub, and fastening the other end by a 1/2-inch lag screw through one of the end holes and one of the other holes. The assembly is drawn up tightly by means of a 5/8-inch through bolt and the pipe spacers.



Four pipe spacers and four bands are required for an assembly. Specify bolts separately.

Cat. No.	Description	Length	Wt. Per 100
J-4850	Stubbing Band	68 1/2 in.	430 lbs.
J-4851	Stubbing Band	89 1/2 in.	455 lbs.

Pipe Spacers

Cat. No.	Description	Wt. Per 100
J-4852	Pipe Spacer	215 lbs.

Stubbing Washers

Hot Galvanized

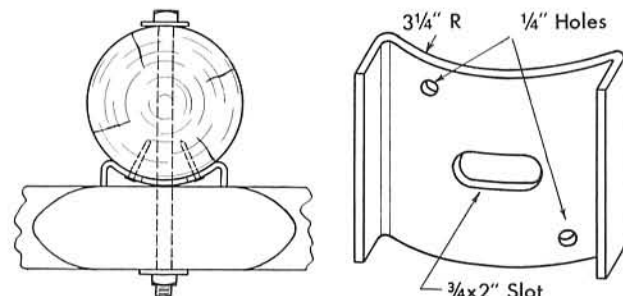


Used in securing a pole, rotted off at the butt, to a new stub. A washer is used on each end of a through bolt bolted through the pole and stub; also on each end of the bolt used for drawing together the wire wrapped around the pole and stub. Size of washer is 3 1/4 x 3 1/4 x 1/4 inches.

Cat. No.	Diam. Hole	Bolt Size	Wt. Per 100
J-133	1 1/8 in.	5/8 or 3/4 in.	76 lbs.

Pole Gains

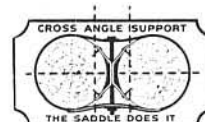
Hot Galvanized



Made of 4 x 3/8-inch flat steel. Used where it is not possible or desirable to cut a gain in the pole.

Cat. No.	Description	Wt. Per 100
J-4060	Pole Gains	147 lbs.

Samson Stubbing Clamps Hot Galvanized



Samson Stubbing Clamps make a stubbed pole line as strong as a new line, save 75% in installation labor and can be salvaged and used over again.

Catalog number includes a saddle, a clamping band and a staple. The band encircles the pole and stub. The saddle, held in compression between the pole and stub, separates them slightly, allowing ventilation and preventing any rolling or slipping. This cross angle support given the assembly is an exclusive feature of Samson Clamps. A 5/8-inch bolt of proper length is used through band and saddle, taking up the slack and making the assembly rigid and secure.

The series of holes in the band permit adjusting to various sizes.

Bolts and square washers must be ordered separately. The length of the bolt should be slightly longer than the diameter of the pole.

Cat. No.	Description	Size of Band	For Pole Diam.—Inches	Wt. Each Lbs.
J-6850	Giant No. 1	2 1/2" x No. 12 x 8'	8 3/4 to 17 3/4	9 1/2
J-6851	Junior No. 2	2 1/4" x No. 12 x 5' 10"	6 to 12 1/2	6 1/4

Samson Installing Wrenches



To simplify installation of Samson Stubbing Clamps, use the forged steel Samson Installing Wrench. One end is used for pulling the bands tight; the other pointed end is for lining up the holes.

Cat. No.	Description	Weight Each
J-6855	Samson Installing Wrench	10 lbs.

Turnbuckles

Hot Galvanized



With Hook and Eye

Used to take up the slack in guy lines. The body is a single piece forging. Furnished with either two eyes or one eye and one hook.

Cat. No.	Type	Size Bolt & Opening Inches	Over-All Closed Inches	Lgth. Open Inches	Weight Per 100
J-1021	Hook and Eye	1/2 x 6	14	20	168 lbs.
J-1022	Hook and Eye	1/2 x 9	17	26	190 lbs.
J-1023	Hook and Eye	1/2 x 12	20	32	320 lbs.
J-1231	Eye and Eye	5/8 x 9	19	28	320 lbs.
J-1232	Eye and Eye	5/8 x 12	22	34	395 lbs.
J-1234	Eye and Eye	3/4 x 12	23	35	550 lbs.

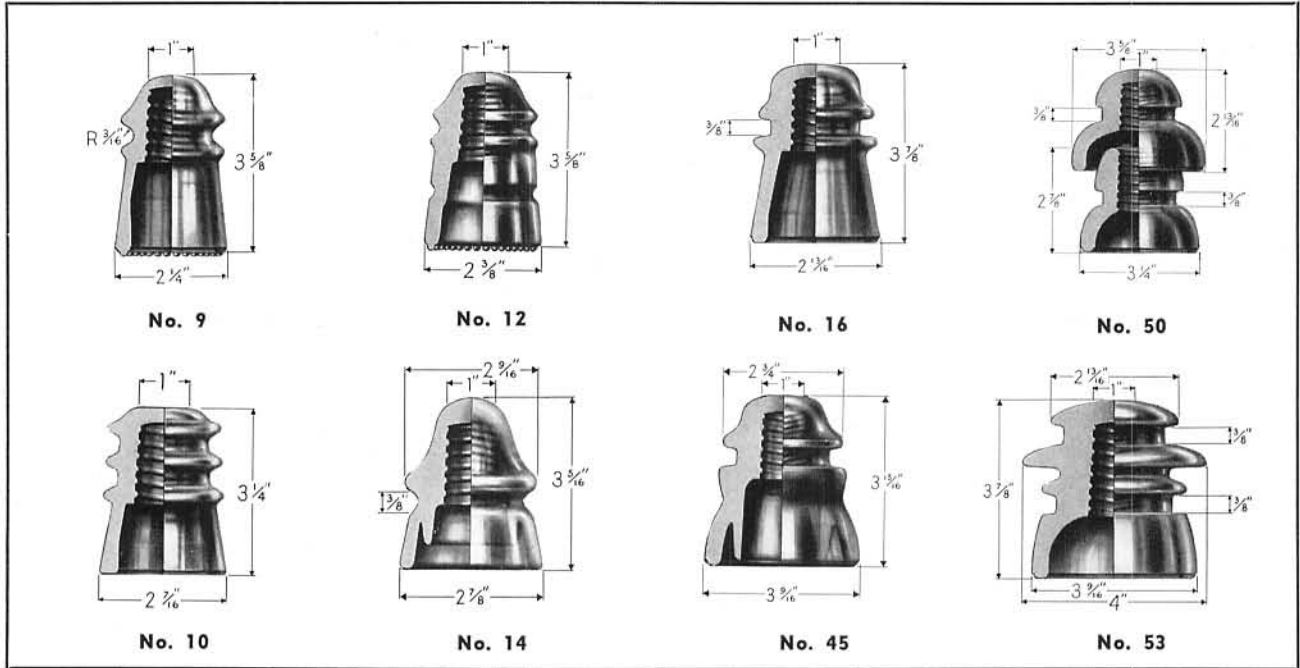
Line Supplies Section

INSULATORS

Screw Thread Glass Insulators

Made from a new and improved colorless glass which is non-porous, possesses high dielectric strength and is unaffected by sudden temperature changes.

Supplied in clear glass only and packed in corrugated cartons with each insulator in a separate compartment. Available in sizes and types illustrated below.

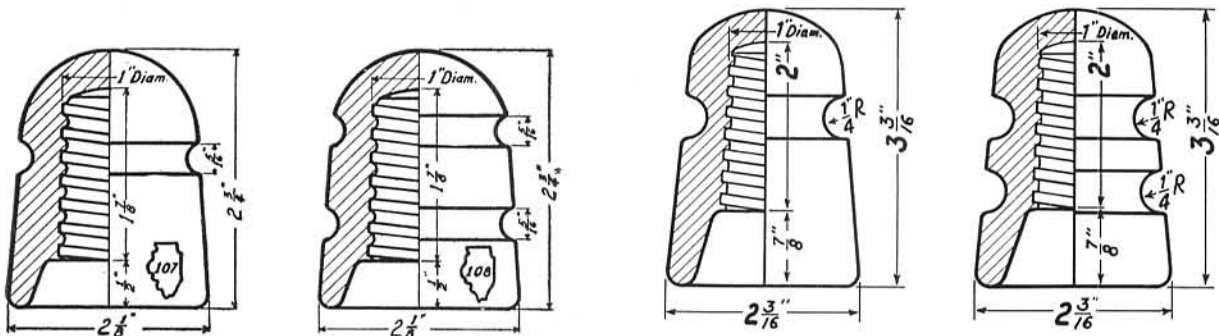


Cat. No.	Description	Weight Each	Std. Pkg. Quantity	Shipping Wt. per 1000
9	Single Groove Pony	9 oz.	50	600 lbs.
10	Exchange Line	10 oz.	50	710 lbs.
12	Double Groove Pony	10 oz.	50	670 lbs.
14	Double Groove D. P. Pony	12 oz.	50	790 lbs.
16	Long Distance, New Style	15 oz.	50	1070 lbs.

Cat. No.	Description	Weight Each	Std. Pkg. Quantity	Shipping Wt. per 1000
42*	D. P.	24 oz.	40	1613 lbs.
45	D. P.	24 oz.	40	1625 lbs.
50	Two-Piece Transposition	23½ oz.	25	1860 lbs.
53	One-Piece Transposition	28½ oz.	30	1950 lbs.

* No. 42: Size of Groove, $\frac{1}{16}$ in.; Height, $4\frac{1}{8}$ in.; Diameter, $3\frac{3}{4}$ in.

Screw Thread Porcelain Insulators

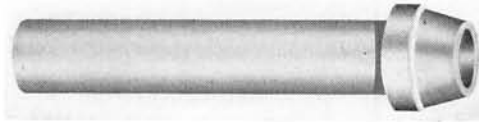


Cat. No.	Description	Std. Pkg.	Shipping Weight per 100
107	Single Groove	50	52 lbs.
108	Double Groove	50	51 lbs.

Cat. No.	Description	Std. Pkg.	Shipping Weight per 100
109	Single Groove	50	80 lbs.
112	Double Groove	50	78 lbs.

KNOBS, TUBES and SCREW EYES

Unglazed Porcelain Tubes



Length Under Head	Inside Diameter	Outside Diameter	Number per Barrel	Weight per Barrel	Weight per 1000
3 in.	$\frac{5}{16}$ in.	$\frac{9}{16}$ in.	4500	285 lbs.	65 lbs.
4 in.	$\frac{5}{16}$ in.	$\frac{9}{16}$ in.	3600	290 lbs.	80 lbs.
6 in.	$\frac{5}{16}$ in.	$\frac{9}{16}$ in.	2000	235 lbs.	120 lbs.
4 in.	$\frac{3}{8}$ in.	$\frac{11}{16}$ in.	2300	270 lbs.	117 lbs.
6 in.	$\frac{3}{8}$ in.	$\frac{11}{16}$ in.	1500	280 lbs.	180 lbs.
8 in.	$\frac{3}{8}$ in.	$\frac{11}{16}$ in.	1200	250 lbs.	210 lbs.
10 in.	$\frac{3}{8}$ in.	$\frac{11}{16}$ in.	1000	265 lbs.	265 lbs.
12 in.	$\frac{3}{8}$ in.	$\frac{11}{16}$ in.	800	290 lbs.	300 lbs.

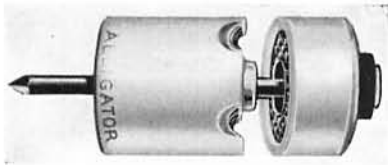


Standard Guy Strain Insulators Porcelain

Dry process, brown glaze — for telephone and radio service where the dielectric strength is not important.

Cat. No.	Length	Width	Diameter of Hole or Groove	Std. Pkg. Quantity	Weight Std. Pkg.
M-500	2 $\frac{1}{4}$ in.	1 $\frac{1}{2}$ in.	$\frac{1}{8}$ in.	100	25 lbs.
M-502	3 $\frac{1}{2}$ in.	2 $\frac{1}{2}$ in.	$\frac{1}{2}$ in.	50	120 lbs.
M-504	4 in.	2 $\frac{7}{8}$ in.	$\frac{5}{8}$ in.	50	190 lbs.
M-506	5 $\frac{1}{8}$ in.	3 $\frac{3}{8}$ in.	$\frac{3}{4}$ in.	25	320 lbs.

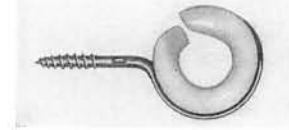
Alligator Nail Knobs



Furnished split as shown, with 3-inch cement coated 12d nails and washers. Knobs are 1 $\frac{3}{4}$ in. in height and 1 $\frac{1}{8}$ in. in diameter.

Weight per 1000, 165 lbs.

Split Insulated Screw Eyes



Convenient, small insulators that are easy to install. The porcelain ring has a $\frac{3}{32}$ -inch diagonal opening which allows the easy insertion of wires. The $\frac{1}{4}$ -inch steel screw eye is galvanized by the hot dip process.

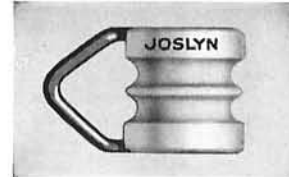
Cat. No.	Diameter of Hole	Length of Shank	Weight per 100
1962-1776	$\frac{5}{8}$ in.	1 in.	9 lbs.
1961-1777	$\frac{5}{8}$ in.	2 in.	9 lbs.
1964-1778	1 in.	1 $\frac{1}{8}$ in.	18 lbs.
1963-1779	1 in.	2 $\frac{1}{8}$ in.	20 lbs.



Insulated Screw Eyes

Over all length, 3 in.

Cat. No.	Diameter of Hole	Weight per 100
1926- $\frac{3}{8}$	$\frac{3}{8}$ in.	9 lbs.
1926- $\frac{1}{2}$	$\frac{1}{2}$ in.	9 lbs.



CB Knobs

Porcelain, double grooved knob, equipped with heavy wire holder.

Cat. No.	Description	Weight per 1000
CB 2 Groove		250 lbs.

Self-Tying Knobs



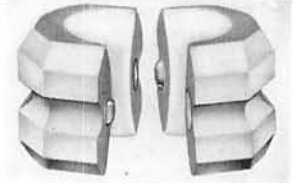
Self-tying knobs require only one screw to install. A 4-inch No. 18 flat head wood screw can be used for fastening to buildings; 4 $\frac{1}{2}$ -inch lag screw to poles; and $\frac{1}{4}$ x3 $\frac{3}{4}$ -inch expansion bolts, to brick walls. Furnished less screw. Weight per 1000, 490 lbs.

Porcelain Knobs

Cat. No.	Description	Height Inches	Diameter of Knob Inches	Size of Hole Inches	Size of Groove Inches	Number per Barrel	Weight per 1000
4-1	Groove	1 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{8}$	2000	230 lbs.
4-2	Groove	1 $\frac{1}{4}$	1 $\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{8}$	2000	225 lbs.
22	Split Knob	1 $\frac{5}{8}$	2 $\frac{1}{4}$	1	$\frac{1}{8}$	1250	332 lbs.
37	Split Knob	1 $\frac{1}{2}$	1 $\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	1800	250 lbs.
6061-2	Groove, Type A	1 $\frac{1}{2}$	1 $\frac{5}{8}$	$\frac{3}{8}$	$\frac{1}{8}$	2000	210 lbs.
6062-4	Groove, Type B	2 $\frac{1}{4}$	1 $\frac{3}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	1000	395 lbs.
6064-1	Groove, Type S	1 $\frac{5}{8}$	1 $\frac{5}{8}$	$\frac{3}{8}$	$\frac{1}{8}$	2500	150 lbs.
6065-2	Groove, Type T	1 $\frac{1}{4}$	1 $\frac{5}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	1500	245 lbs.
6066-2	Groove, Type C	1 $\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	5000	95 lbs.
1916	Buckeye	1 $\frac{3}{4}$	1 $\frac{1}{4}$	..	..	2600	180 lbs.



No. 6066



No. 22



No. 4-1



No. 4-2



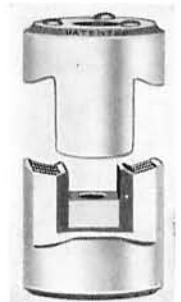
No. 6064



No. 6061



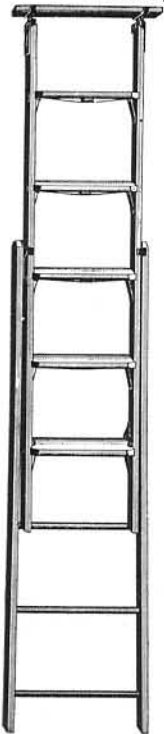
No. 6062



No. 1916

LADDERS

Utility Step-Extension Ladder



For general use as a single section stepladder, for trestle use, or as an extension ladder. Has a convenient working shelf. Steps and rungs are staggered at 6-inch intervals.

Length Used as Stepladder	Length Extended	Total Length	Weight Each
5 ft.	8 ft.	10 ft.	20 lbs.
6 ft.	10 ft.	12 ft.	24 lbs.
7 ft.	12 ft.	14 ft.	28 lbs.
8 ft.	14 ft.	16 ft.	32 lbs.
10 ft.	18 ft.	20 ft.	40 lbs.
12 ft.	22 ft.	24 ft.	48 lbs.

Blue Ribbon Extension Ladders

Made with side rails of 100% vertical grain Douglas Fir, Ladder Grade stock, and rungs of selected hickory. Side rails are reinforced by wire trussing which makes the ladder 40% stronger. Perfect alignment of rungs and rails eliminates strain on the tenon. A special gravity lock guarantees positive action with ease of operation when the extension section is used.

Furnished in Standard Extension Type, Rope and Pulley Extension Type or Windlass Extension Type. Regularly furnished with plain ends — if desired sawtooth metal points or rubber ladder shoes are available. The rubber shoe also has spikes for cutting through snowy, icy surfaces.

The standard extension type is illustrated.

Total Length Extended	Length Bottom Section	Length Top Section	Total Lineal Feet	Weight Pounds
18	10	10	20	40
20	12	10	22	44
22	12	12	24	48
24	14	12	26	52
28	16	14	30	60
30	18	14	32	64
36	20	18	38	76

Safety Platform Ladder



Approved by Underwriter's Laboratories, Inc.

Easily handled by one man. Greater flare and extra spread insure positive stability. A guaranteed hand-safe lock prevents unexpected folding. The one-piece working platform is 15½x20½ inches and is guarded on three sides. There is a large working shelf at hip level and a convenient tool holder at top of ladder.

Cat. No.	Height Over All	Height to Platform	Width of Ladder	Weight Each
3	5 ft., 7 in.	2 ft., 10 in.	22 in.	29 lbs.
4	6 ft., 7 in.	3 ft., 9 in.	24 in.	33 lbs.
5	7 ft., 7 in.	4 ft., 8 in.	25¼ in.	36 lbs.
6	8 ft., 7 in.	5 ft., 7 in.	27½ in.	43 lbs.
7	9 ft., 7 in.	6 ft., 6 in.	29¼ in.	56 lbs.
8	10 ft., 7½ in.	7 ft., 9 in.	31 in.	60 lbs.
10	12 ft., 7 in.	9 ft., 5 in.	34½ in.	73 lbs.
12	14 ft., 6½ in.	11 ft., 2¾ in.	38 in.	85 lbs.

Safety Extension Ladders

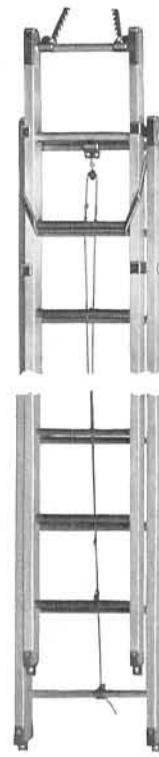
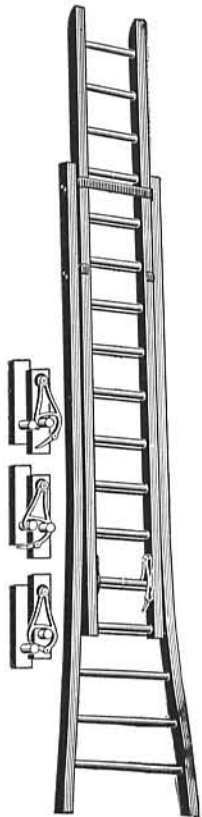
Specially designed and constructed for utilities. The side rails are made of straight grained, properly seasoned airplane spruce. Rungs are made of tough, straight-grained hickory. The side rails of each section are connected at top, middle and bottom with steel tie rods. Either section can be used separately as an individual ladder, both being equipped with safety tips and spikes.

The ladder is extended by pulling the rope which operates the automatic safety lock and raises or lowers the ladder.

Furnished complete with spring lock and with rope and pulley. Equipped with rubber faced tips, safety pole grippers and rubber guarded safety spikes.

Furnished in a complete range of lengths; weight, 2 pounds per foot.

Total Length Extended	Length Bottom Section	Length Top Section	Total Lineal Feet	Weight Pounds
18 ft.	10	10	20	40 lbs.
20 ft.	12	10	22	44 lbs.
22 ft.	12	12	24	48 lbs.
24 ft.	14	12	26	52 lbs.
28 ft.	16	14	30	60 lbs.
30 ft.	18	14	32	64 lbs.
35 ft.	20	18	38	76 lbs.



MANHOLE EQUIPMENT

Manhole Guard Rails



No. 264

Made with a completely welded construction doing away with the pipe fittings and riveted eyes which have in the past proved the weakest points in manhole guard construction.

Made of $\frac{3}{4}$ -inch black steel pipe with seamless steel tubing sleeves. Equipped with flag holder. Painted with two coats of red enamel unless otherwise specified.

A bow-shaped wing brace holds this rail absolutely rigid against collapse when in place, leaving the open side entirely free for work. Illustrated above.

Cat. No.	Size Open	Size Closed	Weight
264	32x32x42 inches high	32x2x42 inches	49 lbs.

No. 110

Same material but of lighter construction than No. 264 and with steel hook for holding it rigid while open instead of the wing brace.

Cat. No.	Size Open	Size Closed	Weight
110	32x32x42 inches high	32x3x42 inches	40 lbs.

Manhole Frames and Covers

These manhole frames and covers are made of cast iron. The weight to be used is dependent upon traffic to be supported.

Round Type

Diameter of cover is $22\frac{1}{2}$ in.
Diameter of base is 36 in.

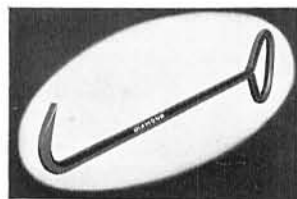
Cat. No.	Height	Weight of Base and Cover
202	9 in.	540 lbs.
204	9 in.	450 lbs.
206	9 in.	400 lbs.
208	7 in.	350 lbs.
211	6 in.	315 lbs.

Square Type

Cat. No.	Size of Opening Inches	Height Inches	Weight
278	$23\frac{1}{2}$ x35	$6\frac{1}{4}$	620 lbs.
275	24x24	5	420 lbs.
229	20x20	5	340 lbs.



Manhole Cover Hooks

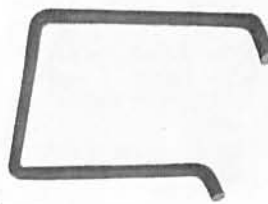


Designed to raise a heavy manhole cover by prying the wedged point end of the hook under the groove provided in the cover for the purpose.

Cat. No.	Length	Weight Each
1936	$26\frac{1}{2}$ in.	5 lbs.

Manhole Steps

Hot Galvanized



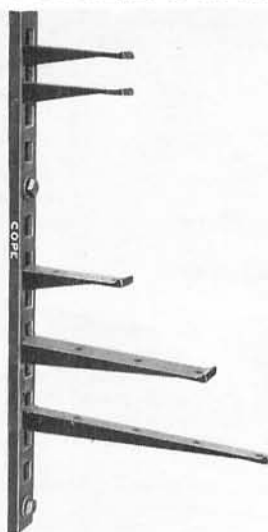
To be set into the wall of the vault. Formed from $\frac{3}{4}$ -inch round steel. Extends 8 inches from the face of the wall.

Description	Weight Per 100
Manhole Step	450 lbs.

Type T Underground Cable Racks and Arms

Hot Galvanized

The rack is $1\frac{1}{2}$ x $\frac{3}{8}$ x $\frac{3}{8}$ -inch open hearth channel with hot galvanized finish and can be either purchased in full 10-foot lengths to be cut as desired or can be supplied



already cut to any lengths desired. Punched the entire length with $\frac{3}{4}$ x $\frac{7}{8}$ -inch holes which are used for both arms and anchorage.

The arms are of malleable iron, hot galvanized — can be used on any of the similar racking now in place.

Racks

In ordering please specify the number of 10-foot lengths or the quantity of the specified lengths desired. Shipping weight is 1 lb. per ft.

Arms

Length	Weight Per 100
4 inches	38 lbs.
$7\frac{1}{2}$ inches	70 lbs.
10 inches	90 lbs.

Insulators for Type T Cable Racks

Made of porcelain, used on channel type rack — provide a smooth, rounded surface which permits creepage without injury to the cable and furnishes adequate insulation between cable and rack. Shipping weight per 100 is 100 lbs.



Steel Manhole Ladders

Hot Galvanized

Made with side bars of $1\frac{1}{2}$ x $\frac{3}{8}$ x $\frac{3}{8}$ -inch open hearth channel and rungs of $\frac{3}{4}$ -inch round steel. The rungs are completely welded to the side bars, both inside and outside and are spaced on 14-inch centers with an inside width of 12-inches between side bars.

Supplied in lengths from 6 feet to 14 feet. Approximate shipping weight per foot is 4 pounds.

Line Supplies Section

MANHOLE EQUIPMENT

Laying Mandrel



Rear end is equipped with a leather wiping washer and the forward end with a countersunk steel hoop and steel cutting edge. In ordering please specify size of the conduit with which Mandrel is to be used.

Diameter	Description	Length
3 inches	Laying Mandrel	36 inches
3½ inches	Laying Mandrel	36 inches
4 inches	Laying Mandrel	36 inches

Test Mandrel



Made to the exact size for testing conduits after laying and has tool steel cutting ends to remove concrete or other light obstructions. In ordering please specify size of the conduit with which Mandrel is to be used.

Diameter	Description	Type	Length
3 inches	Test Mandrel	Round	12 inches
3 inches	Test Mandrel	Square	12 inches
3½ inches	Test Mandrel	Round	12 inches
3½ inches	Test Mandrel	Square	12 inches
4 inches	Test Mandrel	Round	12 inches
4 inches	Test Mandrel	Square	12 inches

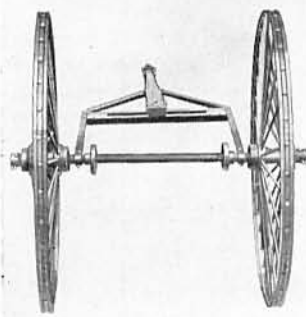
Flexible Mandrel



For testing conduits through which a rigid mandrel would not pass. Constructed of tool steel discs, mounted on a flexible wire rope securely babbitted to heavy socket eyes. It will withstand a pull of 5000 pounds. In ordering please specify size of the conduit with which Mandrel is to be used.

Constructed of tool steel discs, mounted on a flexible wire rope securely babbitted to heavy socket eyes. It will withstand a pull of 5000 pounds. In ordering please specify size of the conduit with which Mandrel is to be used.

Steel Cable Reel Wheels



Complete outfit consists of two wheels, a reel bar with guides and collars, and an adjustable tongue.

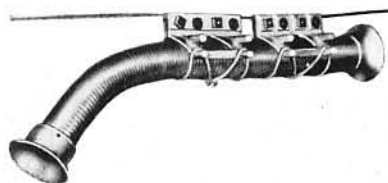
The reel bar is made of cold rolled steel shafting 2½ inches in diameter and 6 feet long and is equipped with guides to hold the reel in place and collars on ends to retain the wheels.

Designed to carry a maximum load of 6000 pounds. Wheels for a

greater load will be made up to order.

Cat. No.	Diameter of Wheels	Weight
40	4 feet	825 lbs.
50	5 feet	940 lbs.
60	6 feet	1044 lbs.
66	6½ feet	1157 lbs.
70	7 feet	1270 lbs.
80	8 feet	1384 lbs.

Cable Feeder and Straightener



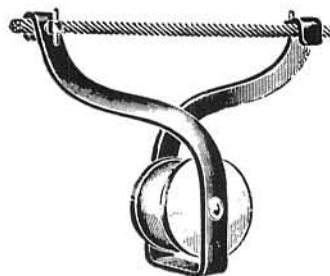
Used in placing aerial or underground cable. Wide mouth, aluminum bell and flexible steel tubing positively prevent danger to cable or

sheath. All interior surfaces are smoothly finished. The holding clamps which securely grip the messenger wire can also be used for dead-ending and splicing work. Accommodate up to 3-inch cables.

Consists of 6-foot tube and 2 pair of malleable iron clamps.

Cat. No.	Description
C-20	Aerial Cable Feeder and Straightener

"Matlock" Cable Roller



The "Matlock" Cable Roller expedites the work of running aerial cable. A suitable number of "Matlock" rollers are attached to the messenger wire, in the simple manner shown in the illustration, fastened in place by the T handle screws. The cable is then placed on to any required distance. Many feet of cable can thus be run with ease and in a short time. The roller has a metal bushing extending beyond each end. This prevents wear on the roller and keeps it in the center of the frame. The frame is forged of mild steel.

Many feet of cable can thus be run with ease and in a short time. The roller has a metal bushing extending beyond each end. This prevents wear on the roller and keeps it in the center of the frame. The frame is forged of mild steel.

Cat. No.	Description	Wt. Each
501	With Wooden Roller	4½ lbs.
502	With Iron Roller	8 lbs.

Cable Bender

This tool is designed for forming and bending cable in underground construction. Does not injure the cable sheath.

It is made of forged tool steel and comes equipped with a steel tube extension handle. Six adjustments are provided so that the tool may be used with all sizes of cable up to 2¾ inches.

The overall length with handle extended is 36 inches.

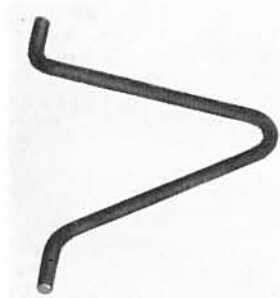


Cat. No.	Description	Weight Each
A	Cable Bender	9 lbs.

MANHOLE EQUIPMENT

Pulling-In Irons

Hot Galvanized



Pulling-In Irons are set into concrete or brick walls of street vaults opposite duct entrances to provide a strong attachment for the blocks used in installing or removing cable. Made of 7/8-inch round steel to extend 10 inches from the wall.

Description	Wt. Per 100
Pulling-In Iron	700 lbs.

Conduit Straps

Hot Galvanized



Used for attaching 2 or 3-inch vertical conduit or pipe to wood poles. They are made of 1/4 x 1-inch steel, and have 1/8-inch holes for 3/8-inch lag screws. Hot galvanized after forming. Order by piece.

Cat. No.	For Conduit Size	Weight Per 100
8925-7925	2 inches	89 lbs.
8926-7926	3 inches	107 lbs.

Cable Duct Shields

Hot Galvanized



Protects cable sheaths at entrance to ducts—absorbs creepage wear due to the expansion and contraction of the sheaths. Made of 18 gauge steel, hot galvanized.

Diameter	Wt. Per 100
3 in.	25 lbs.
3 1/2 in.	40 lbs.

Manhole Sheave



For pulling cable or carrying the winch line at right angles. May be used on the end of a truck or over the edge of a manhole in connection with a snatch block in the manhole.

Will handle cable up to 3 inches in diameter or any size winch line.

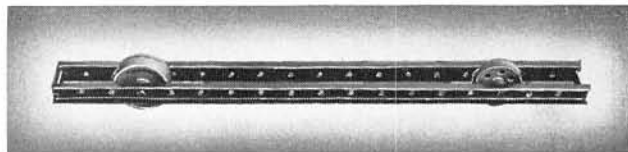
Cat. No.	Large Sheave		Small Sheave		Weight Each
	Diam.	Width	Diam.	Width	
220	7 1/4 in.	3 in.	4 3/4 in.	3 in.	100 lbs.

No. PU-40 Cable Feeder



Designed to protect and guide underground cables into ducts, particularly in congested manholes. Consists of a 7 foot and a 3 foot length of 4-inch galvanized flexible metal hose which may be joined together to make up an uninterrupted length — also two nozzles, one for 3-inch ducts and one for 3 1/2-inch ducts. Extra lengths of hose and extra nozzles for various size ducts may be obtained. Catalog No. PU-40, weight 100 lbs.

Cable Pulling Skids and Sheaves



For leading the pulling line from the mouth of the duct out through the manhole to the capstan or winch. The skids have pin holes every 6 inches from top to bottom so that the sheaves can be placed to correspond to the height of the duct and top of manhole.

Standard length is 9 feet. Shipping weight per set, 231 lbs. 10 and 12-foot lengths are also available.

Screw Coupling Conduit Rods



Constructed of the highest grade materials. Couplings are bronze, cast in octagon shape with 3/4-inch U. S. standard threads. Furnished in two sizes, 7/8 and 1-inch.

Description	Diameter of Rod	Length	Weight Per 100
Straight Stick	7/8 inch	3 feet	155 lbs.
Straight Stick	7/8 inch	4 feet	185 lbs.
Straight Stick	1 inch	3 feet	195 lbs.
Straight Stick	1 inch	4 feet	235 lbs.
Swell Center Stick	1 inch	3 feet	220 lbs.
Swell Center Stick	1 inch	4 feet	260 lbs.

Quick Coupling Conduit Rods



Made of best grade hickory, straight grained and toughened by an oil process to insure long life. The castings are

malleable iron and are power driven onto the sticks and securely riveted.

Length	Description	Weight Each
2 ft. rod	Straight Stick	1 lb.
3 ft. rod	Straight Stick	2 lbs.
4 ft. rod	Straight Stick	2 1/2 lbs.
3 ft. rod	Swell Center Stick	2 1/4 lbs.
4 ft. rod	Swell Center Stick	2 3/4 lbs.

No. PU-27 Cable Sheave and Shackle



May be used in place of the pulling-in frame when it is possible or advisable to locate the rear of the truck directly over the manhole.

The device is attached to the manhole pulling iron and the winch line goes over a roller or sheave at the rear of the truck, then down and under the cable sheave and shackle and thus into the duct. The sheave is made of aluminum and has a groove large enough to take a 2 5/8-inch cable. Hook is drop forged.

Cat. No.	Diameter of Wheel	Weight
PU-27	20 in.	51 lbs.

Line Supplies Section

MISCELLANEOUS

Kellogg Special Wiping Solder



Kellogg Special Wiping Solder is made to Kellogg's rigid specifications and because of its quality is recommended for all cable splicing. Length of bar, 13 in. Weight per bar, 1 1/2 lbs.

No. 111 Bar Solder

Ordinary bar solder, "Half and Half", also for cable splicing. Length of bar, 13 inches. Weight per bar, 1 1/4 lbs.

No. 776 Bar Solder

40-60 wiping solder. Length of bar, 13 inches. Weight per bar, 1 1/2 lbs.

Plain Wire Solder



Used for general line work in connection with some kind of flux. 50-50 grades. Supplied in 5-lb. spools.

Size of Wire Solder	Size Wire Inches	Feet Per Pound	Wt. Per Spool
No. 6 B.&S.	3/16	7 1/2	5 lbs.
No. 10 B.&S.	1/8	16	5 lbs.
No. 12 B.&S.	3/32	30	5 lbs.

Lead Sleeves



Lead sleeves for making cable splices can be furnished in any size and length. The following are standard sizes for No. 22-gauge cable. Walls of sleeve are 1/8-inch thick. All sizes can be furnished in any length.

Size of Cable	Inside Diameter	Length Inches	Weight Per Foot	Weight Per Sleeve
10 & 15 Pair	1 1/4 in.	16 in.	2 1/2 lbs.	3 1/2 lbs.
25 Pair	1 1/2 in.	16 in.	3 lbs.	4 1/2 lbs.
50 & 100 Pair	2 in.	20 in.	4 lbs.	7 lbs.
150 Pair	2 1/2 in.	22 in.	5 lbs.	9 1/4 lbs.
200 Pair	3 in.	22 in.	6 lbs.	11 lbs.
300 Pair	3 1/2 in.	22 in.	7 lbs.	12 3/4 lbs.
400 Pair	4 in.	22 in.	8 lbs.	14 1/2 lbs.
600 Pair	4 1/2 in.	22 in.	9 lbs.	16 1/4 lbs.

Kester Rosin Core Solder



For general soldering. For both new and old work. Also recommended for heavy outside electrical wiring. It is two items in one—solder and flux. Solder is a hollow wire filled with plastic rosin flux that will not corrode; as solder melts flux flows out on the job insuring a perfect bond.

Cat. No.	Description	Size Wire Inches	Length Per Pound	Weight Per Spool
4	Flat 40/60	...	49 feet	1 lb.
5	Round 40/60	.092	50 feet	1 or 5 lbs.
6	Round 50/50	.081	78 feet	5 lbs.

Allen Soldering Paste



Soft form of flux for use with torch or soldering copper. Fumeless, will not corrode or injure surface to which it is applied.

Cat. No.	Size Cans	No. Per Carton
039538	2 oz.	24
039565	4 oz.	24
039539	8 oz.	12
039540	1 lb.	6

Allen Soldering Salts

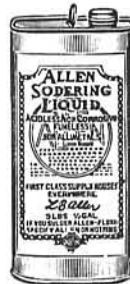


A combination of several of the most efficient soldering agents in a convenient soluble form. Acid free, non-corrosive, non-poisonous and fumeless.

To make up a perfect flux of sufficient strength to use on old metal add 3 parts of water to 1 part of salts; on new metal use even greater dilution.

Cat. No.	Description	Quantity
039547	Allen Soldering Salts	1/2 lb.
039548	Allen Soldering Salts	1 lb.
039549	Allen Soldering Salts	5 lbs.
039550	Allen Soldering Salts	10 lbs.

Allen Soldering Liquid



A safe, fluid form of flux — ready to use. Non-corrosive.

Cat. No.	Description	Quantity
039551	Allen Soldering Liquid	2 oz.
039552	Allen Soldering Liquid	1 lb.
039553	Allen Soldering Liquid	1/2 gal.
039554	Allen Soldering Liquid	1 gal.

Allen Soldering Stick



A convenient cylindrical form of soldering flux of the same quality as Allen's paste. Easy to carry, easy to use — just apply to the heated joint. Non-corrosive.

Kester Acid Core Solder



For general soldering. Used on both new and old work — also recommended for heavy outside electrical wiring. As heat is applied the flux flows from the hollow wire solder forming a permanent bond.

Size No.	Description	Size Wire	Length Per Lb.	Weight Per Spool
3	Round, 40/60	.123	30 feet	1 lb.
5	Round, 40/60	.092	51 feet	1 or 5 lbs.

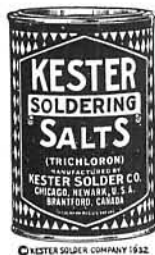
(Revision 1)

MISCELLANEOUS



Kester Soldering Paste

All fluxing ingredients are finely divided and uniformly distributed. Furnished in 1-pound cans.



Kester Soldering Salts

Pure, active soldering salts for flux users. Furnished in 1-pound cans.

Kester Soldering Liquid

Will not evaporate. Adaptable to hand or machine work. Furnished in quart cans.

Waxed Cotton Sleeves

Used over all joints in conductors, exposed leads or wherever there is an exposed wire.

Prepared cotton sleeves are impervious to moisture, are cylindrical in form, permanent and ready for application. Packed in moisture proof cartons.

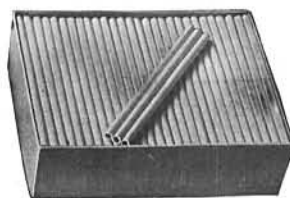
Cat. No.	Description	Diam.	Length	Carton Contains	Wt. Per Carton
4-SW	Prepared Sleeves	$\frac{1}{8}$	$3\frac{1}{4}$	700	$15\frac{1}{2}$ oz.
5-SW	Prepared Sleeves	$\frac{3}{32}$	$3\frac{1}{4}$	400	15 oz.
6-SW	Prepared Sleeves	$\frac{1}{4}$	$3\frac{1}{4}$	200	13 oz.

Cotton Sleevings — Not Waxed

Tubular cotton fabric used to insulate bare wire for ties or relays, keys and jacks.

Cat. No.	Description	Inside Diameter	Yards Per Pound	Wt. Per Spool
1	Cotton Sleevings	$\frac{1}{8}$ in.	280	1 lb.
3	Cotton Sleevings	$\frac{3}{32}$ in.	230	1 lb.

Paper Sleeves



Used to insulate bare joints of cable construction where splices have been made. One sleeve used on each wire of each pair at junction makes a compact and reliable insulation.

Cat. No.	Diameter	Used for Straight Splices	Std. Pkg. Quan.	Weight Per 1000
1833	$\frac{1}{8}$ x 3 in.	22 Ga.	175	1 lb.
1823	$\frac{1}{8}$ x $2\frac{3}{4}$ in.	22 Ga.	175	1 lb.
3163	$\frac{3}{16}$ x 3 in.	19 Ga.	110	1 lb.

Cable Pastes

White paper gummed on one side for use in limiting the length of a wiped joint and giving it a neat and finished appearance.

Description	Width	Length of Roll
Cable Pastes	2 in.	100 ft.

Stearine Wickless Candles

For application to lead sheath, prior to pouring on hot lead in making splices.

Cat. No.	Length	Diameter	Weight Each
$3\frac{1}{2}$	$3\frac{1}{2}$ in.	$1\frac{1}{4}$ in.	3 oz.



Beeswax

Faultless A-1 Beeswax is ideal for impregnating or boiling out cable forms, cores of wool or silk and cotton cables to render them moisture resisting and prevent the insulation from fraying. Supplied in 1-lb. bars.



Fully Refined Paraffine Wax

Kellogg furnishes commercially refined, white paraffine to be used for "boiling out" paper insulated cables before splicing. Furnished in standard 11 pound cakes.

Bonding Ribbon

Soft, tinned copper ribbon used for bonding cables. Coils weighing from 1 to 25 pounds can be supplied as specified.

Description	Size	Feet Per Pound
Bonding Ribbon	$\frac{3}{8}$ x $\frac{1}{16}$ in.	$18\frac{1}{2}$

Lashing Wire

For use in lashing lead sleeves and for attaching aerial cable to supporting strand. Furnished in Nos. 16 and 18 B.&S. gauge tinned soft drawn bare copper wire. Supplied in 1-pound spools.

Metal Rim Tags

For tagging cable or wires as a means of identification after they have been tested out and assembled in groups. Made of thin tough cardboard and bound with metal. Can be used over and over for the same purpose. One inch in diameter.



Cat. No.	Description	No. Per Box
S-16-MR	Box of 1-inch metal rim tags	500

Lead Terminal Tags

For use in marking pairs at cable terminals. Made of sheet lead with a tongue and slot for fastening around the cable terminal stub.

Line Supplies Section

MISCELLANEOUS

Kellogg Black Friction Tape



A best quality insulating tape with high adhesive qualities, made to Kellogg specifications. It lies smooth, holds tight, has high dielectric strength and stays fresh in the roll. Kellogg Friction Tape retains its sticking qualities through all seasons. The standard width is 3/4-inch.

Cat. No.	Width	Length Per Roll	Weight Per Roll
K-5-3/4	3/4 in.	68 feet	1/2 lb.
K-5-2	2 in.	50 feet	1 lb.

Manson Friction Tape



A moisture resistant, strongly adhesive tape packed in 1/2-pound tins. A 1/2-pound roll of 3/4-inch tape averages 78 feet in length. 1/2 to 2-inch widths are also available.

Description	Width	Weight
Manson Friction Tape	3/4 in.	1/2 lb.

Okonite Tape



A rubber tape impervious to moisture, put up in 1/2 pound tins. It is suitable for all telephone or electrical purposes.

Description	Width	Length Per Roll	Weight Per Roll
Okonite Tape	3/4 in.	30 feet	1/2 lb.

Ruberoid Insulating Tape



A waterproof insulating tape adapted for wire connections, conduit joints, overhead and underground cables and telephone lines. Exceeds A.S.T.M. specifications for adhesiveness and strength.

Description	Width	Length Per Roll	Weight Per Roll
P. & B. Insulating Tape	3/4 in.	60 ft.	1/2 lb.
P. & B. Insulating Tape	2 in.	42 ft.	1 lb.

Muslin Splicing Tape

This tape is used for wrapping cable splices. Furnished in rolls 4 inches wide and 10 yards long. Cut from unbleached muslin having a 50/60 weave. Weight approximately 16 lbs. per 100 rolls.

Cat. No.	Description	Width	Length
P-410	Roll of Cable Splicers Cotton Tape	4 in.	10 yds.

Cable Splicers Cotton Tape

One-inch cotton tape used to protect insulation of cable conductors from the cut edges of lead sheath. Do not confuse with cable splicers muslin which is 4 in. wide.

Cat. No.	Description	Width	Length
118	Roll of Cable Splicers Tape	1 in.	18 yds.

Rubber Bandages



Rubber joint bandages are used to cover wire or cable joints. The end is held closed with friction tape. Furnished in rolls 3 or 4 inches wide and 14 feet long. Thickness is 1/2-inch.

Cat. No.	Size	Wt. Per Roll
S-414	4 in. x 14 ft.	12 oz.
S-314	3 in. x 14 ft.	12 oz.

Cable Wrapping Cloth

Waterproofed cotton for temporary closing of splices and sheath openings of aerial cable.

Cat. No.	Description
A-500	Alligator Cloth in sheets 24x40 inches.
A-600	Alligator Cloth, 39 inches wide. In ordering specify the length desired in yards.

Cable Pulling Compound

Lubricates the cable being pulled into conduit. The compound is applied to the cable with a stiff brush at the entrance of the cable feeder tube. It clings to and lubricates the full length of the cable and conduit.

Minerallie Cable Pulling Compound is insoluble in water and does not effect either cable or conduit. Easy to work with at all temperatures and it may be wiped from hands with a dry rag.

Only five to seven pounds of compound are needed to pull a 2.83-inch cable into 400 feet of 3 1/2-inch tile conduit.

Packed in 25 pound and 60 pound cans.

Marline Twine



Cat. No.	Description	Weight Per Ball
415	2-Ply Marline Twine	1 lb.
416	3-Ply Marline Twine	1 lb.

Manilla Rope



The finest commercial grade, 3 strand Manilla rope for hand lines, block and tackle, etc.

Full coils of rope 1/2-inch in diameter and larger contain approximately 1200 feet and half coils about 600 feet. Coils less than 1/2-inch in diameter contain more than 1200 feet. Furnished cut to any length desired.

Diameter	Circumference	Feet Per Pound	Weight Per Coil
3/8 in.	1 1/8 in.	24 1/2	65 lbs.
1/2 in.	1 1/2 in.	13 1/4	90 lbs.
5/8 in.	2 in.	7 1/2	160 lbs.
3/4 in.	2 1/4 in.	6	200 lbs.
1 in.	3 in.	3 3/4	324 lbs.

MISCELLANEOUS

Drierite Desiccant



In this new method, splices in lead covered cables are dried by granular "Drierite" desiccant which is put in among the conductors after the wire splicing work is completed. The bundle of spliced conductors and the desiccant are then compacted by a spiral wrapping of muslin and covered in the usual manner by a lead sleeve. This method involves no boiling out of conductor insulation with hot paraffin no matter how long the splice is unshathed for wire joining work.

Advantageous for work in buildings where fumes from heated paraffin may be objectionable, it is also used in aerial and underground work, particularly in the case of old splices which have been boiled out so often that the paper insulation has become brittle. It has also been used successfully to dry out wet spots which have been caused by defective sheath and on underground work where gases are suspected and open flames are considered dangerous.

The moisture is absorbed by the desiccant, resulting in an effect equivalent to boiling-out with hot paraffin. Once absorbed the moisture will not be released except in temperatures considerably higher than it would be possible to reach under ordinary conditions in telephone cables. Neither will desiccant injure or corrode the sheath, conductors, insulation or cause any harmful effect to the skin of workmen.

It is not possible to compress a splice treated with desiccants as tightly as one boiled out with paraffin, so it is necessary to use lead sleeves $\frac{1}{4}$ or $\frac{3}{8}$ -inch larger in diameter than would normally be required.

The amount of desiccant to be used in splices may be determined from the following table:

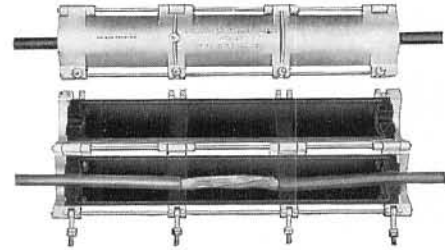
No. Pairs in Cable	Number of Cans Required in Splice			Paper Insulation			Textile Insulation		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Up to 80	$\frac{1}{2}$	..	..	1	..	..	..	..	..
81 to 130	$\frac{1}{2}$	..	..	2	..	..	..	..	..
131 to 205	1	..	..	..	3	..	..	..	..
206 to 255	1	..	..	..	..	..	..	..	..
256 to 300	$1\frac{1}{2}$	..	..	1	1	..	..	..	..
361 to 410	2	..	..	..	$1\frac{1}{2}$	..	..	..	..
411 to 475	2	..	..	..	2	..	..	..	..
476 to 725	3	..	..	..	2	..	..	..	..
726 to 810	3	..	..	..	3	..	..	..	..
811 to 965	..	1	..	..	..	1	..	..	..
966 to 1115	1	1	..	..	..	1	..	..	..

After the correct amount of desiccant has been placed in a splice the opening in the muslin should be securely closed. The lead sleeve should then be beaten-in and wiped in the usual manner.

The desiccant is packaged in cans with screw tops and seals, and comes in the following sizes:

$\frac{1}{8}$ Pint	(50 grams)	Small
$\frac{1}{2}$ Pint	(200 grams)	Medium
1 Quart	(800 grams)	Large

Cavanagh Cable Repair Sleeve



Speeds and simplifies telephone cable repairs.

Quickly applied by any workman, it will serve as long as may be necessary, may be used over and over and will not rust or corrode. If desired it may be used as a permanent repair. May also be used in making tag splices.

Sleeve is made of 16-gauge, cold rolled steel, cadmium plated, tubular in shape, $19\frac{1}{2}$ inches long. Pressure tests show the sleeve to be absolutely free from leakage.

Cat. No.	22 Ga.	Number of Pairs	24 Ga.	26 Ga.	Maximum Cable Diameter	Weight Each
K-1	11	11-16	11-16-26		.46 in.	$5\frac{1}{2}$ lbs.
K-2	16	26	..	..	.53 in.	$5\frac{1}{2}$ lbs.
K-3	26	51	51-76		.67 in.	$5\frac{1}{2}$ lbs.
K-4	51	76	101		.77 in.	$5\frac{1}{2}$ lbs.
K-5	76	101	152		.89 in.	$5\frac{1}{2}$ lbs.
K-6	101	152	202		1.01 in.	$5\frac{1}{2}$ lbs.
K-7	152	202	303		1.17 in.	$5\frac{1}{2}$ lbs.
K-8	202	303	404		1.37 in.	$5\frac{1}{2}$ lbs.
K-9	303	404	606		1.61 in.	$5\frac{1}{2}$ lbs.

J. B. Cable Repair Process and Tool Kit

Cable can now be permanently repaired or spliced by one man. No particular skill or experience is required. The process involves the use of specially designed tools for slitting the cable open and welding it together again, using an ordinary storage battery. A portable oven is used to dry out any moisture which may be present. The process may be applied to any type of cable repair.

J. B. Cable Repair Kit No. 1

Includes the following tools, materials and accessories:

Cable Slitting Tool	Roll $\frac{3}{8}$ -in. Tape
Cable Pliers	Roll 1-in. Cambric Tape
Welding Tool, Leads and 3 Carbons	Package of Fibre Strips
Cable Drying Oven and 6 Cans of Sterno	1 lb. Stearine Core Solder
10-in. Flat File	25 Cable Markers
8-in. Half Round File	25 Strips 1-in. Abrasive Cloth
6-in. Round File	Container for Stearine
File Cleaner	Container for Tapes
Cableman's Scissors	Lineman's Bag
Butting Tool	Special Tool Roll
2 Hickory Wedges	Ladder Platform
Roll Cable Pastors	Instruction Book

J. B. Cable Repair Kit No. 2

Includes the following essential tools and materials:

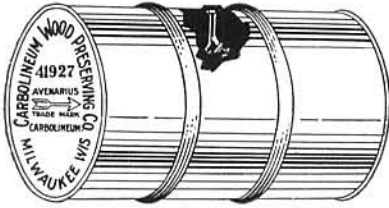
Cable Slitting Tool	Roll Cable Pastors
Cable Pliers	Roll 1-in. Cambric Tape
Welding Tool and 3 Carbons	Package of Fibre Strips
Cable Drying Oven and 6 Cans Sterno	1 lb. Stearine Core Solder
Butting Tool	Stearine Candle
2 Hickory Wedges	Container for Stearine
Roll $\frac{3}{8}$ -in. Tape	Container for Tapes
	Instruction Book

Line Supplies Section

MISCELLANEOUS

Carbolineum

Avenarius Carbolineum Wood Preservative



Protects poles against premature rot, fungus, and termite attack. Avenarius Carbolineum doubles the ordinary life of poles. Easily applied to standing poles or poles before setting.

No expensive treating equipment is needed. Avenarius Carbolineum will not solidify, every drop is usable. It is self-impregnating and cannot injure the wood fibre. It will not bleed or ooze and has no effect on the insulating qualities of the wood.

Quantity	Container	Description	Weight Each
5 Gals.	Drum	Avenarius Carbolineum	50 lbs.
10 Gals.	Drum	Avenarius Carbolineum	100 lbs.
35 Gals.	Drum	Avenarius Carbolineum	347 lbs.
55 Gals.	Drum	Avenarius Carbolineum	542 lbs.

Carbosota



Drum



Can

A preventive against the attack of white ants, fungus growth, rot and decay to which poles and crossarms are subject. It is a refined liquid creosote oil which flows freely and penetrates deeply. Can be applied by simple brush treatments, mopping or hot or cold tank dipping. Meets U. S. Government Specifications TTW-561-A—TTW-556.

Quantity	Container	Description	Weight Each
55 gals.	Drum	Carbosota	550 lbs.
30 gals.	Drum	Carbosota	310 lbs.
5 gals.	Can	Carbosota	50 lbs.
1 gal.	Can	Carbosota	10 lbs.

P. & B. Cable Paint

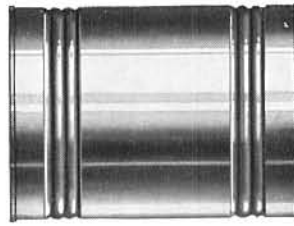


Also known as "rapid asphalt paint" and P. & B. Compound. Used for painting cable to fill in pores in crystallized portions, for fibre conduit joints and taped joints, and as a preservative. Insulates and prevents corrosion and deterioration.

Consists of a liquid-asphalt-base paint that is resistant to acid, acid fumes and alkali.

Quantity	Description	Weight
1 gal. can	P.&B. Cable Paint	8 lbs.
5 gal. can	P.&B. Cable Paint	48 lbs.

Kellogg Formula 401 RSA Parolite



A non-corrosive, acid resisting, non-conducting material applied to cables. Sets quickly and forms a protection against chemical fumes, rodents and abrasion—will endure for many years.

Easy to apply—a trench is dug and a wooden or metal trough is placed beside it. A strip of tarred felt paper is then laid in the trough and a coating of Parolite is applied. After the compound has cooled slightly, the cable is laid on it and more Parolite is poured over it. The paper is then wrapped about the cable and as soon as the compound cools, the cable is laid in the trench and the earth filled in.

For new cable 100 pounds coats 325 feet of 25 pairs, 300 feet of 50 pairs, 200 feet of 75 pairs, 165 feet of 100 pairs, 150 feet of 125 pairs, 125 feet of 150 pairs, 100 feet of 200 pairs of No. 22 B. & S. gauge new cable, if properly applied. This is sufficient under normal conditions but when toilets, stables, gas plants, cinders, train smoke or other conditions threaten the cable, a thicker coating should be given.

Furnished in open top, light metal drums containing approximately 400 pounds.

Cat. No.	Description	Weight Per Drum
401	Drum of Parolite Compound	400 lbs.

Tarred Felt Paper

Used with cable compound, as described above, for burying lead-covered cable in ground. The paper is laid in the trench under and around the cable and the melted compound is poured into the trench thus formed. The paper is then folded over to complete the installation. Supplied in long strips.

Cat. No.	Description	Size	Weight of Roll
A-184	Roll of Tar Paper	6 in. wide x 144 ft. long	12 lbs.

No. 23 Black Cable Paint

A quick-drying, extra heavy bodied gilsonite and varnish base paint used for the protection of underground pipe, tanks or cable.

Quantity	Container	Description	Weight
1 gal.	Can	No. 23 Cable Paint	8½ lbs.
5 gals.	Can	No. 23 Cable Paint	45 lbs.
30 gals.	Drum	No. 23 Cable Paint	270 lbs.
55 gals.	Drum	No. 23 Cable Paint	495 lbs.

Reliable Pothead Compound



Fills every crevice — does not crack. "Cold flows" slightly at all weather temperatures and adheres well to all surfaces. Fills cable terminals perfectly without pre-heating the terminals and without a second filling after cooling to make up for shrinkage.

One gallon cans — Shipping Weight — 11 lbs.

MISCELLANEOUS

Galvanized Nails

Reinforced flat heads, diamond points. Can be supplied in sizes from 6d to 60d. The sizes listed below are more generally used in telephone work.
Shipped in 100 lb. kegs.

Size	Length	Gauge	Diameter of Head	No. Per Keg
6d	2 in.	No. 11½	¼ in.	18,100
8d	2½ in.	No. 10¼	⅜ in.	10,600
10d	3 in.	No. 9	⅝ in.	6,900
20d	4 in.	No. 6	¾ in.	3,100
30d	4½ in.	No. 5	⅞ in.	2,400
30d Spcl.	4½ in.	No. 4	⅞ in.	2,000
40d	5 in.	No. 4	⅞ in.	1,800
50d	5½ in.	No. 3	⅞ in.	1,400
60d	6 in.	No. 2	⅞ in.	1,100

Uses For Galvanized Nails in Telephone Work

- 6d Nailing pins to cross arms.
- 8d General purposes.
- 10d Fastening strain plates.
- 20d Lower nail for fastening bracket No. J-2551-1 to pole.
- 30d Lower nail for fastening pole steps and W.U. bracket to pole.
- 50d Upper nail for fastening bracket No. J-2551-1 to pole.
- 60d Upper nail for fastening pole step and W.U. bracket to pole.

Ground Wire Staples

Hot Galvanized

Special staple with single shank and flat head especially designed for attaching ground wires. Easy to drive.

Length	Description	Width Inside	Wt. Per 100
⅞ in.	Ground Wire Staples	¼ in.	1 lb.

Galvanized and copperweld staples also on page 9.

Pole Dating Nails

Hot Galvanized



Used for indicating the year in which pole was set. May be obtained for any specified year or may be obtained blank. Please specify year desired.

Length	Description	Wt. Per 100
2½ in.	Pole Dating Nails	4.4 lbs.

Fibre Cleats



Fibre cleats are furnished in three styles as illustrated. These cleats furnish a neat and substantial method of permanently retaining interior wire in place, especially on lath and plaster walls where it is not desirable to fasten with nails or staples.

Cat. No.	Type	Size
1	Single Groove Fibre Cleats	⅞ in.
2	Two Groove Fibre Cleats	⅞ and ⅝ in.
2-A	Two Groove Fibre Cleats	⅞ and ⅝ in.

Milonite Insulated Nails

Used for installing two-conductor or three-conductor twisted insulated wire. Easy to handle and use and prevent short circuiting. Diameter of head is ⅞-inch.



Dark green nails carried in stock.

Cat. No.	Length Under Head	Std. Pkg. Quantity	Weight Per 1000
1812½	½-inch	100	1⅝ lbs.
1858⅝	⅝-inch	100	1⅞ lbs.
1878⅞	⅞-inch	100	2¼ lbs.

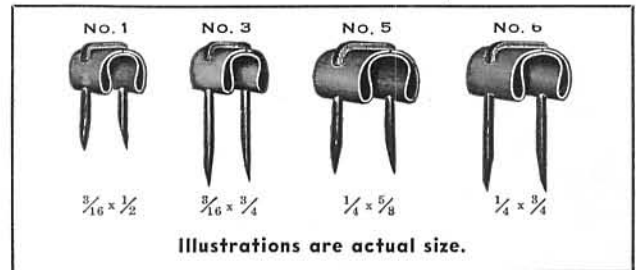
Metal, Insulated Nails

Head is steel drawn over a tough fibre so that a washer is formed below the steel insuring insulation. Diameter of head is ⅞-inch.

Olive green, brown and ivory nails carried in stock.

Cat. No.	Length	Std. Pkg. Quantity	Weight Per 1000
1512½	½ in.	100	1¾ lbs.
1558⅝	⅝ in.	100	1⅞ lbs.
1578⅞	⅞ in.	100	2 lbs.

Blake Insulated Staples



Illustrations are actual size.

For retaining interior telephone or bell wire on wood surface. A double insulation of fibre protects the wires from contact with the metal portion of the staples. Color is gray.

Cat. No.	Description	Size	Std. Pkg.	Weight Per 1000
1	For hardwood	⅞ x ½ in.	100	1½ lbs.
3	For general use	⅞ x ¾ in.	100	2 lbs.
5	For hardwood	¼ x ⅞ in.	100	2¼ lbs.
6	For general use	¼ x ¾ in.	100	2½ lbs.

Blake Colored Insulated Staples

White, brown and green and buff are carried in stock. Specify color desired.

Cat. No.	Size	Std. Pkg.	Weight Per 1000
1-C40	⅞ x ½ in.	40	1½ lbs.
3-C40	⅞ x ¾ in.	40	2 lbs.
5-C40	¼ x ⅞ in.	40	2¼ lbs.
6-C40	¼ x ¾ in.	40	2½ lbs.

"Nail It" Insulated Staples

Drives like a nail, will not bend. After starting the wire can be passed under the short leg. The insulated fibre is locked on the staple so that it cannot fall off. It incorporates the dimensions of the two most popular sizes of staples used.

No. 221 is stocked in the following colors — buff, brown and white.

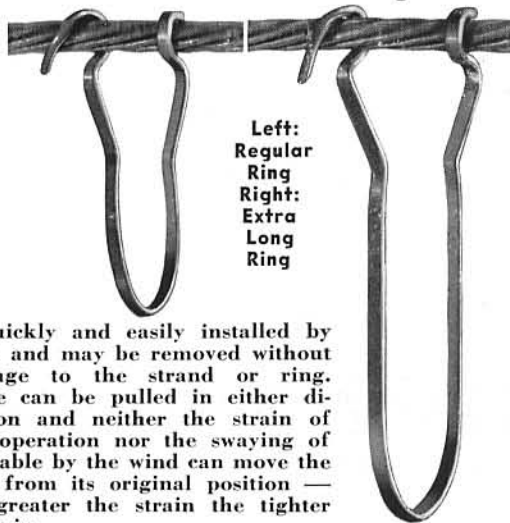


Cat. No.	Description	Size Inches	Weight Per 1000
256	Coppered	⅞ x ¼ in.	2 lbs.
221	Colored	⅞ x ¼ in.	2 lbs.

Line Supplies Section

CABLE RINGS

National Cable Rings



Left:
Regular
Ring
Right:
Extra
Long
Ring

Quickly and easily installed by hand and may be removed without damage to the strand or ring. Cable can be pulled in either direction and neither the strain of this operation nor the swaying of the cable by the wind can move the ring from its original position — the greater the strain the tighter the grip.

Made of high carbon wire, hot dip galvanized and packaged in clusters of five to prevent tangling.

Furnished in standard length or extra long for placing a second cable on an existing messenger.

In ordering it is important to specify the size of strand on which rings are to be used.

Also available in copperweld on special order.

Standard Length—Galvanized

Made for all strand sizes — specify size desired.

Size	For Cable Diameter	Std. Pkg.	Weight Per 1000
1½ in.	½ to ⅝ in.	1000	47 lbs.
2 in. light	⅝ to 1⅛ in.	500	66 lbs.
2 in. heavy	⅝ to 1⅛ in.	500	90 lbs.
2½ in.	1⅛ to 1⅜ in.	500	106 lbs.
3 in.	1⅜ to 2¼ in.	400	125 lbs.
3½ in.	2¼ to 2⅝ in.	300	140 lbs.
4 in.	2⅝ to 3 in.	250	200 lbs.
4½ in.	3 to 3½ in.	250	210 lbs.

Extra Long—Galvanized

Made for all strand sizes — specify size desired.

Size	Length Under Strand	Std. Pkg.	Weight Per 1000
1½ in.	4¾ in.	500	114 lbs.
2 in.	5¼ in.	300	170 lbs.
2½ in.	6¾ in.	250	216 lbs.
3 in.	7½ in.	200	255 lbs.
3½ in.	8 in.	200	270 lbs.

Marline Cable Hanger

The 3-ply Marline used in the manufacture of these hangers is of the very best grade. The hooks are made from No. 9 wire galvanized after forming.



Cat. No.	Maximum Cable Diameter	Weight Per 1000
J-1721	⅞ in.	35 lbs.
J-1721-A	1 in.	36 lbs.
J-1722	1⅛ in.	37 lbs.
J-1723	1¼ in.	38 lbs.
J-1724	1⅝ in.	40 lbs.
J-1725	1¾ in.	42 lbs.
J-1726	2 in.	45 lbs.
J-1733	2¼ in.	49 lbs.
J-1740	2½ in.	62 lbs.

Chance Duplex Cable Rings



The Y bottom of the Duplex cable rings prevents lateral movement of the cable independent of ring, and the additional surface aids in supporting the cable more securely. They are very easily clipped around an existing cable. The cable can be pulled from any direction. Smooth, galvanized finish. "No-Tangle" packed. Specify size of strand upon which rings are to be used.

Also available in copperweld on special order.

Cat. No.	Size Ring	Std. Pkg. Quan.	Weight Per 1000
150-R	1½ in.	500	60 lbs.
200-R	2 in.	500	93 lbs.
250-R	2½ in.	250	136 lbs.
300-R	3 in.	250	158 lbs.
350-R	3½ in.	250	168 lbs.

Chance Never-Slip Type Cable Rings



Never-Slip Cable Rings are applied by hand, no tools being required. Never-Slip rings can be installed over or removed from an existing cable without injury to ring or strand. Have a smooth, galvanized finish.

Usually spaced 20 to 24 inches apart. When ordering, specify size strand with which rings are to be used.

Also available in copperweld on special order.

Cat. No.	Size Ring	Std. Pkg. Quan.	Weight Per 1000
N-150	1½ in.	500	112 lbs.
N-200	2 in.	250	136 lbs.
N-250	2½ in.	200	168 lbs.
N-300	3 in.	200	184 lbs.
N-350	3½ in.	200	193 lbs.

Kearney Cable Ring Saddles

Eliminates ring cutting of lead cable sheath. The wide bearing surface of these saddles and the soft aluminum metal used give the lead sheathing a smooth surface on which to ride.



Cat. No.	Size of Saddle	Weight Per 1000
281	1½ in.	2 lbs.
282	2 in.	2 lbs.
283	2½ in.	3 lbs.
284	3 in.	4 lbs.
285	3½ in.	4 lbs.
5366	4 in.	4 lbs.

National Galvanized Cable Ring Saddles

Eliminates ring cutting on lead sheath due to vibration and assures a longer life to the cable.

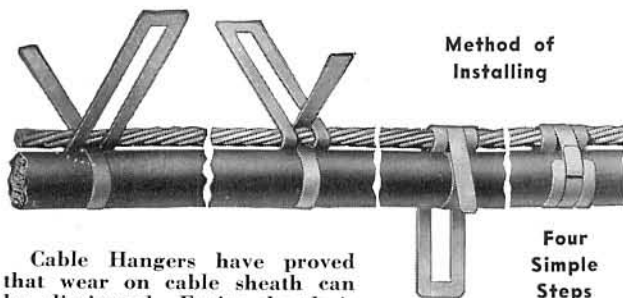
Made of steel, hot dip galvanized after forming. Used with standard cable rings.



Size	Std. Pkg.	Weight Per 1000
1½ in.	1000	90 lbs.
2 in.	1000	100 lbs.
2½ in.	500	110 lbs.
3 in.	500	135 lbs.
3½ in.	500	150 lbs.

CABLE HANGERS

Reliable Davidson Cable Hangers



Method of Installing

Four Simple Steps

Cable Hangers have proved that wear on cable sheath can be eliminated. Entire sheath is grounded solidly to messenger and grade clamps are not needed as cable does not creep on steepest grade.

Davidson Cable Hangers are rust-proof and unusually neat in appearance. Maintenance cost of aerial cable is materially reduced and enclosure of entire cable and messenger with cable molding in trees is facilitated.

Space the hangers 20 in. apart but not nearer than 10 in. from any splice.

Cat. No.	Length	For Strand Size	For Cable Size	Weight Per 1000
1	7 7/8 in.	5/16 in.	3/4 in.	50 lbs.
2	11 in.	3/8 in.	1 1/8 in.	65 lbs.
3	14 in.	3/8 in.	1 5/8 in.	105 lbs.
4	16 in.	3/8 in.	2 in.	135 lbs.
5	18 in.	3/8 in.	2 1/4 in.	150 lbs.
6	19 1/2 in.	3/8 in.	2 7/8 in.	170 lbs.

National Zinc-Wraps

For Hanging the Entire Cable on the Messenger Strand



The Zinc Strap



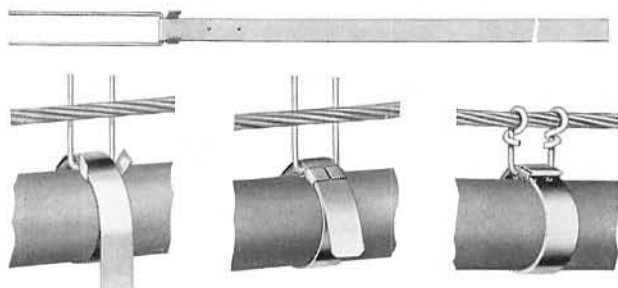
Method of Installing

Some of the most important advantages of using these cable hangers are: elimination of damage to the cable—elimination of all wear that threatens when the cable is in contact with the messenger—the fact that Zinc-Wraps follow the standard practice of suspending the cable below the strand—hug the cable and will not slide along it once placed—ease and speed of installation—and great strength.

Cat. No.	For Cable Diameter	Std. Pkg.	Weight Std. Pkg.
2207	3/4 in.	500	39 lbs.
2210	1 in.	500	40 lbs.
2215	1 1/2 in.	500	48 lbs.
2220	2 in.	250	28 lbs.
2226	2 5/8 in.	250	40 lbs.

National Adjust-A-Straps

For Replacing Rings Next to Poles

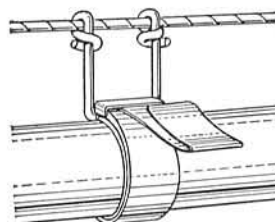


Method of Installing

Adjust-A-Straps have all the desirable features of Zinc-Wraps. They differ, however, in that they are made with an adjustable support instead of the hook.

Cat. No.	For Cable Diameter Inches	Weight Per 100	Cat. No.	For Cable Diameter Inches	Weight Per 100
2007	3/4	7 3/4 lbs.	2026	2 5/8	16 lbs.
2010	1	8 lbs.	2033	3 1/4	18 1/2 lbs.
2015	1 1/2	9 1/2 lbs.	2050	5	26 lbs.
2020	2	11 lbs.	2065	6 1/2	31 lbs.

Diamond Aerial Cable Supports



Two supports, 20 inches apart are placed on each side of the pole. Each support consists of a zinc strip in position on a soft, galvanized U-shaped wire, 5 inches long.

*No. 8 is the same as No. 7 except No. 8 has 10-inch long U-shaped wire on end instead of 5-inch.

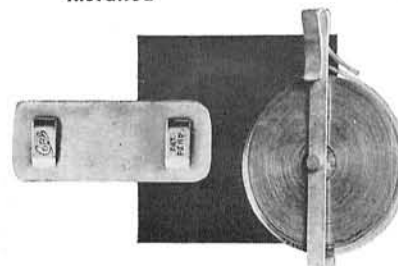
Cat. No.	Length of Strap	Diameter of Cable or Sleeve	Std. Pkg.	Weight Per 1000
1	10	3/4 in.	500	84 lbs.
2	16	1 1/8 in.	500	110 lbs.
3	22	2 in.	300	130 lbs.
4	28	2 5/8 in.	300	162 lbs.
5	34	3 1/8 in.	300	186 lbs.
6	50	5 in. sleeve	200	256 lbs.
7	64	6 1/2 in. sleeve	200	315 lbs.
8*	64	6 1/2 in. sleeve	200	350 lbs.

Cable Bands

Consists of two parts, the 1 1/4-inch wide pad and the 1/2-inch wide supporting strap which is supplied in 100-foot coils. The coil is carried by the lineman on a belt reel. Both are made of zinc.



Installed



Pad

Strap

Cable Protector Pad

Length of Pad	Weight Per 100
2 in.	21 lbs.
2 1/2 in.	26 lbs.
3 in.	30 lbs.
4 1/2 in.	45 lbs.
6 in.	60 lbs.

Supporting Strap

Length Per Coil	Weight Per Coil
100 ft.	5 lbs.

Line Supplies Section

RINGS

Drive Rings

Hot Galvanized

These rings accomplish the same purpose as the screw threaded, pigtail bridle ring but are designed for driving instead of screwing into structures. When attached to wood they are driven as an ordinary wire nail. When attached to hard substances such as brick, stone or concrete, Hammer Drive Anchors are employed.

Made of hard nail wire, hot galvanized.



Diameter of Eye	Size of Hammer Drive Anchor to use	Std. Pkg.	Weight per 1000
1/2 in.	3/16 x 7/8 in.	100	16 lbs.
5/8 in.	1/4 x 1 in.	100	28 lbs.
7/8 in.	1/4 x 1 in.	100	53 lbs.
1 1/4 in.	1/4 x 1 in.	500	57 lbs.

Hammer Drive Anchors



For nailing to concrete, brick or stone. Shields are one piece, non-rusting aluminum alloy.

Furnished with heavily hot galvanized nails.

Diam. & Length of Shield	Diameter of Drill to Use	Std. Pkg.	Weight per 100
3/16 x 3/8 in.	3/16 in.	25	1 lb.
3/16 x 1 1/4 in.	3/16 in.	25	1 1/4 lbs.
1/4 x 1 in.	1/4 in.	25	1 1/2 lbs.
1/4 x 1 1/4 in.	1/4 in.	25	1 3/4 lbs.
1/4 x 1 1/2 in.	1/4 in.	25	2 1/4 lbs.
5/16 x 1 1/4 in.	5/16 in.	25	2 3/4 lbs.
5/16 x 1 3/4 in.	5/16 in.	25	3 1/2 lbs.
5/16 x 2 1/4 in.	5/16 in.	25	4 1/2 lbs.
5/16 x 2 1/2 in.	5/16 in.	25	5 lbs.
3/8 x 2 in.	3/8 in.	25	6 1/2 lbs.
3/8 x 3 1/4 in.	3/8 in.	25	8 1/4 lbs.
1/2 x 2 1/4 in.	1/2 in.	25	11 1/2 lbs.
1/2 x 3 1/2 in.	1/2 in.	25	15 1/2 lbs.

Multi-Size Screw Anchors For Wood Screws



Designed to accommodate in one anchor several diameters of wood screws. The purpose is to reduce the number of anchors required to accommodate all sizes of screws. They are made in several lengths covering the majority of uses. For instance the No. 10 to 14x1-inch anchor will work successfully with all sizes of wood screws ranging from No. 10 to No. 14 inclusive.

Screw enters the shield easily without danger of marring the head of the screw.

Furnished less wood screws.

Cat. No.	Use Wood Screws No.	Length Wood Screw	Drill Hole	Weight per 100
6 to 8	3/4 in.	3/4 in.	1/4 in.	1 lb.
10 to 14x1 in.	1 in.	1 in.	3/8 in.	2 lbs.
10 to 14x1 1/2 in.	1 1/2 in.	1 1/2 in.	3/8 in.	2 3/4 lbs.
16 to 18x1 1/2 in.	1 1/2 in.	1 1/2 in.	3/8 in.	4 1/4 lbs.

Bridle Rings

Galvanized or Enameled

For pole line and interior distribution. Each ring has a 3/8-in. opening in the eye. Furnished either hot galvanized or dark blue enameled. When order does not specify galvanized rings will be shipped.



Cat. No.	Size of Eye	Length of Shank	Weight per 1000
A-1 5/8	1 5/8 in.	1 1/4 in.	110 lbs.
C-1 1/4	1 1/4 in.	1 1/4 in.	95 lbs.
E-5/8	5/8 in.	7/8 in.	35 lbs.
F-3	3 in.	1 7/8 in.	300 lbs.

Cat. No.	Size of Eye	Length of Shank	Weight per 1000
A	1 5/8 in.	1 1/4 in.	150 lbs.
C	1 1/4 in.	1 1/4 in.	125 lbs.

Combination Cable Clamps

For Use with Detachable Bridle Rings



Provides an economical and easily applied fastening for attaching lead covered cables and parallel runs of bridle wire to walls. The rings may be snapped into place by hand and readily opened when adding and removing bridle wires. They may also be attached to the clamps at any time subsequent to their installation or fastened to brick, stone or concrete with screw anchors or hammer drive anchors.

Furnished less bridle rings or screw anchors.

Cat. No.	Cable Diam.	Use Screw Anchor No.	Use Wood Screw Size	Weight per 100
0-A	3/16 in.	10-14x1	1 1/4 in.xNo.14	3 1/2 lbs.
0	1/8 in.	10-14x1	1 1/4 in.xNo.14	4 lbs.
1	1/8 in.	10-14x1	1 1/4 in.xNo.14	4 1/2 lbs.
2-A	1 in.	10-14x1	1 1/4 in.xNo.14	7 lbs.
2	1 1/8 in.	10-14x1	1 1/4 in.xNo.14	7 1/2 lbs.
3-A	1 3/8 in.	10-14x1 1/2	1 3/4 in.xNo.14	14 1/2 lbs.
3	1 1/8 in.	10-14x1 1/2	1 3/4 in.xNo.14	15 1/2 lbs.
4-A	1 7/8 in.	10-14x1 1/2	1 3/4 in.xNo.14	18 1/2 lbs.

Bridle Rings For Combination Cable Clamp

One size of ring fits all clamps.

Cat. No.	Diameter of eye	Std. Pkg.	Weight per 100
D-1	1 in.	500	4 lbs.

Toggle Bridle Rings



Used in material of hollow construction as magnesite blocks, wallboard, lath, plaster, hollow tile, etc.

Furnished complete with 3/8x1 1/4-inch round washer and square nut.

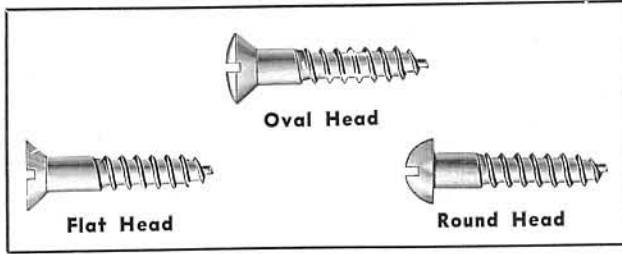
The 3/8-inch size is furnished with cadmium plated finish and the 1/4-inch size is furnished with hot galvanized finish.

Supplied with either spring or No. 5 type toggle head. Spring type will be furnished unless otherwise specified.

Diameter of Screw	Length of Screw	Diameter of Eye	Size Drill Required	Std. Pkg.	Weight Per 100
3/8 in.	4 in.	3/8 in.	1/2 in.	250	8 1/2 lbs.
1/4 in.	4 in.	1 1/4 in.	5/8 in.	250	17 1/2 lbs.

SCREWS

Steel Wood Screws



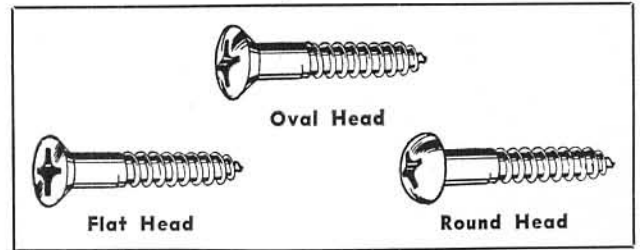
Wood screws are furnished with round heads, flat heads or oval heads. Available galvanized, blued or bright.

3/8 in. No. 6 8	1/2 in. No. 6 8 10	5/8 in. No. 6 8 10	3/4 in. No. 6 8 10 14 ..	7/8 in. No. 6 8 10 14 ..	1 in. No. 6 8 10 14 16
1 1/4 in. No. 6 8 10 14 16	1 1/2 in. No. 6 8 10 14 16 18 ..	1 3/4 in. No. 6 8 10 14 16 18 20	2 in. No. 6 8 10 14 16 18 20	2 1/4 in. No. 6 8 10 14 16 18 20	2 1/2 in. No. 6 8 10 14 16 18 20
2 3/4 in. No. 8 10 14 16 18 20	3 in. No. 8 10 14 16 18 20	3 1/2 in. No. .. 10 14 16 18 20	4 in. No. .. 14 16 18 20	4 1/2 in. No. .. 14 16 18 20	5 in. No. .. 14 16 18 20

Screw Gauge

No.	Diameter of Screw	Flat Head, Diameter of Head	Round Head, Diameter of Head
6	.138 in.	.257 in.	.240 in.
8	.164 in.	.308 in.	.287 in.
10	.190 in.	.359 in.	.334 in.
14	.242 in.	.461 in.	.429 in.
16	.268 in.	.512 in.	.476 in.
18	.294 in.	.563 in.	.523 in.
20	.320 in.	.614 in.	.570 in.

Phillips Screws



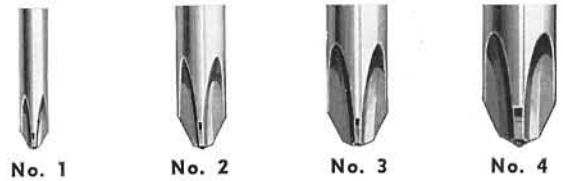
An outstanding improvement in screw design makes possible faster starting, faster driving, better holding power, reduced spoilage and fewer accidents. Screws may be driven with half the pressure required for the regular slotted screw and the driver guides the screw. In the head of the Phillips Screw is a tapered recess which exactly fits a tapered driver and the screw clings to the driver.

Available in approximately the same range of sizes as shown at the left; galvanized, blued or bright; flat head, round head or oval head.

Phillips Drivers for Phillips Wood Screws



Actual Sizes of Phillips Driver Points



Two sizes of Phillips Drivers will drive Phillips Wood Screws No. 5 to No. 16.

Cat. No.	Description	Cat. No.	Description
1	Drives Nos. 2, 3 and 4	3	Drives Nos. 10, 11, 12, 14 and 16
2	Drives Nos. 5, 6, 7, 8 and 9	4	Drives Nos. 18, 20 and 24

Use No. 2 Driver for No. 10 Round Head Screws.

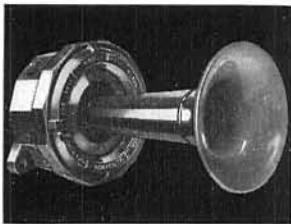
Applications of Wood Screws in Telephone Work

Length	No.	Type	Use	Length	No.	Type	Use
2 1/2 in.	18	Flat Head Galv.	No. 6061, Type A, two groove knob—other than first knob	3 in.	12	Round Head Galv.	For No. 1916 knobs
3 in.	18	Flat Head Galv.	No. 6061, Type A, two groove—first knob	1 1/2 in.	16	Round Head Galv.	For house brackets
3 1/2 in.	18	Flat Head Galv.	No. 6061, Type A, to stucco walls	2 in.	14	Round Head Blued	For transposition brackets
2 1/2 in.	18	Flat Head Galv.	No. 6064, Type S, single groove knobs	1 in.	6	Round Head Blued	For connecting blocks
3 in.	18	Flat Head Galv.	No. 6065, Type T, two groove knobs	1 in.	8	Round Head Blued	For subsets on oak
2 1/2 in.	18	Flat Head Galv.	No. 4, single groove knobs	1 1/4 in.	6	Round Head Blued	For subsets on oak
3 1/2 in.	18	Flat Head Galv.	No. 4, two groove knobs	1 1/4 in.	8	Round Head Blued	For subsets on oak
2 1/2 in.	10	Round Head Galv.	No. 6066, Type C, two groove knobs	1 1/2 in.	6	Round Head Blued	For fanning strips
				1 1/2 in.	8	Round Head Blued	For subsets
				2 in.	8	Round Head Blued	For subsets on plastic walls
				2 1/2 in.	8	Round Head Blued	For old style subsets on plaster walls

Line Supplies Section

SIGNALS

Heavy Duty Weatherproof Howlers



With Bell Projector

This signal produces an unusually loud sound, ideal for effective calling or coding in industrial or commercial locations.

The new threaded ring, separable construction and plug-in type of wiring connection assures quick, simple installation. The entire projector assembly, including the signal mechanism, can be removed by unscrewing the threaded holding ring without disturbing the signal housing or the wiring. Weatherproof, dust tight and durably constructed, this howler will stand up under the most severe service. Finish is battleship gray enamel (red enamel when specified).

A.C. howlers operate on either series or multiple circuits. D.C. howlers operate on multiple circuits only. Six or eight D.C. howlers on one circuit require at least 24 volts.

Signal transformers are required for signals operating on circuits with 24 volts or less. 60 Cycles is standard. When specified, signals to operate with 25 cycles are available in all voltages. The power consumption is 20 watts.

Voltage and frequency must be specified when ordering.

With 7½-inch Bell Projector			With 14-inch Conical Projector		
Cat. No.	Current	Weight Each	Cat. No.	Current	Weight Each
8546	A.C.	5½ lbs.	8557	A.C.	5¾ lbs.
8526	D.C.	6 lbs.	8558	D.C.	6 lbs.

With Double Bell Projector

Cat. No.	Current	Weight Each
8590	A.C.	7¾ lbs.
8599	D.C.	8¼ lbs.

Motor Driven Signals



Clear and vibrant tone, ample power to make its calls heard in the most noisy industrial location. Ideal for coding. The high torque, series wound motor starts and stops instantly with the current impulses—no lag to blur the code. An accessible set screw gives instant adjustment of tone.

Entirely weatherproof — assembled throughout with rubber gaskets to exclude moisture. Housing tapped for ½ inch conduit. Supplied with 14 inch wire leads. Finish in battleship gray enamel (red enamel when specified). Power consumption is 55 watts.

With 8½-inch Single Bell Type Projector

Cat. No.	Voltage	Current	Size of Signal		Weight Each
			Length	Height	
8175-110V	A.C.-60 cycles		14⅞ in.	6⅞ in.	21 lbs.
8175-220V	A.C.-60 cycles		14⅞ in.	6⅞ in.	21 lbs.
8176-110V	D.C.		14⅞ in.	6⅞ in.	21 lbs.
8176-250V	D.C.		14⅞ in.	6⅞ in.	21 lbs.

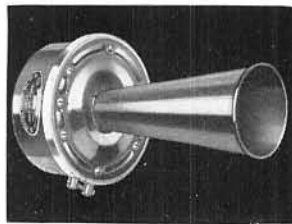
With 19½-inch Double Bell Projector

Cat. No.	Voltage	Current	Size of Signal		Weight Each
			Length	Height	
8180-110V	A.C.-60 cycles		19½ in.	10¾ in.	24 lbs.
8180-220V	A.C.-60 cycles		19½ in.	10¾ in.	24 lbs.
8181-110V	D.C.		19½ in.	10¾ in.	24 lbs.
8181-250V	D.C.		19½ in.	10¾ in.	24 lbs.

A.C. signals also operate on 50, 40 or 30 cycles.

D.C. signals also operate on 25 cycles A.C.

Non-Weatherproof Howlers



With Conical Projector

A loud distinctive tone produced at low current consumption, easy wiring and maintenance, dust-proof construction — suitable for indoor use or where weatherproof construction is not required.

Can be attached to a flat surface or outlet box having mounting holes spaced on 2¾ and 3½ inch centers. The housing is of heavy gauge pressed steel and the signal is finished in battleship gray enamel (red enamel when specified).

Signal transformers are required for signals operating on circuits of 24 volts or less. 60 Cycles is standard. When specified, 25 cycle signals are available in all voltages.

Voltage and frequency must be specified when ordering.

With 7½-inch Single Bell Projector			With Double Bell Projector		
Cat. No.	Current	Weight Each	Cat. No.	Current	Weight Each
8755	A.C.	4 lbs.	8795	A.C.	7 lbs.
8726	D.C.	4¼ lbs.	8794	D.C.	7 lbs.

With 9-inch Conical Projector			Projector-Less Type with Grille Front		
Cat. No.	Current	Weight Each	Cat. No.	Current	Weight Each
8752	A.C.	4¼ lbs.	8741	A.C.	3 lbs.
8751	D.C.	4½ lbs.	8740	D.C.	3 lbs.

Mine Type Howlers

Sturdily constructed and effectively sealed against dust and moisture. The mechanism and separable type construction is similar to the Weatherproof Howler. Finish is battleship gray enamel.

Signal transformers are required for signals operating on circuits of 24 volts or less. 60 cycles is standard. 25 cycle signals are available in all voltages if desired.

Voltage and frequency must be specified when ordering.

Cat. No.	Current	Length of Projector	Length Over-All	Weight Each
8652	A.C.	7½ in.	10⅞ in.	4 lbs.
8651	D.C.	7½ in.	10⅞ in.	4 lbs.

Industrial Sirens

Non-Coding Type

A simple and powerful signal with unusual tone and noise-penetrating qualities. No gears or vibrating parts to get out of order and no adjustment to make. Sound is produced by a rotor fan turning at high speed within a port housing.

Coding Type

Can be coded at practically any speed and is operated by a push button or automatic calling device.

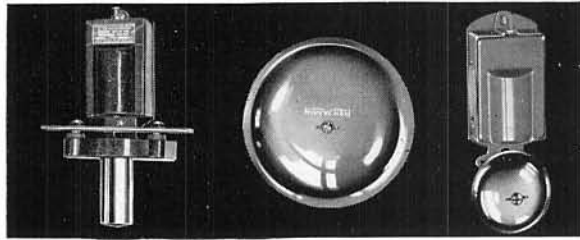
Both sirens are weatherproof—finished in red enamel, provided with a "BX" connector for wire entrance.

Power consumption of the non-coding siren is 150 watts and of the coding siren, 225 watts. The powerful motor is of universal type—standard for 110 volts A.C. or D.C. The following special voltages can be furnished where specified. Non-coding, from 6 to 250 volts, A.C. or D.C.; coding, from 220 to 250 volts, A.C. or D.C.

Cat. No.	Description	Over-All Length	Weight Each
8195	Non-coding	11 inches	15 lbs.
8196	Coding	13 inches	32 lbs.

SIGNALS

Single Stroke Bells and Chimes



Chime 8-in. Diam. Bell 3-in. Diam. Bell

Simple in design and positive in operation—solenoid type mechanism. The plunger, the only moving part, responds instantly when the coil is energized. For series or multiple operation. Tone volume is adjustable. The bells are nickel-plated and the bell housings are cast iron, finished in battleship gray. The cast iron housings for the chimes are finished in crackle lacquer. Chime bar and resonating chamber are chromium plated.

Installation is simplified by a special mounting plate which provides a means of attachment to any switch or outlet box having mounting holes spaced on $3\frac{1}{2}$ -inch centers.

Signal transformers are required for bells operating on 24 volt circuits. 60 Cycles is standard. When specified, 25 cycle bells and chimes in all voltages are available. Voltage and frequency must be specified when ordering.

Cat. No.	Description	Height Over All	Weight Each
8110	3-inch Bell, A.C.	7 $\frac{3}{4}$ in.	3 lbs.
8111	3-inch Bell, D.C.	7 $\frac{3}{4}$ in.	3 lbs.
8112	4-inch Bell, A.C.	4 $\frac{7}{8}$ in.	3 $\frac{1}{2}$ lbs.
8113	4-inch Bell, D.C.	4 $\frac{7}{8}$ in.	3 $\frac{1}{2}$ lbs.
8115	6-inch Bell, A.C.	6 in.	4 lbs.
8116	6-inch Bell, D.C.	6 in.	4 lbs.
8117	8-inch Bell, A.C.	8 in.	6 lbs.
8118	8-inch Bell, D.C.	8 in.	6 lbs.
8120	Chime, A.C.	8 $\frac{7}{8}$ in.	5 lbs.
8121	Chime, D.C.	8 $\frac{7}{8}$ in.	5 lbs.



Industrial Buzzers

For use on calling or warning systems where the volume of competitive noise is not excessive. The buzzer mechanism is attached directly to the removable steel cover of the case and the armature striking the metal cover produces the sound. Finished in battleship gray enamel.

Office and Factory Type (Non-weatherproof)

Provided with one $\frac{1}{2}$ -inch knockout at the back and one on the side — mounts on $3\frac{1}{4}$ and 4-inch standard outlet boxes.

Cat. No.	Current	Size of Signal, Inches	Weight Each
8797	A.C.	2 $\frac{3}{4}$ x 5, Diameter	3 lbs.
8796	D.C.	2 $\frac{3}{4}$ x 5, Diameter	3 lbs.

Voltage and frequency must be specified when ordering.

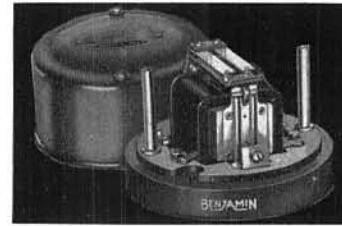
Mine Type Buzzer (Weatherproof)

Assembly is sealed and provided with 8-inch insulated wire leads which feed through a water-tight bushing. Casings have two sets of mounting holes equipped with gaskets and spaced on $2\frac{3}{4}$ and $3\frac{1}{2}$ -inch centers.

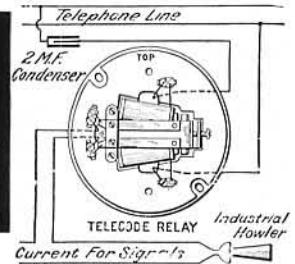
Cat. No.	Current	Diameter of Signal	Weight Each
8679	A.C.	5 $\frac{1}{8}$ Inches	3 $\frac{1}{4}$ lbs.
8678	D.C.	5 $\frac{1}{8}$ Inches	3 $\frac{1}{4}$ lbs.

Voltage and frequency must be specified when ordering.

Telecode Relay



For Panel Mounting



Where an auxiliary 110-volt loud-sounding extension signal is required instead of the usual standard telephone bell, the Telecode Relay is used to actuate the signal. It is operated by the regular ringing impulses and the auxiliary signal is actuated in turn without affecting the talking and ringing efficiency of the telephone system.

These relay contacts are rated at .8 ampere at 110 volts, sufficient to operate five vibrating type howlers. Standard coil windings are 1000 ohms for operation on 110 volt, 60 cycle A.C. or D.C. circuits. For ringing circuits of standard telephone systems, relays should have the same coil resistance as the bell ringer coils of the telephone. For use on intercommunicating systems relay must be of the same voltage as the ringing circuit as well. The finish of all units is battleship gray enamel.

In ordering, specify the resistance of telephone bell ringer coils or voltage of ringing circuit.

For Panel Mounting

The relay mechanism is mounted on a bakelite base $4\frac{1}{2}$ -inches in diameter. Two mounting screw holes are spaced on $3\frac{1}{2}$ -inch centers.

Cat. No.	Description	Wt. Each
8313-P	Open Circuit	2 $\frac{1}{2}$ lbs.
8313-L	Locking Armature	2 $\frac{1}{2}$ lbs.

With Explosion-Proof Box

Cast iron base is threaded for a $5\frac{1}{2}$ -inch cast red brass cover. Close fitting joints prevent the escape of flames in the event of an internal explosion. Base has two mounting lugs and two hubs equipped with conduit stops. Regularly tapped $\frac{1}{2}$ -inch straight through.

Cat. No.	Description	Wt. Each
8319-P	Open Circuit	10 $\frac{1}{2}$ lbs.
8319-L	Locking Armature	10 $\frac{1}{2}$ lbs.

With Steel Box

For general use indoors — the bi-part. pressed steel cover box supplied is 6 x 6 x 3-inches in size with $\frac{1}{2}$ -inch knockouts on all four sides.

Cat. No.	Description	Wt. Each
8315-P	Open Circuit	5 $\frac{1}{4}$ lbs.
8315-L	Locking Armature	5 $\frac{1}{4}$ lbs.

With Water-Tight Box

Vapor-proof, the box has a cast iron base, threaded for $5\frac{1}{2}$ -inch, cast aluminum cover and sealed with a rubber gasket. Base has two mounting lugs and two hubs equipped with conduit stops. Regularly tapped $\frac{1}{2}$ -inch straight through.

Cat. No.	Description	Wt. Each
8322-P	Open Circuit	7 $\frac{1}{2}$ lbs.
8322-L	Locking Armature	7 $\frac{1}{2}$ lbs.

Super-Sensitive Relay

For operating extension signals on long, heavily loaded telephone communication lines — 18 to 30 cycle, A.C. service. Responds to exceptionally weak impulses of low frequency, alternating current, telephone ringer circuits and operates loud sounding extension signals.

Consists of two distinct units, a super-sensitive, polarized relay with its coils connected across the telephone ringer circuit, and a delay relay. The contacts of the super-sensitive relay control a low voltage circuit to the delay relay which in turn controls the signal circuit.

May be used on lines having 1000 to 2500 ohm relays or ringers and will operate over a voltage range of from 8 to 135 volts, 16 to 30 cycles A.C., but will not respond to a higher frequency. Contact capacity is one ampere at 110 volts or 110 watts at other voltages. The signal circuit requires 6 volts, 2 amperes D.C. Delay relay is arranged to operate on D.C. only and will be wound to operate on higher than 6 volts if specified.

Cat. No.	Description	Weight Each
8330	Relay with 6x8x4 Inch Steel Box	13 lbs.
8331	Relay Only	8 $\frac{1}{2}$ lbs.

Line Supplies Section

SLEEVES

Nicopress Tools

Nicopress Tools are ruggedly constructed of the finest materials obtainable, and from every angle they are practical, economical and highly efficient.

Nicopress tool grooves are lettered for your convenience. Any particular tool groove will accommodate all Nicopress sleeves having the same letter at the end of the stock number. For example, all Nicopress tools having a "C" groove will accommodate all Nicopress sleeves whose stock numbers end with a "C", such as 1-080C, 1-102C, etc. Example: A 12 B.&S. copper sleeve No. 1-080C may be compressed in the "C" groove of either the No. 0-C or the No. 31-DC or No. 31-JC tool. The single exception to this is the sleeves for 12 B.W.G. HTL 85 or HTL 135 wire. These sleeves and dead ends must be compressed in the Type 31 tool and not in the No. 0-D.

No. 17-1

For drop, bridle and inside wires. For gauges 14 to 18 B.&S. or 18 to 19 B.W.G. Length is 8 inches and weight each is 10 ounces.



No. 17-2

No. 17-2

For drop, bridle and inside wires. For gauges 14 to 22 B.&S. or 18 to 19 B.W.G. Length is 8 inches and weight each is 10 ounces.

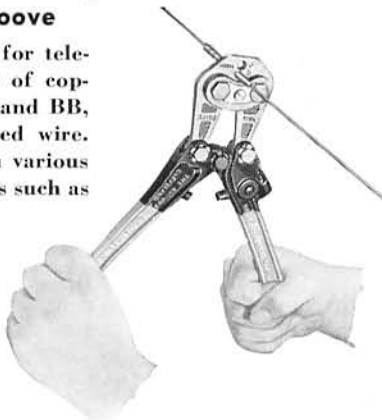
No. "0" One Groove

A single groove tool for telephone wire. May be obtained with any one of the following grooves: C, D, E, G, Q or J. SPECIFY GROOVE DESIRED. Length is 10 inches and weight each is 2 pounds.



No. 31 Two Groove

A two groove tool for telephone line wire sizes of copperweld and copper, and BB, 85 and 135 galvanized wire. May be obtained with various 2-groove combinations such as DC, DJ, JC, or EJ. SPECIFY COMBINATION OF GROOVES DESIRED. Length is 11½ inches and weight each is 2¼ pounds.



Tool Holsters

A leather holster that may be carried on linemen's belts. Available for Nos. 0 and 31 Nicopress Tools.

Nicopress Splicing Sleeves

In making Nicopress joints, the sleeves, which are lined with a metal alloy harder than the metal of either sleeve or conductor, are pressed on to the conductors with the special Nicopress tool.

Splices made with Nicopress sleeves are stronger than the rated breaking strength of the wire and are so tight that the conductors cannot pull out. Further, the use of Nicopress sleeves assures high electrical conductivity. Made for use with copper, steel and copperweld in a wide variety of sizes.

Packed in boxes of 100.

For "BB" Galvanized Wire



Above: Sleeve Below: Completed Splice



Galvanized Steel Sleeves

Cat. No.	Gauge B.W.G.	For Use in Tool Groove	Weight per 100
5-083C	14	C	2 lbs.
5-019C	12	C	1½ lbs.
5-109D	12	D in No. 31 Only	2 lbs.
5-134Q	10	Q	2 lbs.
5-148G	9	G	3½ lbs.
5-165G	8	G	3 lbs.

Galvanized Copper Sleeves

2-083C	14	C	1½ lbs.
2-083D	*14	D	1¾ lbs.
2-109D	12	D	1½ lbs.
2-134J	10	J	3 lbs.
2-148J	9	J	3½ lbs.
2-165J	8	J	5 lbs.

Galvanized Bronze Sleeve

4-109C	12	C	1½ lbs.
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For "85" Galvanized Wire

Galvanized Steel Sleeves

Cat. No.	Gauge B.W.G.	For Use in Tool Groove	Weight per 100
5-083C	14	C	1½ lbs.
5-109D 85	12	D in No. 31 Only	2 lbs.
5-134Q	10	Q	1¾ lbs.
5-148G	9	G	3½ lbs.

Galvanized Copper Sleeves

2-083C	14	C	1½ lbs.
2-083D	*14	D	1¾ lbs.
2-134J 85	10	J	4½ lbs.

For "135" Galvanized Wire

Galvanized Steel Sleeves

Cat. No.	Gauge B.W.G.	For Use in Tool Groove	Weight per 100
5-109D 135	12	D in No. 31 Only	2½ lbs.

*Indicates sleeve with larger than standard outside diameter for use in larger tool groove.

For Rusty Iron Wire

Tinned Copper Sleeves

Cat. No.	Gauge B.W.G.	For Use in Tool Groove	Weight per 100
2-102C	12	C	1¾ lbs.

SLEEVES

Nicopress Splicing Sleeves For Hard Drawn Copper Wire

Cat. No.	Gauge B&S	Gauge NBS	For Use in Tool Groove	Weight per 100
1-064C	14	16	C	1½ lbs.
1-080C	12	14	C	1½ lbs.
1-080D	*12 with 9 O.D.	14	D	1½ lbs.
1-080E	*12 with 8 O.D.	14	E	2½ lbs.
1-102C	10	12	C	1½ lbs.
1-102D	*10 with 9 O.D.	12	D	1½ lbs.
1-102E	*10 with 8 O.D.	12	E	2 lbs.
1-102J	*10 with 6 O.D.	12	J	5½ lbs.
1-114D	9	11	D	1½ lbs.
1-114E	*9 with 8 O.D.	11	E	2 lbs.
1-114J	*9 with 6 O.D.	11	J	3¾ lbs.
1-128E	8	10	E	2 lbs.
1-128J	*8 with 6 O.D.	10	J	4 lbs.
1-162J	6	8	J	5 lbs.

For Drop, Bridle and Inside Wires

Right: Sleeve  Below: Completed Splice



Cat. No.	For Wire	For Use in Tool No.	Weight per 200
3-036A	19-20-22 B&S Copper	17-2	½ lb.
3-045B	17-18 AWG Copperweld 17 B&S Bronze 17-18 B&S Copper	17-1 or 17-2	1 lb.
3-051B	16 B&S Copper	17-1 or 17-2	1 lb.
3-064B	14 B&S Copper	17-1 or 17-2	1 lb.
4-049B	18-19 BWG Ironite	17-1 or 17-2	1 lb.

Reducing Sleeves—For Drop, Bridle and Inside Wires

2-045x036B	17 or 18 B&S to 19, 20 or 22 B&S	17-1 or 17-2	1 lb.
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For Copperweld Wire Copper Splicing Sleeves

Cat. No.	Gauge AWG	For Use in Tool Groove	Weight per 100
1-080C	12	C	1½ lbs.
1-080D	12	D	1¾ lbs.
1-080E	*12	E	2 lbs.
1-080J	*12	J	5 lbs.

*Indicates sleeve with larger than standard outside diameter for use in a larger tool groove.

Nicopress Reducing Sleeves For Copper Line Wire



Cat. No.	Gauge B&S	For Use in Tool Groove	Approx. Ship. Wt. per 100
1-064x045C	14 to 17, 18	C	1½ lbs.
1-080x036C	12 to 19, 20, 22	C	1½ lbs.
1-080x045C	12 to 17, 18	C	1½ lbs.
1-080x051C	12 to 16	C	1½ lbs.
1-080x064C	12 to 14	C	1½ lbs.
1-102x080C	10 to 12	C	1½ lbs.
1-114x080D	9 to 12	D	1¾ lbs.

Note—Information on Reducing Sleeves for galvanized wire on request.

Nicopress Repair Sleeves For Copper Line Wire Copper Sleeves



Cat. No.	Gauge B&S	Length	For Use in Tool Groove	Weight per 100
R1-080C	12	7 in.	C	6 lbs.
R1-080D	*12	7 in.	D	6 lbs.
R1-102C	10	7½ in.	C	5¼ lbs.
R1-102D	*10	7½ in.	D	5¼ lbs.
R1-114D	9	8 in.	D	7 lbs.
R1-114E	*9	8 in.	E	7 lbs.
R1-128E	8	8 in.	E	8½ lbs.
R1-162J	6	10 in.	J	15½ lbs.

For BB Galvanized Wire Galvanized Copper Sleeves

Except No. R4-109C which is Galvanized Bronze.

Cat. No.	BWG	Length	For Use in Tool Groove	Weight per 100
R2-083C	14	7 in.	C	6 lbs.
R4-109C	12	7½ in.	C	5½ lbs.
R2-109D	12	7½ in.	D	7 lbs.
R2-134J	10	8½ in.	J	16¾ lbs.
R2-148J	9	9 in.	J	16¼ lbs.
R2-165J	8	10 in.	J	16½ lbs.

*Indicates sleeve with larger than standard outside diameter for use in a larger tool groove.

Nicopress Offset Dead-End Sleeves



The outstanding advantages secured through the use of the Nicopress method of dead-ending are—simplicity and speed of installation; maximum tightness and strength of completed dead ends; the remarkable degree to which they withstand vibration and the provision for a tail of any desired length.

No special tools are needed as work is done with the same tool used for making Nicopress line splices.

For Copper Line Wire Copper Offset Dead-Ends

Cat. No.	Gauge B&S	Gauge NBS	For Use in Tool Groove	Weight per 100
91-080C	12	14	C	1½ lbs.
91-080D	*12 with 9 O.D.	14	D	1¾ lbs.
91-080E	*12 with 8 O.D.	14	E	2½ lbs.
91-102C	10	12	C	1½ lbs.
91-102D	*10 with 9 O.D.	12	D	1½ lbs.
91-102E	*10 with 8 O.D.	12	E	1¾ lbs.
91-114D	9	11	D	1½ lbs.
91-114E	*9 with 8 O.D.	11	E	2 lbs.
91-128E	8	10	E	1½ lbs.
91-128J	*8 with 6 O.D.	10	J	5½ lbs.
91-162J	6	8	J	4½ lbs.

*Indicates dead-end with outside diameter larger than standard for use in larger tool groove.

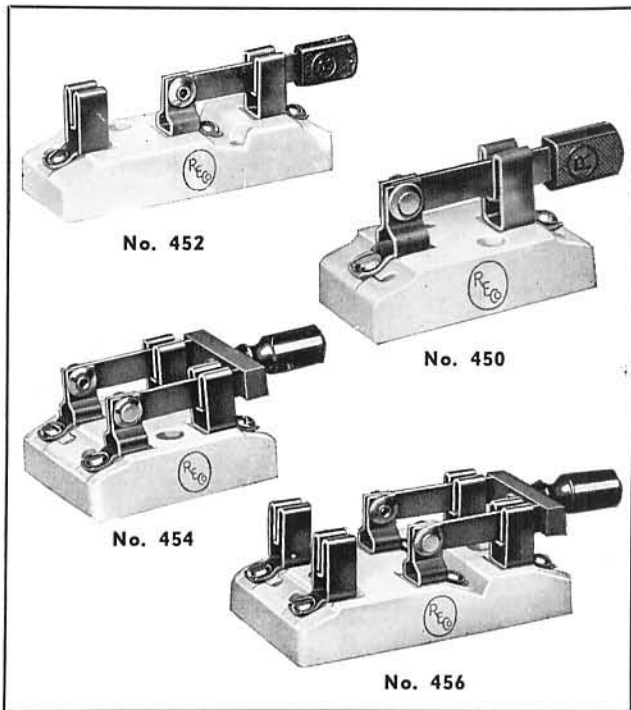
For "BB" and High Tensile Wire

Cat. No.	Gauge BWG	For Wire	Sleeve Material	For Use in Tool Groove	Weight per 100
95-083C	14	BB	Galv. Steel	C	1¾ lbs.
92-083C	14	BB	Galv. Copper	C	1½ lbs.
95-109C	12	BB	Galv. Steel	C	1½ lbs.
92-109D	12	BB	Galv. Copper	D	1¾ lbs.
94-109C	12	BB	Galv. Bronze	C	1½ lbs.
95-109D 85	12	85	Galv. Steel	D in No. 31 Only	1¾ lbs.
95-109D 135	12	135	Galv. Steel	D in No. 31 Only	2½ lbs.

Line Supplies Section

SLEEVES, SWITCHES, MARKERS

Telephone or Battery Switches 25 Amperes



Rugged, heavy and compact with double loop positive contact posts, and spring washer equipped hinged posts, made in one piece with projecting terminals. Built for long satisfactory service. Porcelain bases.

Cat. No.	Style	Dimensions Inches	Std. Pkg.	Shipping Wt. Per C
450	S.P.S.T.	2 7/8 x 1 1/4	100	37 lbs.
452	S.P.D.T.	3 3/8 x 1 1/4	100	61 lbs.
454	D.P.S.T.	2 7/8 x 2	100	63 lbs.
456	D.P.D.T.	5 3/8 x 2	100	105 lbs.

Premax

Embossed Aluminum Letters and Figures



Provide permanence and legibility in any property marking. Made of 99% pure aluminum, they do not rust or tarnish, and being perfectly smooth will not catch or hold dirt.

Furnished in both Letters and Figures in 1/2, 3/4, 1, 1 1/2, 2, 3, 4, or 6-inch sizes. Also available in polished brass.

Embossed Aluminum Tags



Easy to attach, permanent in service embossed aluminum tags offer the simplest, cheapest and most practical

identification of poles and other properties.

Letter is sharply and cleanly embossed or raised on pure aluminum strip. Furnished with 1/16, 1/8, 3/16 or 1/4-inch letters, plate width from 3/4 to 2 1/4 inches.

Escutcheon Pins and Eyelets

Special galvanized steel nails or brass escutcheon pins are available for all aluminum markers listed above.

Special bulletin on request.

Size	Description	No. Per Lb.
1-inch	No. 15 Galvanized Steel	900
1-inch	No. 15 Brass	700
3/4-inch	No. 15 Brass	950
5/8-inch	No. 15 Brass	1100
5/8-inch	No. 15 Cadmium Plated Steel	1200
Brass Eyelets — Packed 1000 per box.		

Double Tube Splicing Sleeves



Used for making straight line splices. Use copper sleeves for copper wire and tinned copper or tinned steel for iron wire. When twisted they draw snugly around the wire forming a solid joint which air and moisture cannot penetrate. When ordering copper sleeves use B.&S. gauge. When ordering tinned copper sleeves for iron wire use B.W.G. gauge. When ordering steel sleeves use B.W.G. gauge.

Standard size combination sleeves can also be furnished. Please specify kind and size of wire for which sleeves are intended.

Double Tube Tinned Steel Sleeves For Splicing Galvanized Iron Line Wire

Gauge B.W.G.	Full Length Inches	Half Length Inches	No. of Turns	Full Length Weight Per 1000
8	6 3/4	3 3/8	3	85 lbs.
9	5 3/4	2 7/8	3	68 lbs.
10	5 1/2	2 3/4	3	53 lbs.
12	4 3/4	2 3/8	3	38 lbs.
14	4 1/2	2 1/4	3	30 lbs.
16	4	2	3	17 lbs.

Double Tube Plain Copper Sleeves For Splicing Copper Line Wire

Gauge B.&S.	Gauge B.W.G.	Gauge N.B.S.	Full Lgth., In.	Half Lgth., In.	No. of Turns	Full Length Weight Per 1000
6	8	..	6 3/4	3 3/8	3 1/2	118 lbs.
7	9	..	5 3/4	2 7/8	3 1/2	93 lbs.
8	10	..	5 3/4	2 3/4	3 1/2	68 lbs.
9	11	..	5 1/4	2 5/8	3	60 lbs.
10	12	12	4 3/4	2 3/8	3	35 lbs.
12	14	14	4 1/2	2 1/4	3	29 lbs.
14	16	..	4	2	4	20 lbs.
16	..	..	4	2	4	20 lbs.
17	..	..	4	2	4	17 lbs.

Double Tube Tinned Copper Sleeves For Splicing Galvanized Iron Line Wire

Gauge B.W.G.	Gauge B.&S.	Full Length Inches	Half Length Inches	No. of Turns	Full Length Weight Per 1000
12	10	4 3/4	2 3/8	3	35 lbs.
14	12	4 1/2	2 1/4	3	29 lbs.
16	14	4	2	4	20 lbs.

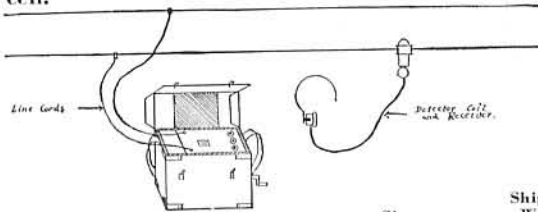
TESTING EQUIPMENT

Stewart Test Set with Detector Coil



shoulder strap, and leather top cover. Uses one No. 321-R dry cell.

This Test Set tells which way and how far trouble is from the tester without opening the line. It is a complete portable telephone, having transmitter, receiver, generator, battery, etc., and talks up as efficiently as a telephone. Comes complete with all cords and clips, detector coil, battery, full length



Cat. No.	Description	Size Inches	Shipping Weight Each
STS-1	Test set—Midget	3 1/2 x 5 3/4 x 6 3/4	7 lbs.
STS-2	Test set—Heavy Duty	4 1/2 x 6 3/4 x 8	10 lbs.
SDC-3	Detector Coil only		4 oz.

Matthews Woodpecker Telefault



No. 6 dry cell. Furnished less battery. Net weight is 10 pounds.

The type L Telefault will find wet trouble of high or low resistance, grounds, crosses, split pairs and dead shorts. It will not "noise up" other working pairs. Cannot be confused with other inductive noises—has a tone like a woodpecker on a pole. The exploring coil and receiver will tell whether power circuits are alive before touching them. Operates on one

Cat. No.	Description	Shipping Weight Each
L	Woodpecker Telefault—Complete	15 lbs.
L	Exploring Coil Only	3 lbs.
L	Receiver Only	1 lb.

Stewart Direct Reading Test Cabinet



The meter can be used as a 15-volt voltmeter or it can be equipped for 150-volts.

Reads resistance to trouble direct in ohms. Operates on eight No. 6 dry cells at a cost of less than \$8.00 per year.

Any telephone man can install it in one hour's time and anyone can use it. Push button marked short, and it reads resistance to short. Button marked Ground L-1, reads resistance to ground on one side, and button marked Ground L-2 reads resistance to ground on other side.

Card furnished with each instrument gives distance to trouble on all sizes of wire or cable.

Description	Size Inches	Shipping Weight Each
Direct Reading Test Cabinet	10x16x3	12 lbs.

Stewart Detecto-Meter



The most successful instrument made for locating bad joints, locating low resistance ringers, checking transmitters, receivers, induction coils, etc.

Reads resistance direct in ohms, the same as a voltmeter reads volts. Operates on one No. 6 dry cell. Portable—equipped with a shoulder strap.

The instrument is also a 150-volt voltmeter and a battery tester.

Description	Size	Shipping Weight Each
Detecto-Meter	5x7 1/2 x 8 inches	4 lbs.

Stewart Midget Detecto-Meter

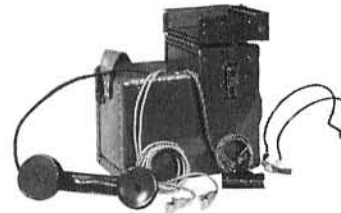


It will measure all resistances of line wire and telephone parts up to 10,000 ohms and will locate all bad joints and noisy connections. The instruction book furnished with each Detecto-Meter gives resistance of all gauges of line wire in mile steps. It also gives the resistance of all cable of general use.

Comes complete with cords and clips, as well as battery. It has a voltage adjustment so that it can be set at zero when battery varies. It has a voltage switch for voltage reading. The binding posts are insulated. Operates on one No. 6 dry cell. Net weight each is 20 oz.

Size	Shpg. Wt. Ea.
2x3x6 inches	3 lbs.

West Test Set



Handy, portable unit which the lineman can take out on the job to quickly find faults without opening lines or interfering with circuits and without any help from the operator.

The set is equally useful on iron or cop-

per wire, bare or insulated and on grounded or metallic circuits.

Also a convenient portable telephone with handset which can be folded into the case and headband which frees both hands for testing. Three flashlight batteries are mounted in the case and the telephone equipment is connected to the line by operating a lever key. The telephone circuit is a high-efficiency circuit—transmission is excellent and ringing signals carry distinctly over long and heavily loaded lines.

Contained in a carrying case that is weatherproof and cannot accidentally become grounded. Adjustable carrying strap allows set to be carried in the hand or slung over the shoulder. Instruction folder shows how to make the various tests.

Furnished with three National Carbon No. 950 or three Ray-O-Vac No. 2 dry cells.

Cat. No.	Description	Size Inches	Weight Each
TA-20	Test set with aluminum case	8x9x5 1/4	18 lbs.
TA-21	Test set with leather case	7x9x5	18 lbs.
TA-23	Test set with West Ground Tester	8x9x5 1/4	18 lbs.

Line Supplies Section

TESTING EQUIPMENT

Weston 689 Ohmmeters



Designed for the service man who relies upon resistance and continuity tests in checking circuits. The type 1-E scale is calibrated with a double range and resistance readings are available from 0-5000 and 0-50,000 ohms, and type 1-F with ranges 10 and 1000 ohms.

A magnetic shunt provides convenient adjustment to compensate for variations in battery voltage. This adjustment may be made before each series of tests, thus assuring accurate resistance readings.

Complete with No. 950, 1½-volt battery and a long pair of test leads.

Cat. No.	Description	Size Inches	Shipping Weight Each
689-1-E	Weston Ohmmeter, Complete	5x2⅞x1⅞	1 lb.
689-1-F	Weston Ohmmeter, Complete	5x2⅞x1⅞	1 lb.
	Leather Carrying Case for either 689-1-E or 689-1-F.		

Weston 564 Volt-Ohmmeters



Has a useful selection of voltage and resistance ranges.

Changes in battery potential are compensated for by short-circuiting the resistance pin jacks of any range and adjusting pointer to zero ohms by turning the battery adjustment knob.

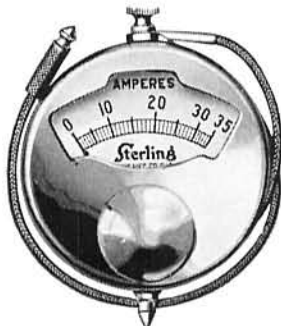
Ranges are available from engraved pin jacks moulded internally with the panel. A toggle switch connects meter in circuit as a voltmeter or ohmmeter.

Voltage ranges: 3/30/300/600 d.c., all 1000 ohms per volt. Resistance ranges: 1000/10,000/100,000 and 1,000,000 ohms full scale.

Complete with pair of 4-foot test leads and a No. 781, 4½-volt battery.

Cat. No.	Size	Shipping Wt. Each
564-3C	5½x3¾x2½ in.	1¾ lbs.

Pocket Ammeters and Voltmeters



No. 24

Useful in all kinds of battery testing, servicing telephones, radios, automotive ignition, gas engines, door bells and in low-voltage electrical work. Also serve as polarity indicator — indicating the direction of the current.

Have calibrated scales, durable, clearly marked dial and full nickel-finished case, 2¼ inches in diameter and ⅝-inch thick.

Equipped with a flexible cord and spur for making connections.

Cat. No.	Reading—Scale	Std. Pkg.	Weight Pkg.
24	Ammeter, 0-35 amp., 1 amp. divisions	10	4 lbs.
34-C	Voltmeter, 0-50 volts, 1 volt divisions	10	4 lbs.
44	Voltammeter, 0-35 ampere, 0-10 volts, 1 ampere and 1/5 volt divisions	10	4 lbs.

Readrite No. 739 Pocket Volt-Ohm-Milliammeters

A.C. and D.C.

Molded case with rounded corners

... Knob operated zero adjustment for resistance measurements ... Precision three-inch Lifetime Guaranteed meter with two natural sapphire jewel bearings ... Ranges are: A.C.-D.C. Volts 0-15-150-750-1500 (D.C. at 1000 ohms per volt); D.C. Milliamperes 0-1½-15-150; Resistance, Low ohms, 0-500, backup circuit, with 25 ohms at center scale; 0-500,000 ohms. External batteries may be used for higher resistance measurements. Attractive modernistic silver and black panel. All accessories including test



leads, alligator clips, battery and instructions are included. Uses one 1½ volt battery, National Carbon Co. No. 135.

Cat. No.	Description	Size Inches	Shipping Weight Each
739	Volt-Ohm-Milliammeter	3⅞x5⅞x2⅞	5 lbs.
769	Leather Carrying Case with Strap Handle	4¼x6¾x3	1 lb.

No. 738, D.C. Only

D.C. readings only are available with Model 738. Otherwise it has the same quality features as Model 739.

Ranges are D.C. Volts 0-15-150-750-1500 at 1000 ohms per volt; D.C. Milliamperes 0-1½-15-150; Resistance, Low Ohms, backup circuit, 0-500, 25 ohms in center scale; 0-500,000 ohms. External batteries can be used for higher resistance measurements.

Furnished with test leads, alligator clips, instructions and one National Carbon Co. No. 135, 1½ volt battery.



Cat. No.	Description	Size Inches	Shipping Wt. Each
738	Volt-Ohm-Milliammeter-D.C.	3⅞x5⅞x2⅞	5 lbs.
769	Leather Carrying Case with Strap Handle	4¼x6¾x3	1 lb.

Triplett No. 666 Volt-Ohm-Milliammeters



Model 666 Volt-Ohm-Milliammeter is a complete pocket-size tester with A.C. and D.C. Voltage ranges to 1000 Volts (self-contained) and complete facilities for Direct Current and Resistance analyses.

A.C.-D.C. Voltage at 1000 ohms per volt 0-10-50-250-500-1000 (compensated copper-oxide rectifier provides for A.C. measurements); D.C. Milliamperes 0-1-10-50-250; low ohms ½ to 300; high ohms to 250,000.

Has black molded case and panel — completely insulated. Furnished complete with battery and specially insulated test leads with pee wee clips tested at 11,000 volts. Uses one 1½ volt battery, National Carbon Co. No. 135, which is included with the tester.

Cat. No.	Description	Size—Inches	Weight
666	1000 volts self-contained	3⅞x5⅞x2⅞	5 lbs.
669	Leather Carrying Case with Leather Handle	4¼x6¾x3	1 lb.

TESTING EQUIPMENT

Stewart Type L Cable Tester



Locates high resistance water leaks, wet spots, shorts, crosses, and grounds. Locates the cable trouble to the inch. Equipped with exploring coil that will not pick up the tone on the sheath of cable due to its patented circuit that balances out the tone that carries past the trouble.

Operates on two No. 6 dry cells.

Cat. No.	Description	Size	Weight Each
L	Cable Tester	4x10½x11 in.	18 lbs.

Stewart Cable Tester and Locator

Locates crosses, shorts, grounds and wet spots and is equipped with neutral exploring coil. Also is a cable locator — tells exactly where and how deep a cable is buried.

Equipped with a lamp to tell when all connections are correct and when trouble is still in.

Uses four No. 6 dry cells.

Cat. No.	Size	Shipping Weight Each
10	7½x11½x13 inches	12½ lbs.

Trouble-Man's Friend



Direct reading resistance meter — enables the trouble man to make all tests for the detection, nature of trouble and the approximate location of the fault either in the central office, on the line or at the subscriber's station.

The ohmmeter, designed especially for this instrument is the dead beat type with jewel bearings, mounted in a dust-proof bakelite case. Large scale assures easy, accurate readings. Two ohm-

meter readings are provided; low scale 0-200 ohms and high scale 0-10,000 ohms. Within the range of 0-2000 ohms the accuracy is within 2%.

A battery compensator, zero adjuster for the meter, cam type key switches and one meter on low and high scale are provided. Also equipped with a buzzer with switching keys for "buzzing out" cable, circuit wiring, testing fuses, heat coils, etc. Uses two National Carbon Co. No. 950 dry cells.

All parts are mounted upon a chassis which is easily removed from the case to replace battery and for inspection. The black walnut carrying case has a door to protect the meter when not in use and a leather carrying case. Net weight each, 5 lbs.

Cat. No.	Description	Height	Width	Depth	Shipping Weight Each
628	Trouble-Man's Friend	8½ in.	6 in.	4 in.	6 lbs.

Telkor Telespot



Locates faults on aerial open wire or cable lines without lineman climbing any poles. Also locates and finds the depth of buried water and gas pipes or cable and concealed wiring between walls in buildings.

Consists of a vacuum tube amplifier contained in a cast aluminum cabinet finished in black crinkle lacquer. Size is 5½ x 7¼ x 8½ inches. Three lengths of ½-inch bakelite tubing, wired on the inside, plug into each other and make a 10-foot pole. A 6-foot shielded cord from the amplifier, plugs into the receptacle

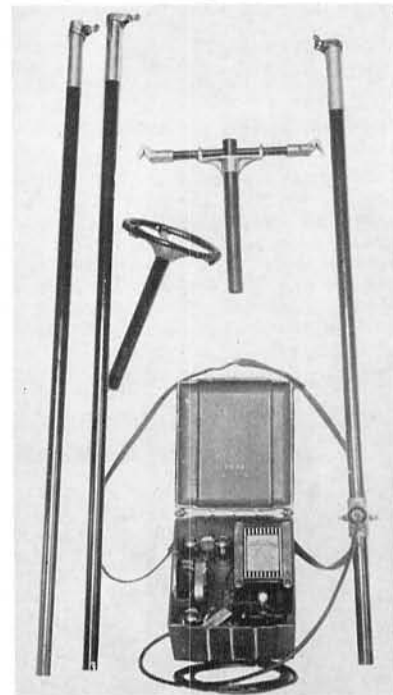
in the lower pole unit. An exploring coil and line tapper are mounted on short tubes into which the pole may be plugged. The exploring coil is used in searching for line faults and the line tapper is used to talk to the home plant. The amplifier is provided with a carrying strap so that the user can hang it over his shoulder, leaving his hands and arms free to manipulate the pole. The amplifier is tuned to 400 cycles and is equipped with a 3-inch speaker so that it is not necessary to wear a head set.

In locating a fault on open wire, the tone is placed on the line and the lineman places the amplifier on the seat

of his car. One section of the pole with the exploring coil mounted on it, is placed on the running board and while driving along the road where the lines run, the tone can be clearly heard from the speaker. The approximate location of the fault can be determined from the car and the exact spot within inches can be located by walking under the line with the exploring coil on the pole units.

To call back to the home plant the lineman removes the exploring coil from the pole, mounts the line tapper, places it across the wire, attaches the transmitter and he is ready to talk.

Uses one Ray-O-Vac, 90-volt, No. BB-60-P and two No. 2 dry cells. Three pole lengths and exploring coil and line tapper are shipped with the Telespot amplifier. The amplifier is furnished less tone generator and transmitter.

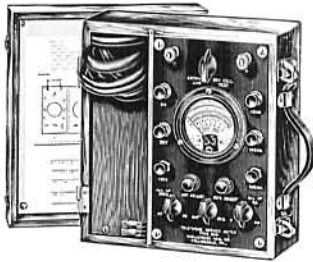


Description	Weight Each
Telespot (complete)	20 lbs.

Line Supplies Section

TESTING EQUIPMENT

Shallcross Telephone Service Meter



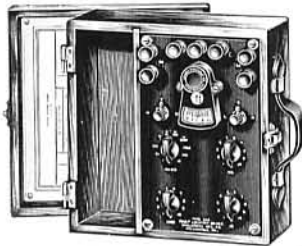
Useful for testing subscriber set output, dry cells, transmitter current, receiver resistance, capacity of condensers, ringing impedance, magneto output and impedance, central office commercial supply voltage, ringing machine voltage, battery charging current, etc.

The measurements possible with this meter are: D.C. voltage ranges, 6-30-150-300 volts; D.C. current ranges, 15-150-300 milliamperes and 6 amperes; A.C. voltage ranges, 6-30-150-300 volts; resistance range D.C. 0-500-5000-50,000 ohms; capacitance ranges, .001 to 0.1-1-10 mfd.; approximate artificial load, 600 ohms 6-30 volts A.C.; inductance, 1- to 100- 1000- 10,000 Henrys; and resistance range A.C. 25-3,000,000 ohms.

Uses one No. 6 dry cell which must be ordered separately. Furnished in an oak carrying case with leather handle and removable lid. Net weight each is 11½ lbs.

Cat. No.	Description	Size	Shpg. Wt. Ea.
614	Telephone Service Meter	10x10x6½ in.	18 lbs.

Shallcross Fault Location Bridge



Provides three types of measurements: Wheatstone Bridge, Murray and Varley Loop. As a Wheatstone Bridge, cable resistance is measured from 1 ohm to 11.1 megohms. Murray Loop tests will locate grounds, crosses, opens and shorts and inductive crosses or split pairs, with a high

degree of accuracy. Varley Loop tests will locate grounds, crosses and shorts.

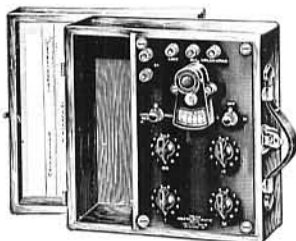
Rheostat range 10 to 11,100 ohms with three decades in 10 ohm steps. Coil accuracy is $\pm 0.1\%$.

Bridge resistance range, 1 ohm to 11,100,000 ohms. Three rheostat coils 10 x 10 + 1000 + 1000 ohms. Accuracy $\pm 0.1\%$, ratio coils $\pm 0.1\%$.

Uses one No. 6 dry cell which must be ordered separately. Furnished in oak carrying case with leather handle and removable lid. Net weight each is 8 pounds.

Cat. No.	Description	Size	Shpg. Wt. Ea.
628	Fault Location Bridge	10x10x6½ in.	14 lbs.

Shallcross Cableman's Wheatstone Bridge and Reference Charts



A portable instrument having fixed ratio arm arranged for the Varley Loop Tests for locating faults, grounds and crosses. The rheostat dial reading is referred directly to a chart and the distance to fault determined without computation.

Four rheostat decades, total range, 1111 ohms.

Uses one No. 6 dry cell which must be ordered separately. Furnished in oak carrying case with leather handle and removable lid. Net weight each is 7 lbs.

Cat. No.	Description	Size, Inches	Shpg. Wt. Ea.
627	Cableman's Wheatstone Bridge	10x10x6½	13 lbs.

Shallcross Current Flow Test Set



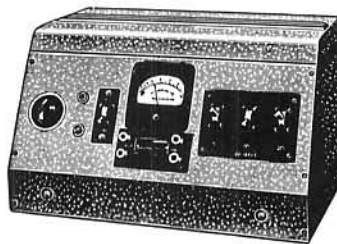
Provides for a complete and rapid means for testing the flow of current through relays and other telephone and telegraph equipment.

Current range, 0-15, 0-75 and 0-150 M.A. Voltage ranges, 0-7, 5, 0-15 and 0-75 volts.

Furnished in oak carrying case with leather handle and removable lid. Net weight 6½ lbs.

Cat. No.	Description	Size, Inches	Shpg. Wt. Ea.
695	Current Flow Test Set	10x10x6½	13 lbs.

Shallcross Transmission Test Set



Specifically designed to provide a convenient and inexpensive method of measuring transmission losses in lines, switchboard circuits, apparatus, etc. In addition to these tests, comparative measurements of the capacity of condensers may be made as well as tests

for balance of repeating coils and relays. The oscillator output may be used as a tone source for fault location measurements with the Shallcross Nos. 628, 629 or similar Fault Location Bridges.

This testing equipment gives the wire chief a convenient method for making tests of the switchboard and main frame, testing cord circuits, picking up cable pairs and checking subscribers' lines.

The No. 692 single unit operates from 110-120 volt A.C. or D.C. supply and contains a No. 691 Tone Generator, a No. 355 Attenuation Box and a No. 690 Decibel Meter together with switching arrangements for calibration and testing. Each unit may be ordered separately.

Cat. No.	Description	Size, Inches	Shpg. Wt. Ea.
692	Transmission Test set complete	14¼ x 8 x 8	12½ lbs.
690	Transtester-Decibel Meter	7½ x 5 x 4¼	3 lbs.
355	Attenuation Box	7½ x 5 x 4¼	2 lbs.
691	Tone Generator	6 x 6 x 6½	5½ lbs.

Teleohm (Pocket Size)



For testing and locating line circuit, telephone and switchboard trouble, shorts, grounds, high resistance, and open circuits in coils of all kinds, also partially shorted coils, high resistance transmitters, cut-outs in receiver, desk stand and switchboard cords, hook switch contacts, etc.

Uses two No. 950 dry cells. Equipped with a Weston 0-3 Volt Direct Reading Ohmmeter 0-10,000 Ohm Scale, mounted in a walnut case.

Cat. No.	Description	Size	Weight Each
4300	Teleohm Test Unit	1⅝ x 3½ x 6 in.	1¼ lbs.

TESTING EQUIPMENT

Wheatstone Fault Location Bridges

L. & N. — Type U Test Sets



A portable Wheatstone Bridge especially designed to measure conductor resistance, identify faulty wires in cable, locate grounds, shorts and crosses by Murray, Varley, Hillborn and other loop tests. With a buzzer and telephone receiver it can be used to locate opens.

Dial switches have positioning stops. Knobs are undercut and switch, keys and binding posts are so placed that a man wearing gloves can manipulate them easily.

Ratio dial has multiplying values of 1/1000, 1/100, 1/10, 1/9, 1/4, 1/1, 10/1 and 100/1 for resistance measurements and for Varley Loop tests, also settings of M1000, M100 and M10 for ratios in Murray Loop tests.

Rheostat has 4 decades, $10(1+10+100) + 9 \times 1000$ ohms + infinity. Limit of error in ratio resistors $\pm 0.05\%$; in rheostat resistors $\pm 0.1\%$. Includes pointer galvanometer of 1 megohm sensitivity, 4.5 volt battery and keys for galvanometer and battery. Hillborn Loop test can be made using internal galvanometer.

Furnished in oak case with metal protecting corners, removable lid and carrying strap. Net weight each is 8 pounds.

Cat. No.	Description	Size Inches	Shipping Wt. Each
5430-A	Type U Portable Test Set	$8\frac{7}{8} \times 7\frac{3}{8} \times 5\frac{3}{8}$	9 lbs.
5431	Leather Carrying Case		
5412	Buzzer		
9812	Telephone Receiver Set with Head Band		
PI-124-C	Extra Galvanometer System		
Std. 986	Eveready No. 950 Flash Cell, 3 required.		

L. & N. — Type S Test Sets



This set comprises a compact Wheatstone Bridge convenient for electrical resistance measurements with provision for Murray and Varley Loop tests in location of faults in communication circuits. With a buzzer and telephone receiver it can be used to locate opens.

Ratio dial has multiplying values of 0.001, 0.01, 0.1, 1, 10, 100 and 1000 for resistance measurements and for Varley Loop tests; also settings of M1000, M100 and M10 for ratios in Murray Loop tests. Rheostat has 4 decades $9(1+10+100+1000)$ ohms. Limit of error in ratio resistors $\pm 0.05\%$; in 1-ohm rheostat resistors $\pm 0.2\%$; for all others $\pm 0.1\%$. Includes pointer galvanometer of 1-megohm sensitivity, 4.5-volt battery, and keys for galvanometer and battery.

Furnished in oak case with hinged lid and carrying strap.

Cat. No.	Description	Size Inches	Weight Each
5300	Type S Portable Test Set	$8\frac{7}{8} \times 7\frac{3}{8} \times 5\frac{1}{2}$	8 lbs.
5431	Leather Carrying Case		
5412	Buzzer		
9872	Telephone Receiver Set with Head Band		
PI-124-C	Extra Galvanometer System		
Std. 986	Eveready No. 950 Flash Cell, 3 required.		

Rela-Flo Test

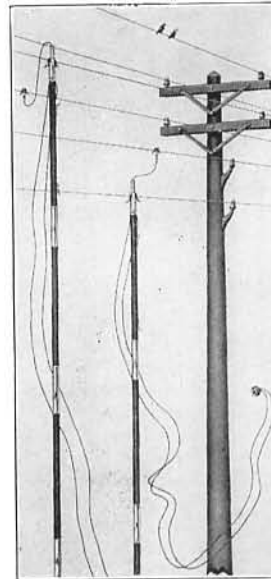


Successful operation of equipment employing relays or other electro-magnetic switches requires accurate and dependable adjustment of the switching devices. The Rela-Flo-Test accurately measures and controls any desired value of current in an electrical circuit for margining and testing D.C. relays and similar apparatus.

Complete with two 6-foot battery leads and two 6-foot test leads and fittings.

Cat. No.	Description	Nominal Operating Voltage	Size	Shipping Wt. Each
125	Rela-Flo-Test	25	15x9x6 in.	15 lbs.
150	Rela-Flo-Test	50	15x9x6 in.	15 lbs.
1250	Rela-Flo-Test	25 and 50	15x9x6 in.	15 lbs.

Telephone Connecting Poles



Used to connect to any two wires in a lead without climbing the telephone pole.

Consists of an 18-foot, four section, wood pole with bayonet joints. On one end of the pole are mounted a floating contact and a stationary contact. Both are simple spring brass, three prong contacts. These contacts are connected by 50 feet of stranded weatherproof wire to a standard socket which in turn is connected by 50 feet of twisted pair to clips to fasten to telephone binding posts.

The connection is made by hooking the floating contact over a wire and then by hooking the contact fastened to the pole over the other wire.

Cat. No.	Weight
33	7 lbs.

Vincent Rare Gas Relays

An electronic device for use on telephone lines instead of mechanical ringing relays. Has no moving parts, may be placed in any position and may be used on either harmonic or coded ringing bells.

Lines equipped with the Vincent Rare Gas Relay are free from grounds in normal operations and therefore free from noise which would ordinarily be picked up through grounds. Prevents premature tripping in machine ringing from manual or dial offices and acts as a protector against lightning discharges.

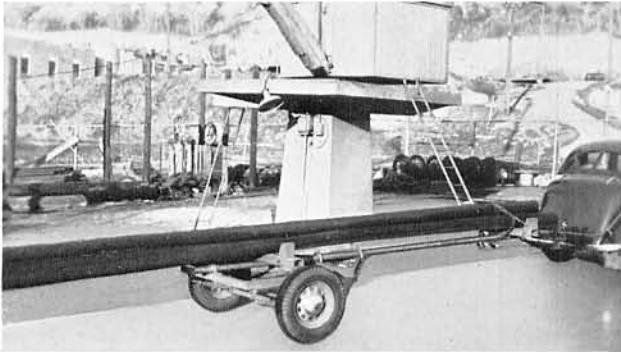
Inserted in series with the bell, condensers are left in the circuit as usual.



Cat. No.	Description	Size	Wt. Each
RTC-2	Vincent Rare Gas Relay	$2\frac{1}{2} \times 1\frac{1}{2}$ in.	8 oz.

TOOLS

Model 20 Richards Utility Pole Trailers



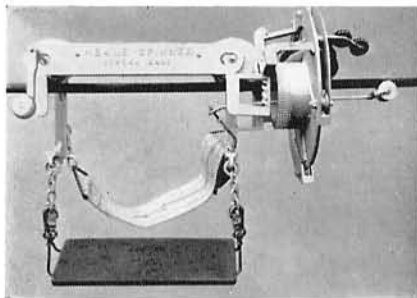
The patented adjustable load balancing front bolster makes it possible to use this trailer with a passenger car, pickup or heavy duty truck regardless of the type of body on the towing vehicle as the entire load of poles is carried on the trailer.

Front bolster and chassis are both adjustable on the reach track, thus cross arms as well as poles 40 feet in length and longer may be carried by booming to the front bolster. Load may be balanced over the trailer axle or part on the front bolster as desired.

Specifications:

Tires:	600-16—6-ply.
Axle:	2000 lbs. capacity, drop forged I-beam.
Bearings:	Timken Nos. 15118 and 19074.
Reach:	18 feet standard, additional lengths available.
Bolster Blocks:	Adjustable, accommodate 1 to 6 poles.
Coupling:	Standard ring type. Weight: 500 lbs.
Capacity:	One ton.

Neale One Man Cable Spinning Machine



Saves one-third the cost of placing new cable and there are no grade clamps or ties to crush or cut the cable which is held rigid against the strand. This eliminates all whipping in sleet storms or high winds. The machine lashes the cable tightly to

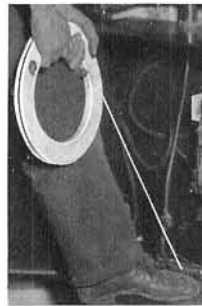
the messenger strand with 091 wire held at a tension of 35 pounds and as the machine moves along the strand, makes a complete spiral every 13 inches.

In general, new cable is first placed in the usual manner except that aerial cable rings should be spaced at 10 to 15 foot intervals instead of the usual 18 inches. The lineman then rides the cable car under the cable spinning machine and propels it along the strand by turning a crank. A pre-formed coil of wire rotates about both strand and cable, lashing them tightly together. The lineman works the machine with one hand and removes the rings with the other.

Stops ring cutting, bowing and crystallization in old cables. The procedure of lashing old cable already supported by rings is similar to that for new cable.

The machine is light in weight and may easily be handled by one man.

Fish Tape, Reel and Puller



Three tools in one—the tape is enclosed, with the end automatically locked within the reel. Used as a handle it furnishes a sure grip on which full strength can be confidently exerted.

The steel tape may be quickly run out to any length desired—automatically reeled in as pulling proceeds, with no lengths of loose tape left lying or springing around. The tape is always under control. Less breakage because the coil of tape is securely held in the reel at all times.

Other sizes can be supplied on special order.

Cat. No.	Diameter of Reel	Length of Tape	Size of Tape
0	8½ in.	50 feet	⅛x.060 inch
1	12 in.	100 feet	⅛x.060 inch

Fish Tape

For pulling wire through conduits, pipes, etc. Will not kink. Ordinarily furnished in 100-foot coils but other lengths and other sizes can be supplied on special order.

Description	Size Tape	Wt. Each
100 foot coil of Fish Tape	⅛x.060 in.	3¼ lbs.

Klein "Chicago" Fish Tape Pullers



Pocket size fish tape puller—light in weight, yet strong. Grips automatically and holds like a vise.

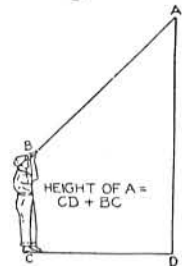
Cat. No.	Description	Weight
1629	For Fish Tape	2½ lbs.
1629-A	For No. 12 Iron Wire	2½ lbs.

Type CW Matthews Teleheight



Simply and accurately gives height of poles, trees, wires, buildings, etc. Only 5 inches in length and can be easily carried in vest pocket. Furnished with leather carrying case.

To find height of "A" on the sketch stand away from "A" until the bubble and line of the teleheight cross each other. Then measure the distance from C to D and add to it the distance from C to B. The sum will equal the height of the point A.



Cat. No.	Description	Length	Weight
CW	Matthews Teleheight	5 in.	8 oz.

TOOLS

4 Point or Star Drills



For brick, stone or concrete. Made of high grade octagon drill rod. The quality of steel is carefully tested for uniformity and actual tests are made in various kinds of stone to insure a temper that will give the best average service in all.

Additional sizes and lengths are available on special order.

Diameter Drill	Length	Std. Pkg.	Weight Per Doz.
1/4 in.	12 in.	12	2 lbs.
5/16 in.	12 in.	12	3 lbs.
3/8 in.	12 in.	12	4 lbs.
7/16 in.	12 in.	12	5 lbs.
1/2 in.	12 in.	6	5 lbs.
5/8 in.	12 in.	6	9 lbs.
3/4 in.	12 in.	6	12 lbs.

Di-Forge Twist Drills For Hammer Drilling



Forged from a solid bar of vanadium tool steel. Used with a hand or electric hammer. Rotate clockwise between each blow when used with hand hammer. Rotate continuously if used with electric hammer. Will stand hard use and abuse.

Diameter	Length Over-all	Depth Hole	Std. Pkg.	Weight Per Doz.
5/16 in.	2 3/4 in.	1 3/8 in.	12	1/2 lb.
1/4 in.	3 1/4 in.	1 3/4 in.	12	3/4 lb.
3/8 in.	4 1/4 in.	2 1/2 in.	12	1 lb.
3/8 in.	5 in.	3 in.	6	1 1/4 lbs.
1/2 in.	5 1/4 in.	3 1/4 in.	6	1 1/2 lbs.
1/2 in.	5 3/8 in.	3 1/4 in.	6	2 lbs.
5/8 in.	5 1/2 in.	3 3/4 in.	6	2 1/2 lbs.
5/8 in.	5 3/4 in.	4 in.	6	2 1/2 lbs.
3/4 in.	5 3/4 in.	4 in.	6	3 lbs.

"Sudden-Depth" Drills



For drilling holes in extremely hard materials these cemented Tungsten, carbide tipped drills are fast and economical. Very durable, drills many holes in tile, slate, granite, etc., without regrinding. Silent, permitting work at all times. Can be used in any hand or electric drill. Additional sizes available on special orders.

Description	Drill Diam.	Shank Diam.	Over-all Length
"Sudden Depth" Drill	5/16 in.	1/4 in.	3 in.
"Sudden Depth" Drill	1/4 in.	3/16 in.	4 in.
"Sudden Depth" Drill	3/8 in.	3/16 in.	4 in.
"Sudden Depth" Drill	3/8 in.	1/2 in.	4 in.
"Sudden Depth" Drill	1/2 in.	3/8 in.	6 in.
"Sudden Depth" Drill	5/8 in.	1/2 in.	6 in.
"Sudden Depth" Drill	3/4 in.	1/2 in.	6 in.
"Sudden Depth" Drill	7/8 in.	1/2 in.	6 in.
"Sudden Depth" Drill	1 in.	1/2 in.	6 in.

Lag Screw Expansion Shields



Used to attach fixtures, cable, etc., to the surface of masonry.

The problem of misfit threads has been solved by the improved formation of the interior threaded portion in these Lag Screw Shields. They will permit cut thread or rolled thread, cone point or gimlet point lag screws of good and poor quality to enter equally well with a free and uniform expansion and without binding.

Made of high grade ductile malleable iron, hot galvanized. Furnished less lag screws.

Long Standard				
Diam. Lag Screw	Drill Hole	Length of Shield	Std. Pkg.	Weight Per 500
1/4 in.	1/2 in.	1 1/2 in.	100	5 lbs.
5/16 in.	5/16 in.	1 3/4 in.	100	6 lbs.
3/8 in.	3/8 in.	2 3/4 in.	100	12 lbs.
1/2 in.	3/4 in.	3 1/2 in.	100	20 lbs.
Short Standard				
1/4 in.	7/16 in.	1 in.	100	3 lbs.
5/16 in.	1/2 in.	1 in.	100	4 lbs.
3/8 in.	5/8 in.	2 in.	100	9 lbs.
1/2 in.	3/4 in.	2 in.	100	13 lbs.

Style B Drill Holders



A hand drilling tool for use where numerous small holes are to be drilled for fastening small fixtures, etc. Either Di-Forge or Star drill points may be used. Weight per dozen, 6 1/2 lbs.

Style C Rubber Grip Drill Holders



For use with Di-Forge or Star drill points. Made of vanadium steel with a soft rubber grip with flange to protect the hand of the operator. Hexagon flange also prevents rolling.

Weight per dozen, 10 pounds.

Hammer Drills



Developed particularly for use in installing expansion shields and anchors.

Drills holes with safety and accuracy. Each sliding stroke of this telescopic hammer penetrates further, with greater accuracy and less effort. The anvil end slides straight and smooth for a 7 1/2-inch stroke.

Di-Forge Twist Drills are recommended for use with this drill.

Line Supplies Section

TOOLS

17-inch Cross Arm and Pole Bits



Twist is 12 inches long and the over-all length is approximately 17 inches.

Cat. No.	Diameter	Weight Per Doz.	Cat. No.	Diameter	Weight Per Doz.
56-6	$\frac{3}{8}$ in.	2 $\frac{3}{4}$ lbs.	56-11	$\frac{1}{8}$ in.	6 lbs.
56-7	$\frac{1}{4}$ in.	3 $\frac{1}{4}$ lbs.	56-11*	$\frac{1}{8}$ in.	4 lbs.
56-8	$\frac{1}{2}$ in.	4 lbs.	56-12	$\frac{3}{4}$ in.	6 $\frac{1}{2}$ lbs.
56-9	$\frac{5}{8}$ in.	5 lbs.	56-14	$\frac{7}{8}$ in.	8 $\frac{1}{2}$ lbs.
56-10	$\frac{5}{8}$ in.	5 $\frac{1}{2}$ lbs.	*Only 12 in. in over-all length.		

12-inch Cross Arm and Pole Bits

Similar to No. 56 except 12 inches in over-all length and with 8-inch twist.

Cat. No.	Diameter	Weight Per Doz.	Cat. No.	Diameter	Weight Per Doz.
53-6	$\frac{3}{8}$ in.	2 $\frac{1}{4}$ lbs.	53-11	$\frac{1}{8}$ in.	4 $\frac{1}{4}$ lbs.
53-8	$\frac{1}{2}$ in.	3 lbs.	53-12	$\frac{3}{4}$ in.	4 $\frac{3}{4}$ lbs.
53-10	$\frac{5}{8}$ in.	3 $\frac{3}{4}$ lbs.	53-14	$\frac{7}{8}$ in.	5 $\frac{1}{2}$ lbs.

Wood Boring Brace Drills



Length of twist varies from 2 $\frac{1}{4}$ to 4 inches and the over-all length from 4 $\frac{1}{2}$ to 8 inches. Order by diameter.

Cat. No.	Diameter	Weight Per Doz.	Cat. No.	Diameter	Weight Per Doz.
46-8	$\frac{1}{4}$ in.	$\frac{7}{8}$ lb.	46-16	$\frac{1}{2}$ in.	2 $\frac{5}{8}$ lbs.
46-10	$\frac{3}{8}$ in.	1 $\frac{1}{4}$ lbs.	46-18	$\frac{5}{8}$ in.	3 lbs.
46-12	$\frac{3}{8}$ in.	1 $\frac{3}{4}$ lbs.	46-20	$\frac{5}{8}$ in.	3 $\frac{1}{2}$ lbs.
46-14	$\frac{3}{8}$ in.	2 $\frac{1}{8}$ lbs.	46-22	$\frac{1}{2}$ in.	4 lbs.

Single Spur Car Bits



Entire tool is heat treated. Head is of single cutter type with one outlying spur which permits smooth boring and insures long life.

Diameter	Twist Length					
	12 Inches		18 Inches		24 Inches	
	Cat. No.	Weight Per Doz.	Cat. No.	Weight Per Doz.	Cat. No.	Weight Per Doz.
$\frac{7}{16}$ in.	57-7-12	6 $\frac{3}{4}$	.....	.....	.....	.....
$\frac{8}{16}$ in.	57-8-12	7 $\frac{1}{2}$	.....	.....	.....	.....
$\frac{9}{16}$ in.	57-9-12	8 $\frac{5}{8}$	57-9-18	10 $\frac{3}{8}$	57-9-24	12 $\frac{3}{8}$
$\frac{10}{16}$ in.	57-10-12	9 $\frac{3}{8}$	57-10-18	12	57-10-24	14 $\frac{1}{4}$
$\frac{11}{16}$ in.	57-11-12	10 $\frac{1}{2}$	57-11-18	13 $\frac{1}{2}$	57-11-24	16 $\frac{1}{2}$
$\frac{12}{16}$ in.	57-12-12	11 $\frac{3}{4}$	57-12-18	15 $\frac{5}{8}$	57-12-24	18 $\frac{3}{4}$
$\frac{13}{16}$ in.	57-13-12	12	57-13-18	16 $\frac{1}{2}$	57-13-24	20 $\frac{1}{4}$

Weight in pounds.

Bell Hangers' Drills



Made of heat treated, alloy steel with a twist length of 3 $\frac{3}{4}$ inches. 18-inch lengths shown are standard for telephone work but 12 and 24-inch lengths are available on special order.

Cat. No.	Diameter	Weight Per Doz.	Cat. No.	Diameter	Weight Per Doz.
48-6	$\frac{1}{8}$ in.	1 $\frac{3}{4}$ lbs.	48-16	$\frac{1}{2}$ in.	6 $\frac{1}{8}$ lbs.
48-8	$\frac{1}{4}$ in.	2 $\frac{1}{2}$ lbs.	48-18	$\frac{5}{8}$ in.	6 $\frac{5}{8}$ lbs.
48-10	$\frac{3}{8}$ in.	2 $\frac{7}{8}$ lbs.	48-20	$\frac{5}{8}$ in.	7 lbs.
48-12	$\frac{3}{8}$ in.	3 lbs.	48-22	$\frac{1}{2}$ in.	7 $\frac{1}{2}$ lbs.
48-14	$\frac{1}{2}$ in.	3 $\frac{3}{4}$ lbs.	48-24	$\frac{3}{4}$ in.	8 lbs.

Expansive Bits



Provides positive clearance of chips, permitting boring without interruption. Fits all standard makes of bit extensions.

Cat. No.	Cuts	Weight Per Doz.
3	$\frac{1}{2}$ to 1 $\frac{1}{2}$ inches	3 $\frac{1}{8}$ lbs.
4	$\frac{7}{8}$ to 3 inches	7 $\frac{1}{2}$ lbs.

Extra Clamp for No. 3 $\frac{1}{8}$ lb.
 Extra Clamp Screws for No. 3 $\frac{1}{8}$ lb.
 Extra Clamp for No. 4 $\frac{3}{8}$ lb.
 Extra Clamp Screws for No. 4 $\frac{1}{4}$ lb.

Bit Extensions



Will drive a bit from $\frac{5}{8}$ to 1-inch in size. Positive lock prevents the loosening of the holding sleeve.

Cat. No.	Length	Weight Each
900-12	12 in.	$\frac{3}{4}$ lb.
900-18	18 in.	1 $\frac{1}{8}$ lbs.
900-24	24 in.	1 $\frac{3}{8}$ lbs.
900-30	30 in.	1 $\frac{5}{8}$ lbs.

Cold Chisels



Extra Refined Octagon Steel. This chisel is the standard pattern, first quality.

Cat. No.	Diam. of Steel	Size Cut	Length	Weight Per Doz.
45- $\frac{1}{4}$	$\frac{1}{4}$ in.	$\frac{1}{8}$ in.	5 in.	1 lb.
45- $\frac{5}{16}$	$\frac{5}{16}$ in.	$\frac{3}{8}$ in.	5 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ lbs.
45- $\frac{3}{8}$	$\frac{3}{8}$ in.	$\frac{3}{8}$ in.	5 $\frac{1}{2}$ in.	2 $\frac{1}{4}$ lbs.
45- $\frac{7}{16}$	$\frac{7}{16}$ in.	$\frac{1}{2}$ in.	6 in.	3 $\frac{1}{2}$ lbs.
45- $\frac{1}{2}$	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.	6 in.	4 lbs.
45- $\frac{5}{8}$	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.	7 in.	7 lbs.
45- $\frac{3}{4}$	$\frac{3}{4}$ in.	$\frac{7}{8}$ in.	7 $\frac{1}{2}$ in.	11 lbs.
45- $\frac{7}{8}$	$\frac{7}{8}$ in.	1 in.	8 in.	15 lbs.
45-1	1 in.	1 $\frac{1}{8}$ in.	8 $\frac{1}{2}$ in.	20 lbs.

Socket Framing Chisels



The blades, 8 inches long, are made of extra heavy cross section solid steel. The over-all length ranges from 16 inches to 17 $\frac{1}{2}$ inches. Order by blade width.

Cat. No.	Width	Weight Per Doz.	Cat. No.	Width	Weight Per Doz.
261- $\frac{3}{8}$	$\frac{3}{8}$ in.	7 $\frac{3}{4}$ lbs.	261-1	1 in.	13 $\frac{1}{2}$ lbs.
261- $\frac{1}{2}$	$\frac{1}{2}$ in.	8 $\frac{1}{4}$ lbs.	261-1 $\frac{1}{4}$	1 $\frac{1}{4}$ in.	16 lbs.
261- $\frac{5}{8}$	$\frac{5}{8}$ in.	10 $\frac{1}{2}$ lbs.	261-1 $\frac{1}{2}$	1 $\frac{1}{2}$ in.	18 lbs.
261- $\frac{3}{4}$	$\frac{3}{4}$ in.	11 lbs.	261-1 $\frac{3}{4}$	1 $\frac{3}{4}$ in.	22 lbs.
261- $\frac{7}{8}$	$\frac{7}{8}$ in.	11 $\frac{1}{2}$ lbs.	261-2	2 in.	24 lbs.

TOOLS

Yankee No. 41 Automatic Drills

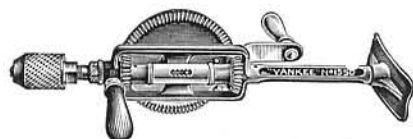


For rapidly boring holes in wood by pushing down on the handle, which is forced back by a spring. The drill point revolves backward on up stroke of handle, clearing the chips and freeing the point. Points are held in chuck so they cannot be pulled out.

Drill is chrome plated and polished. The handle is a magazine for holding the drill points. It is quickly closed and locked and when unlocked the drill points are forced up into plain sight. Eight drill points are included with each drill: $\frac{1}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ -inch diameter.

Cat. No.	Diameter Holes	Length Over All	Weight Per Doz.
41	$\frac{1}{16}$ to $\frac{5}{8}$ in.	11 $\frac{1}{4}$ in.	8 $\frac{1}{4}$ lbs.

Yankee No. 1550 Single Speed Ratchet Breast Drills



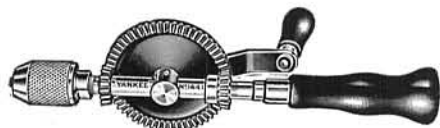
Equipped with five adjustments controlled by a ratchet shifter which changes at a finger touch. The five adjustments are plain

drill, left-hand, right-hand, double and gears locked. With the shifter in the double ratchet notch the drill cuts continuously on both the forward and backward movements of the crank.

Equipped with a three-jaw chuck for round shank drills. All metal parts are chromium plated.

Cat. No.	Length Over All	Capacity	Weight Each
1550	17 in.	0 to $\frac{1}{2}$ in.	6 $\frac{1}{2}$ lbs.

Yankee No. 1441 Single Speed Hand Drill

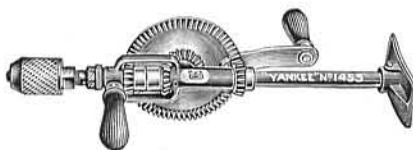


Plain hand drill with 3-jaw chuck for round shank tools only. Has chrome-plated steel frame and chuck. Two

steel pinion gears support main driving gear.

Cat. No.	Length Over All	Capacity	Weight Each
1441	13 $\frac{1}{4}$ in.	0 to $\frac{3}{8}$ in.	2 $\frac{1}{2}$ lbs.

Yankee No. 1455 Double Speed Breast Drills



Has 3-jaw chuck for round shank tools up to $\frac{1}{2}$ inch. Handy sliding shifter instantly changes the speed or locks spindle for opening chuck. Steel

spindle with adjustable ball bearing, cut gears and steel pinions. Breast plate is adjustable.

Cat. No.	Length Over All	Capacity	Weight Each
1455	16 $\frac{1}{2}$ in.	0 to $\frac{1}{2}$ in.	6 lbs.

Nos. 482 and 483 Automatic Push Drills



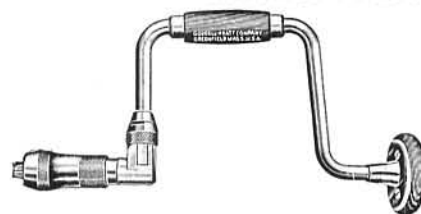
No. 483

Nos. 482 and 483 are spring controlled push drills with working parts fully enclosed. The handles serve as magazines for 8 drill points, ranging in size from $\frac{1}{16}$ to $\frac{5}{8}$ -inch. These drill points are included with the drill.

No. 482 has a hardwood handle with a transparent plastic ring next to the metal cap making the cutting parts of the points visible. No. 483 is furnished with a completely transparent handle.

Cat. No.	Description	Wt. Each
482	Wood Handle	6 lbs.
483	Transparent Handle	6 $\frac{3}{4}$ lbs.

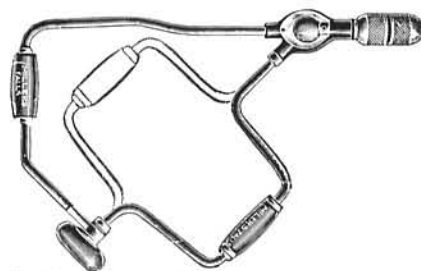
Ratchet Braces



This Ratchet Brace is especially adapted for telephone work. The 10-inch sweep brace is most commonly used.

Cat. No.	Sweep	Wt. Each
7008	8 inches	3 lbs.
7010	10 inches	3 $\frac{1}{2}$ lbs.

Corner Braces



This corner brace is easy to operate because there is ample space between swivel and steadying handle to allow free use of the handle.

Cat. No.	Sweep	Length	Wt. Each
502	10 inches	17 inches	1 $\frac{1}{2}$ lbs.

Wrecking Bars

Light Gooseneck Pattern



Octagon steel, black finish. Strong gooseneck pattern with slot for pulling nails. Back of the claw is flat for ripping purposes.

Cat. No.	Length	Diameter	Weight Per Doz.
12	12 in.	$\frac{1}{2}$ in.	9 lbs.
18	18 in.	$\frac{5}{8}$ in.	22 lbs.
24	24 in.	$\frac{3}{4}$ in.	42 lbs.
30	30 in.	$\frac{3}{4}$ in.	51 lbs.
36	36 in.	$\frac{7}{8}$ in.	81 lbs.

Line Supplies Section

TOOLS

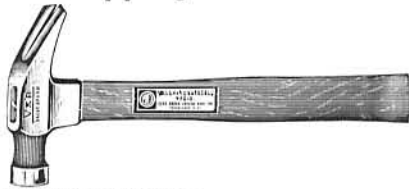
Nail Hammers



Bell Face — Octagon Neck Handle — White Lacquered Handle.

Cat. No.	Description	Length	Weight Each
111	Nail Hammer	14 in.	20 oz.
111½	Nail Hammer	13 in.	16 oz.

Ripping Hammers



White Lacquered Handles.

Cat. No.	Description	Length	Weight Each
111-R	Ripping Hammer	14 in.	20 oz.
111½-R	Ripping Hammer	13 in.	16 oz.

Ball Pein Hammers



Black Finish — White Lacquered Handle.

Cat. No.	Description	Length	Weight Each	Weight per Doz.
2/0-B	Ball Pein Hammer	14 in.	12 oz.	14 lbs.
0-B	Ball Pein Hammer	14 in.	16 oz.	16 lbs.
2-B	Ball Pein Hammer	16 in.	24 oz.	24 lbs.
4-B	Ball Pein Hammer	17 in.	32 oz.	30 lbs.

Linemen's Double Face Hammers



Polished Head — Black Body.

Cat. No.	Description	Length	Weight Each
0	Double Face Hammer	15 in.	36 oz.

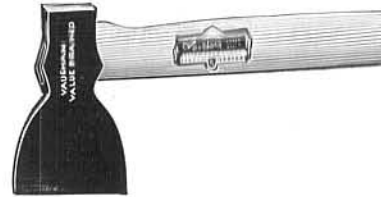
Single Bit Axes
Dayton Pattern



Fine tool steel black finished bit, cutting edge honed. With bent or straight handles. If not specified axes will be furnished with bent handles. Available handled or unhandled.

Cat. No.	Description	Length	Width of Bit	Weight Each
3	Dayton Pattern	36 in.	4½ in.	3 lbs.
3½	Dayton Pattern	36 in.	4½ in.	3½ lbs.

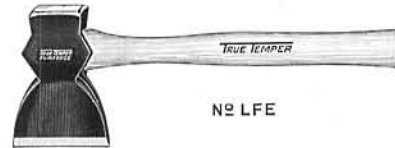
Linemen's Broad Hatchets



Bit is thin for rapid cutting. Head has a smooth black finish and hickory handle is lacquered white.

Cat. No.	Length	Width of Bit	Weight Each
801	13½ in.	4 in.	24 oz.
802	14½ in.	4½ in.	28 oz.
803	18½ in.	5 in.	36 oz.
804	18½ in.	5½ in.	42 oz.

Linemen's Blunt Edge Hatchets



Heavy head is 1⅝ in. thick, tapered to cold chisel cutting edge. Head has gun metal finish; handle is high grade hickory.

Cat. No.	Length of Handle	Width of Bit	Weight Each
LFE	16 in.	4¼ in.	64 oz.

Heavy Stripping Knives



For use in shaving poles preparatory to painting or treating with preservatives. Blades are full polished and shanks are enameled black.

Handles are fitted with heavy steel ferrules. With this form of handle no cap is required.

Cat. No.	Width of Blade	Length of Blade	Weight Each
625-12	1¾ in.	12 in.	28 oz.
625-14	1¾ in.	14 in.	31 oz.

Razor Blade Draw Knives



Highly finished sharpened steel blade, ready for use. Hardwood handles are mounted on shanks which are securely held in place by riveting on top of nickel plated caps.

Cat. No.	Width of Blade	Length of Blade	Weight Each
600-10	1¾ in.	10 in.	18 oz.
600-12	1¾ in.	12 in.	19 oz.
600-14	1¾ in.	14 in.	21 oz.

TOOLS

Yankee Standard Blade Screw Drivers



Blades are of carefully hardened, tempered, special analysis steel, fastened into the handle so that they simply cannot loosen. Handles are selected hardwood with durable black finish, shaped for grip and comfort.

Cat. No.	Length of Blade	Length Over-All	Weight Per Doz.
90-3	3 in.	7½ in.	1⅞ lbs.
90-4	4 in.	9¼ in.	2⅞ lbs.
90-5	5 in.	10½ in.	4¼ lbs.
90-6	6 in.	11¾ in.	4½ lbs.
90-7	7 in.	13 in.	6½ lbs.
90-8	8 in.	14 in.	7 lbs.
90-9	9 in.	15 in.	7½ lbs.
90-10	10 in.	16½ in.	10⅞ lbs.

Yankee Cabinet Screw Drivers



Same as standard style except with light, slim blades. All lengths have about the same size points. Blades are the same width all way back and tempered entire length.

Cat. No.	Length of Blade	Length Over-All	Diameter of Blade	Weight Per Doz.
95-4½	4½ in.	8¼ in.	⅜ in.	1⅞ lbs.
95-5½	5½ in.	9¼ in.	⅜ in.	1¾ lbs.
95-6½	6½ in.	10¼ in.	⅜ in.	2 lbs.
95-7½	7½ in.	12 in.	⅜ in.	2¾ lbs.
95-8½	8½ in.	13 in.	⅜ in.	2⅞ lbs.
95-9½	9½ in.	14 in.	⅜ in.	3 lbs.
95-10½	10½ in.	15 in.	⅜ in.	3¼ lbs.
95-12½	12½ in.	17 in.	⅜ in.	3⅜ lbs.

No. 10 Yankee Ratchet Screw Drivers



Saves time and labor. No tiresome grip-and-let-go movement is necessary. Right-hand ratchet, left-hand ratchet and rigid adjustments are quickly changed by sliding shifter. Polished blades and chrome ratchet case.

Cat. No.	Length of Blade	Length Over-All	Weight Per Doz.
10-3	3 in.	7⅞ in.	4 lbs.
10-4	4 in.	8⅞ in.	4½ lbs.
10-5	5 in.	9½ in.	4⅜ lbs.

No. 15 Yankee Ratchet Screw Drivers



On the blade is a knurled washer by means of which the blade can be turned with a finger and the thumb.

Cat. No.	Length Over-All	Std. Pkg.	Weight Per Doz.
15-2	4⅞ in.	6	1⅞ lbs.
15-3	5⅞ in.	6	1¾ lbs.
15-4	6½ in.	6	1⅞ lbs.
15-5	7¾ in.	6	2 lbs.
15-6	8¾ in.	6	2⅞ lbs.

No. 12 Yankee Ratchet Screw Drivers



A strong, substantial screw driver with a short stub blade. Right and left hand and rigid.

Cat. No.	Length of Blade	Length Over-All	Std. Pkg.	Weight Per Doz.
12	1 in.	5½ in.	6	3¾ lbs.

Yankee Spiral Ratchet Screw Drivers



No. 30-A

Simple, compact, strong, durable and easy to operate. Screws may be driven or drawn by pushing on the handle or by ratchet movement. The movement is changed instantly or the driver can be made rigid by a simple shift. Spindle can be locked closed. Three bits of different size are furnished with each driver. All exposed metal parts are chromium plated.

Regular Style

No. 35 is for small screws, it is lighter and more sensitive than No. 30-A.

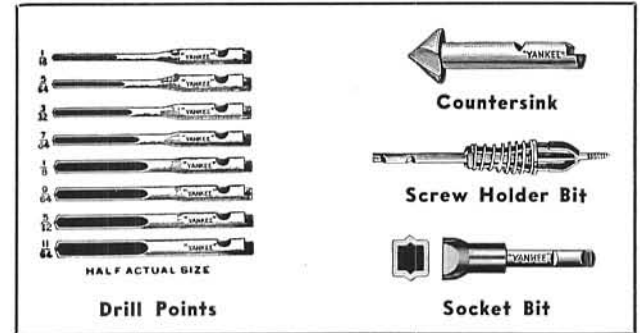
Cat. No.	Description	Length with Bit Extended	Length with Bit Closed	Weight Per Doz.
30-A	Standard Size	18¼ in.	13 in.	13½ lbs.
31-A	Heavy Pattern	25 in.	16¾ in.	21 lbs.
35	Light Pattern	12⅜ in.	9⅞ in.	7½ lbs.

With Quick Return

Spring in handle causes handle to come back automatically after each stroke of the driver.

Cat. No.	Description	Length with Bit Extended	Length with Bit Closed	Weight Per Doz.
130-A	Standard Size	20 in.	14¾ in.	15 lbs.
131-A	Heavy Pattern	28 in.	19⅜ in.	24 lbs.
135	Light Pattern	13½ in.	10¼ in.	8¼ lbs.

Attachments for Spiral Screw Drivers



Chuck and Drill Set

Consists of chuck and 8 drill points which fit into chuck adapter and the two together are then put into the chuck of spiral screw driver in the same manner as a regular bit. Set of points and a chuck in a wood box.

Cat. No.	Set	No. of Points	Range of Sizes	Weight Per Dozen Sets
30-A	Chuck & Drill Set	8	⅛ to ¼ in.	1¼ lbs.
31-A	Chuck & Drill Set	8	⅛ to ¼ in.	1¼ lbs.
35	Chuck & Drill Set	3	⅛ to ¼ in.	½ lb.

Countersinks and Screw Holder Bits

For 30-A, 31-A and 35.

Socket Bits

Available in two styles: for both square or hexagon nuts as shown or for hexagon only. Give style and width of nuts across flats and Number of Driver.

Line Supplies Section

TOOLS

Klein Side-Cutting Pliers



For use on bare and insulated wire. All Klein pliers have polished heads and temper blued handles. Powerful leverage and keen reinforced cutting knives make this plier adaptable for heavy cutting in telephone and telegraph work.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
201-5	5 inches	6	3 lbs.
201-6	6 inches	6	5¼ lbs.
201-7	7 inches	6	7¼ lbs.
201-8	8 inches	6	11¾ lbs.
201-9	9 inches	6	14 lbs.

Klein Side-Cutting Pliers



With Sleeve-Joint Twister
For use on bare or insulated wire with joint twister.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.	Size Sleeve Twister	
				N.B.S.	B. & S.
212-6	6 in.	6	5 lbs.	14 and 17	12
212-7	7 in.	6	7½ lbs.	14 and 17	12
212-8	8 in.	6	11¾ lbs.	12	10

Round Nose, Side-Cutting Pliers—N. E. Type



For use on bare or insulated wire. Identical with series 201 except that the nose is round to permit working in confined space and all edges are rounded to prevent nicking of wire.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
201-5 N.E.	5 inch	6	3 lbs.
201-6 N.E.	6 inch	6	5¼ lbs.
201-7 N.E.	7 inch	6	7¼ lbs.
201-8 N.E.	8 inch	6	11¼ lbs.
201-9 N.E.	9 inch	6	13½ lbs.

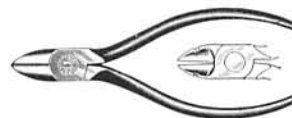
Side-Cutting Pliers — N. E. Type



With Sleeve-Joint Twister
Identical with series 201-N.E. but have opening provided for twisting double tube sleeve joints.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.	Sleeve Opening for Wire Size	
				N.B.S.	B. & S.
212-6 N.E.	6 in.	6	5¼ lbs.	14 and 17	12
212-7 N.E.	7 in.	6	7¼ lbs.	14 and 17	12
212-8 N.E.	8 in.	6	11¾ lbs.	12	10

Oblique Cutting Pliers with "W" Stripping Notches



Has two "W" shaped notches at back of the cutting knives specially designed for removing acetate cellulose insulation from .050 and .058 wires.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
245-5-W	5 inches	6	3 lbs.

Klein Oblique Cutting Pliers

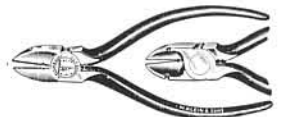


Cuts close, the narrow head permitting its use in confined places. The knives are perfectly fitted, so that they meet accurately at all points.

For Close Cutting

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
202-5 Klein's	5 inches	6	3¾ lbs.
202-6 Klein's	6 inches	6	4 lbs.
15-5 Swedish	5 inches	6	4 lbs.

Oblique Cutting Pliers with "W" Stripping Notches, Sleeve Openings and Skinning Hole



All-purpose cutting tool for telephone work. The "W" notches will slit acetate cellulose and other insulation from wires up to .058 O.D. A stripping hole .052 diameter is provided in the blades. Sleeve openings are in the handle. The notch may also be used for "crimping" on .032—.025 single tube copper sleeves.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
202-5-SW	5½ inches	6	3¾ lbs.

Narrow Nosed, Oblique Cutting Pliers



Has narrow hinge and pointed nose, enabling convenient use in confined space. The knives are perfectly matched for clean cutting.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
202-5-A	5 inches	6	3¾ lbs.
202-6-A	6 inches	6	4 lbs.

Oblique Cutting Pliers with Wire Stripping Notch and Sleeve Openings

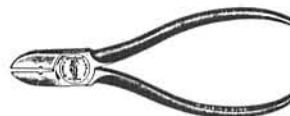


Same as No. 202 series with the addition of stripping notch and openings for twisting sleeves. Notch may also be used for "crimping" on .032—.025 single tube copper sleeves

often used in telephone work for splicing .032 bridle wire and .025 inside wire. When so used two "crimps" are made at each end of the sleeve for .032 bridle wire and three "crimps" for .025 inside wire.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
240-5-S	5 inches	6	3¾ lbs.

Oblique Cutting Pliers with Wire Stripping Notch



Same as series 202 with the addition of a notch in the cutting knives for stripping small wires. The notch can be used for "crimping" single tube copper sleeves.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
240-5	5 inch	6	3¾ lbs.
240-6	6 inch	6	4 lbs.

Klein No. 245 Oblique Cutting Pliers



For telephone men and switchboard builders. Convenient as it can easily be carried in vest pocket.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
245-5	5 inches	6	3 lbs.

TOOLS

Klein Long Oval Nose Pliers



With or Without Cutters

Adapted to stripping the ends of insulated wire, and for work in confined spaces.

No. 203-6 has the same features as the No. 301-6 series with the addition of the cutting knives. Points are $\frac{3}{16}$ -inch round. Nos. 301-7 and 203-7 have extra long noses — $2\frac{3}{4}$ inches from center of hinge to point.

Cat. No.	Description	Size	Std. Pkg.	Weight Per Doz.
301-5	Without Cutter	5 inches	6	3 $\frac{1}{4}$ lbs.
301-6	Without Cutter	6 inches	6	3 $\frac{3}{4}$ lbs.
301-7	Without Cutter	7 inches	6	4 $\frac{1}{4}$ lbs.
203-5	With Cutter	5 inches	6	3 $\frac{1}{4}$ lbs.
203-6	With Cutter	6 inches	6	3 $\frac{3}{4}$ lbs.
203-7	With Cutter	7 inches	6	4 $\frac{1}{4}$ lbs.

Klein Long Needle Nose Pliers



The thin points make these pliers useful for the general class of work done in central offices. Points are $\frac{1}{16}$ -inch round.

Cat. No.	Description	Size	Std. Pkg.	Weight Per Doz.
303-6	Without Cutter	6 inches	6	3 $\frac{3}{4}$ lbs.

Klein Long Nose Sleeve Pliers



Same as No. 301-6 with the addition of sleeve openings for twisting No. 17 N.B.S. and smaller copper sleeves. Point $\frac{3}{16}$ -inch round.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
316-S	6 inches	6	3 $\frac{3}{4}$ lbs.

Klein Long Nose Cord Crimping Pliers



Same as No. 301-6 with the addition of an oval groove for crimping telephone cords. Point is $\frac{3}{16}$ -inch round.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
301-C	6 inches	6	3 $\frac{3}{4}$ lbs.

Klein Chain Nose Pliers, Without Cutters



For general use where a short nose is desirable.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
317-6	6 inches	6	3 $\frac{1}{2}$ lbs.

Klein Chain Nose Pliers, Side Cutting



Similar to No. 317-6 but with side cutting knives.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
217-6	6 inches	6	3 $\frac{1}{2}$ lbs.

Klein Long Flat Nose Pliers



Adaptable to switchboard work, telephone and telegraph work, armature winding, etc. A very handy tool for spring adjusting. Can be supplied with inside of jaws left smooth if desired.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
305-6	6 inches	6	3 $\frac{1}{2}$ lbs.

Klein Long Flat Nose, Side-Cutting Pliers



Has long, wide, flat nose and cutting knives, polished head and temper blued handles. The inside of the jaws is smooth.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
206-6	6 inches	6	3 $\frac{1}{2}$ lbs.

Klein Long Flat Nose, Spring Adjusting Pliers



Hollow ground on the outside of the jaws to reach between and grasp springs easily.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
311-5 $\frac{1}{2}$	5 $\frac{1}{2}$ inches	6	3 $\frac{1}{4}$ lbs.

Klein Long Duck Bill Pliers



Fitted with duck bill jaws, wider and heavier than those of the ordinary flat nose pliers affording a tool with a firmer gripping surface.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
304-6	6 inches	6	3 $\frac{1}{2}$ lbs.

Klein Long, Duck Bill, Side-Cutting Pliers



Same as No. 304 duck bill with the addition of the cutting knives.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
205-6	6 inches	6	3 $\frac{1}{4}$ lbs.

Klein Heat Coil Pliers



Adapted for removing heat coils from switchboards and telephone terminals, the points of the nose being shaped to fit the coils. Also used for removing battery caps as well as holding any cylindrical object.

Cat. No.	Size	Std. Pkg.	Weight Per Doz.
313-6	6 inches	6	3 $\frac{3}{4}$ lbs.

TOOLS

Klein Long Curved Nose Pliers



A handy plier for working around switchboards, terminals and telephones, due to the nose being curved. The angle is arranged to give full clearance and prevent skinning of knuckles.

Cat. No.	Size	Std. Pkg.	Wt. Per Doz.
302-6	6 inches	6	3 1/4 lbs.

Klein Cord Tip Closing Pliers



Jaws are of sturdy design to permit its use as a hand press for closing cord tips such as W.E. 101 and 102. The circular opening in the jaws is correctly sized to insure a perfect connection when the closure is completed.

Cat. No.	Size	Std. Pkg.	Wt. Per Doz.
039	5 inches	6	3 lbs.

Klein Slip Joint Pliers



Made of tempered tool steel, this tool will give service that cannot be expected from the ordinary plier of similar pattern.

Has a wire cutter and a screw-driver handle.

Cat. No.	Size	Std. Pkg.	Wt. Per Doz.
406-6 1/2	6 1/2 inches	6	6 lbs.

Klein "Utility" Slip Joint Pliers



Heavy duty type, adaptable as a pipe wrench and wire cutter. Has sure grip jaws which readily accommodate objects of irregular shape. Made of tempered tool steel.

Cat. No.	Size	Std. Pkg.	Wt. Per Doz.
407-7	7 inches	6	6 1/4 lbs.

Klein Bent Nose Slip Joint Pliers



A plier of the bent nose type. Specially designed for use in difficult places. An excellent general purpose tool that should be included in every mechanic's kit.

Cat. No.	Size	Std. Pkg.	Wt. Per Pkg.
408-8	8 inches	6	7 1/2 lbs.

Klein No. 105-15 Splicing Clamps



Used for twisting double tube sleeves. A convenient pocket size. Used for copper sleeves from 8 to 17 B. & S. Gauge and iron sleeves from 10 to 19 B. W. G.

Cat. No.	Description	Size	Wt. Per Doz.
105-15	Splicing Clamps	8 inches	5 3/4 lbs.

Klein Wire Splicing Clamps

Forged from a select grade of tool steel properly hardened and tempered. Handles will not buckle when closed. Have polished heads and temper blued handles.

No. 102-1 Baby Pattern



A handy pocket size adapted for telephone troubleshooters. Has five round holes for

copper wire from 8 to 16 B. & S. gauge, and iron wire from 10 to 18 B. W. G.

Cat. No.	Description	Length	Wt. Per Doz.
102-1	Baby Pattern	8 inches	5 3/4 lbs.

No. 102-3 Standard Size for Bare Wire



Five round holes accommodate copper wire from 2 to 12 B. & S. gauge and iron wire

from 4 to 14 B. W. G. Oval hole can be used in serving guy wire or messenger strand and is sometimes used for No. 4 copper sleeves.

Cat. No.	Description	Length	Wt. Per Doz.
102-3	Standard	10 3/4 inches	16 3/4 lbs.

Klein Combination Wire & Sleeve Clamps

No. 132-12 Light Weight



Standard telephone splicing clamp for general line and trouble work. Has four

round holes, accommodating copper wire from 6 to 12 B. & S. gauge, and iron wire Nos. 8 to 14 B. W. G. The reverse side has four sets of chambers adapted for twisting double tube copper sleeve joints Nos. 8 to 17 B. & S. gauge, and iron sleeve joints Nos. 10 to 19 B. W. G.

Cat. No.	Description	Length	Wt. Per Doz.
132-12	Light Weight	9 inches	11 lbs.

No. 132-15 Heavy Weight



For general telephone line work. Has five round holes for

twisting copper wire Nos. 4 to 12 B. & S. gauge, and iron wire Nos. 6 to 14 B. W. G. and one oval hole for guy strand. The reverse side has five double chambers for twisting double tube copper sleeve joints Nos. 6 to 17 B. & S. gauge, and iron sleeve joints Nos. 8 to 19 B. W. G.

Cat. No.	Description	Length	Wt. Per Doz.
132-15	Heavy Weight	11 1/4 inches	18 lbs.

Klein No. 105-17, Type B Splicing Clamps



This clamp has five sets of chambers for twisting double tube copper sleeves from 6 to 14 B. & S. gauge; for copper sleeves from 12 to 17 N. B. S. gauge and for iron sleeves from 8 to 19 B. W. G.

Cat. No.	Description	Size	Weight Per Doz.
105-17	Type B Splicing Clamps	10 3/4 in.	17 lbs.

TOOLS

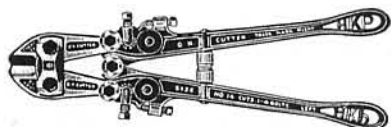
Porter Bolt Cutters



Clipper cut jaws are beveled almost entirely from one side for cutting annealed bolts, wrought iron, soft steel, cold drawn screw stock and non-ferrous metals. Not recommended for cutting reinforcing rod, tempered wire or hardened material of any kind. The jaws can be dressed with a mill file when necessary.

Cat. No.	Length	Cuts Bolts Size	Weight Each
0-NE	18 inches	$\frac{1}{8}$ inch	3 $\frac{1}{4}$ lbs.
1-NE	24 inches	$\frac{3}{8}$ inch	5 $\frac{1}{4}$ lbs.
2-NE	30 inches	$\frac{1}{2}$ inch	8 $\frac{1}{2}$ lbs.
3-NE	36 inches	$\frac{5}{8}$ inch	12 $\frac{1}{2}$ lbs.
4-NE	42 inches	$\frac{3}{4}$ inch	17 $\frac{3}{4}$ lbs.

Porter Wire Cutters



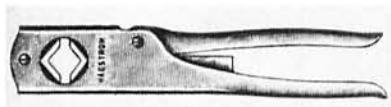
Cuts high strength telephone and telegraph wire. It is light and handy and may be carried in a handy belt holster. Especially suitable for

No. 85 and No. 135 wire in No. 10, 12 or 14 B.W. Gauge.

Holster is leather put together with rivets — no stitching to rot or pull out. Equipped with a safety, snap-down retainer strap.

Cat. No.	Description	Length	Weight
10	Wire Cutter	10 in.	1 $\frac{1}{2}$ lbs.
K-P1	Leather Holster	11 in.	$\frac{1}{2}$ lb.

Porcelain Tube Cutters



Severs porcelain tubes without crushing them, leaving a straight, clean edge. Tubes may be cut into $\frac{1}{4}$ inch lengths and

less when necessary. Weight each is 14 ounces.

Klein Linemen's Wrenches

"Bell System" Type



of different size at each end.

No. 3146 is for $\frac{5}{8}$ -inch through bolts, $\frac{1}{2}$ -inch lag screws, $\frac{3}{8}$ -inch carriage bolts, $\frac{1}{2}$ and $\frac{3}{8}$ -inch guy clamps.

No. 3146-A is for $\frac{3}{4}$ and $\frac{5}{8}$ -inch through bolts, $\frac{1}{2}$ -inch lag screws, $\frac{3}{8}$ -inch carriage bolts, $\frac{1}{2}$ and $\frac{5}{8}$ -inch guy clamps.

Cat. No.	Used For	Size Openings—Inches		Lgth. In.	Weight Per Doz.
		Large End	Small End		
3146	$\frac{5}{8}$ in. Hardware	$1\frac{1}{8}$ & $\frac{11}{16}$	$\frac{11}{16}$ & $\frac{5}{8}$	13	23 lbs.
3146-A	$\frac{3}{4}$ in. Hardware	$1\frac{1}{8}$ & $\frac{11}{16}$	$\frac{7}{8}$ & $\frac{5}{8}$	13	23 lbs.

Klein Combination Steel Wrenches For Lag Screws



The small end of the wrench is arranged for square nuts on $\frac{1}{8}$ -inch machine or carriage bolts. The round hole allows the end of a bolt to come through as the nut is run on.

Cat. No.	Description	Length	Weight Per Doz.
3109-20	Combination Wrench	13 $\frac{1}{2}$ inches	24 lbs.

Chance Lineman's Socket Wrenches

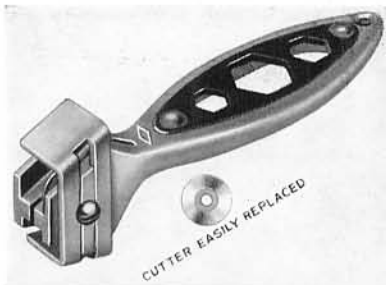


Fits all the standard nuts and lags used in pole line construction. It takes the place of a hammer, or hand

axe in driving lags, pins, bolts, steps, etc.

Cat. No.	Description	For Nut Sizes	Weight Each
C-234		$\frac{3}{4}$ in. and smaller	3 $\frac{1}{4}$ lbs.
C-154		$\frac{5}{8}$ in. and smaller	2 $\frac{1}{2}$ lbs.

Diamond Braid Strippers



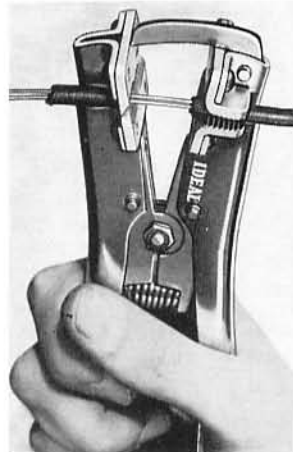
Used for removing the braided covering from parallel drop wire and for holding bridging connectors while they are being installed or removed.

Consists of an aluminum handle with an enlarged end into which is clamped a circular

steel blade projecting into two wire grooves. One groove accommodates plain braid wire and the opposite groove is for resistant braid wire. A sliding guard actuated by the thumb forces the wire against the blade and the braid is cut by drawing the tool along the wire. The handle has $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ -inch hexagonal wrench openings for the nuts or heads of bridging connectors.

Cat. No.	Description	Std. Pkg.	Weight Each
D-1	Braid Stripper	12	1 lb.
D-2	Extra Cutter	..	..

E-Z Wire Strippers



A light, handy tool, used for stripping both twisted pair and parallel telephone drop wire. Easily and cleanly strips the toughest insulation with no nicking or cutting of the wire. The wire is clamped and the insulation cut and stripped, all in one simple operation. Just insert wire, squeeze handles and release. Protects the operators hands and requires no more pressure than ordinary pliers. Length overall is 7 $\frac{1}{4}$ inches and weight each is 1 $\frac{1}{2}$ lbs.

Line Supplies Section

TOOLS

Linemen's Rubber Gloves



These gloves are of highest grade rubber, steam cured, seamless and form fitting. Qualities of high insulation, low leakage, strength, flexibility and long life are evenly balanced.

Furnished in either "Curved Finger" or "Straight Finger" styles. In the "curved finger" type there is no surplus rubber to bunch in the palm. Rated voltage, 10,000.

Sizes: 9, 9½, 10, 10½, 11 and 12.

Cat. No.	Type	Length	Weight Per Pair
90-B	Straight Finger	14 in.	1½ lbs.
100-B	Curved Finger	14 in.	1½ lbs.

Linemen's Protector Gloves



Designed to be worn over Linemen's Rubber Gloves to protect them from snagging, etc. Made of specially tanned, Grade A horsehide, will not become slippery when wet. Have full 4-inch gauntlets. A pair of these gloves is a necessary part of every lineman's outfit.

For Use with Straight Finger Rubber Gloves

Cat. No.	Description	For Size Rubber Glove	Weight Per Pair
18-C	Closed Back	9, 9½, 10	½ lb.
18	Open Back	9, 9½, 10	½ lb.
20-C	Closed Back	10½, 11, 12	½ lb.
20	Open Back	10½, 11, 12	½ lb.

For Use with Curved Finger Rubber Gloves

118-C	Closed Back	9, 9½, 10	½ lb.
118	Open Back	9, 9½, 10	½ lb.
120-C	Closed Back	10½, 11, 12	½ lb.
120	Open Back	10½, 11, 12	½ lb.

Protective Bags for Linemen's Gloves



Used to protect Linemen's Rubber Gloves when not in use. Made of 42 ounce duck in two lengths, 15 inches to hold the gloves flat or 9 inches for an easy fold at the wrist. Large enough to accommodate leather protector gloves also. Equipped with snap hooks and "D" rings to enable the lineman to attach the bag to his belt.

Cat. No.	Length	Weight Each
25	9 inches	9 oz.
35	15 inches	12 oz.

Sterling Linen Tapes

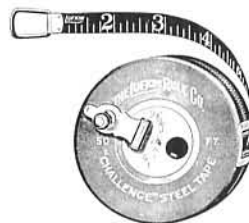


A strictly high grade tape especially popular with telephone and telegraph companies for ordinary work.

The serviceable linen tape is ⅝-inch wide with reinforced leather ends. Markings are clear and figures are prominent. Case is of genuine russet leather, metal lined, with folding flush handle and nickel plated trimmings.

Cat. No.	Markings	Length	Weight Each
403	Feet, inches and half inches	50 ft.	12 oz.
406	Feet, inches and half inches	100 ft.	19 oz.
403-D	Feet, 10ths and half-10ths	50 ft.	12 oz.
406-D	Feet, 10ths and half-10ths	100 ft.	19 oz.

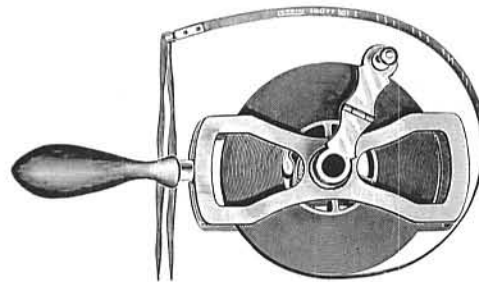
Challenge Steel Tapes



Particularly recommended for all kinds of general measuring. Line is ⅜-inch wide, made of highest grade tape steel with distinct markings on one side only. Case of genuine russet leather hand stitched and with substantial plated steel liner. Folding flush steel handle is opened by pressing pin on opposite side. Measurements guaranteed accurate.

Cat. No.	Markings	Length	Weight Each
263	Feet, inches and 8ths	50 feet	11 oz.
266	Feet, inches and 8ths	100 feet	21 oz.
263-D	Feet, 10ths and 100ths	50 feet	11 oz.
266-D	Feet, 10ths and 100ths	100 feet	21 oz.

Surveyors' Chain Tapes



A chain tape that will stand up to telephone, railroad and other rough work. This line is ⅝-inch wide and made of heavy, extra tough steel, coated with white metal to resist rust. Graduations and figures are deeply stamped into babbitt metal.

Line is detachable from reel, has heavy brass end clips and is furnished with a pair of leather thongs.

Has sturdy metal reel of improved pattern, nickel plated, with polished hardwood handle and long, folding, winding handle.

Regular markings — feet only with end feet in tenths. Tapes over 100 feet long have 4-arm reel with "D" handle and spike end.

Cat. No.	Description	Length	Weight Each
3100	Surveyor's Chain Tape	100 ft.	3½ lbs.
3150	Surveyor's Chain Tape	150 ft.	5 lbs.

TOOLS

Nos. 590 and 591 Docking Saw



A useful saw for telephone construction crews. Made of high-grade special steel, full breast, tempered blade, ground 18x20 gauge, polished ribbon edge, 4½ points per inch, peg teeth, filed and set. Handle has easy grip and is made of malleable iron, tinned and riveted. Each saw sharpened and set ready for use.

Cat. No.	Type	Length	Std. Pkg.	Weight Per Doz.
590	Skew Back	30 in.	4	37 lbs.
591	Straight Back	30 in.	4	37 lbs.

No. 24 Cableman's Saw



This saw is arranged particularly for cable work. Ground 17x19 gauge, 10 points per inch on one side, 13 points on the other. One of these saws should be in every tool kit. Will also cut wood.

Cat. No.	Length	Width at Point	Width at Butt	Std. Pkg.	Weight Per Doz.
24-16	16 inches	⅝ in.	2¼ in.	6	9 lbs.

No. 9 Compass Saw



Extra heavy blade for telephone work. Ground 16x17 gauge, 9 point filed and set. Blade is slotted and punched. Equipped with interchangeable beach handle, nicked wing nut and screw.

Cat. No.	Description	Length	Weight Per Doz.
9-12	Compass Saw	12 in.	6 lbs.
9-14	Compass Saw	14 in.	7 lbs.

No. 2 Back Saw



Silver steel, hardened and tempered. Spring steel back keeps blade true.

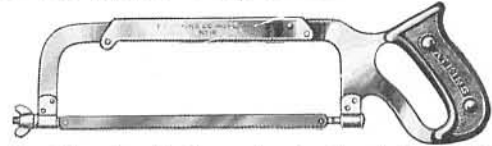
Cat. No.	Points Per Inch	Weight Per Doz.
2-8	14	8 lbs.
2-10	14	13 lbs.
2-12	14	17 lbs.

No. TR3-14 Roberts Pruners

A strong pull cut pruning saw of silver steel, properly ground and toothed with the right pitch on curved blade. Highly polished and etched. Has closed pattern handle which is interchangeable with a pistol grip. Seasoned beech, lacquered handle is held by three nicked screws.

Cat. No.	Length	Width at Point	Width at Butt	Weight Per Doz.
TR3-14	26 in.	1⅜ in.	3¼ in.	21 lbs.

No. 10 Pistol Grip Hacksaw Frames



Hard rubber handle hung low to direct the entire force of stroke in line with the cutting edge of the blade. Frame is cold-rolled steel, ⅜-inch thick and 1½-inch wide, nicked and highly polished. Adjustable, 8 to 12-inch blades—will cut at four different angles. Depth under back to cutting edge of blade is 3 inches.

Cat. No.	Description	Size	Weight Per Doz.
10	Hacksaw Frame	8 to 12 in., adj.	24 lbs.

No. 11 Hacksaw Frames

Has a hard, rubber, open grip handle which gives the operator complete control of the saw at all times. Frame is made of extra high grade steel ⅜-inch wide and ⅝-inch thick. Nicked and polished. Depth under back to cutting edge, 3 inches.

Cat. No.	Size	Wt. Per Doz.
11	8 to 12 inches—adjustable	20 lbs.

Atkins AAA Alloy Steel Non-Breakable Hand Hacksaw Blades



No. 300—For cutting cast iron, slate, machine steel and other soft solid stock. Raker set.

No. 310 — For cutting iron, steel, brass and copper tubing; wrought iron pipe; drill rod; conduit; extra light structural shapes; metal trim and sheet metal thicker than 18 gauge. Raker or undulated set —

please specify which is desired.

No. 315—For cutting same materials as No. 310 except thinner than 18 gauge. Undulated set.

Cat. No.	Length	Thickness	Width	Teeth Per Inch
300-8	8 in.	.025 in.	⅞ in.	18
300-10	10 in.	.025 in.	1½ in.	18
300-12	12 in.	.025 in.	1½ in.	18
310-8	8 in.	.025 in.	⅞ in.	24
310-10	10 in.	.025 in.	1½ in.	24
310-12	12 in.	.025 in.	1½ in.	24
315-8	8 in.	.025 in.	⅞ in.	32
315-10	10 in.	.025 in.	1½ in.	32
315-12	12 in.	.025 in.	1½ in.	32

No. 390 Tuttle Tooth One-Man Cross Cut Saw

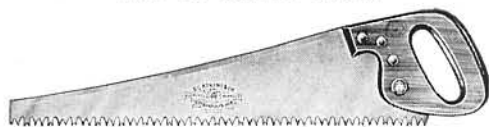


Finest and most popular one-man saw available. Special steel, straight back blade, hardened and tempered. Taper ground, clears easily, runs fast.

Cat. No.	Length	Width at Point	Width at Butt	Weight Each
390-3	3 ft.	2¼ in.	6¾ in.	2⅞ lbs.
390-3½	3½ ft.	2¼ in.	7 in.	3¼ lbs.
390-4	4 ft.	2¾ in.	7¼ in.	4½ lbs.
390-4½	4½ ft.	2¾ in.	7½ in.	5½ lbs.

TOOLS

Pruning Saws No. 40 Tuttle Tooth



Special steel, high grade tuttle tooth pattern. Has extra sharp teeth which hold edge longer due to their extra fine temper. Handle is air-dried beech, Davey pattern.

Cat. No.	Length	Width at Point	Width at Butt	Weight Per Doz.
40-20	20 in.	1 7/8 in.	5 1/2 in.	17 lbs.
40-24	24 in.	1 1/2 in.	6 1/4 in.	21 lbs.

No. 41

Silver steel, skew back blade, ground 18x11 gauge. Has six point bevel filed handsaw teeth with wide set. Handle is lacquered and polished, fastened to the blade with 3 nickeled screws and a medallion.

Cat. No.	Length	Width at Point	Width at Butt	Weight Per Doz.
41	36 in.	1 1/2 in.	6 in.	28 lbs.

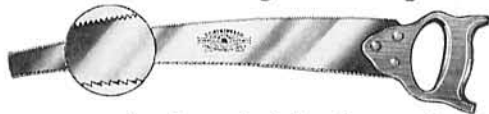
No. 17 Forester Pruners



Silver steel blade will not bind and the wider butt adds stiffness. Four and one-half points to the inch gives large teeth that cut large or small limbs readily. Teeth are filed and set.

Cat. No.	Length	Width at Point	Width at Butt	Std. Pkg.	Weight Per Doz.
17	26 in.	1 1/2 in.	3 1/2 in.	6	16 lbs.

No. 12 Double Edge Pruning Saws



The concave edge is toothed for fine cutting and the opposite for coarse work. Lacquered beech handle is attached to blade with 3 nickeled screws.

Cat. No.	Length	Width at Point	Width at Butt	Weight Per Doz.
12-12	12 in.	1 1/8 in.	3 1/8 in.	7 lbs.
12-14	14 in.	1 1/8 in.	3 3/8 in.	9 lbs.
12-16	16 in.	1 1/8 in.	3 3/8 in.	11 lbs.
12-18	18 in.	1 1/8 in.	3 3/8 in.	12 lbs.
12-20	20 in.	1 1/8 in.	3 3/8 in.	13 lbs.
12-22	22 in.	1 1/8 in.	3 3/8 in.	14 lbs.

Ideal Commutator Resurfacers and Dressers



Pocket Type

An artificial abrasive for hand grinding of commutators and rings on fractional horsepower motors. A quick application of this hand type resurfacer will remove high mica, ridges, grooves and burns, leaving a smooth, non-scratching surface.

There are five grades to choose from: extra coarse, coarse, medium, finish and polish. The Pencil Type Resurfacer will be shipped in finish grade if not specified. Size is 6x2 3/8 x 3/8 inch. The Pocket Type has one grade on one end and another on the other end. When ordering specify the two grades desired. Size is 6x2x1 inch.

Bartlett Pole Saw

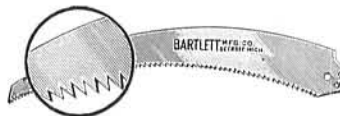


The No. 44 Bartlett Pole Saw is for use on limbs larger than the capacity of the regular No. 1 Type Trimmer. It has a sixteen-inch peg tooth blade with seven teeth to the inch. The blade is adjustable to three angles, and cuts on both the up and down stroke. Furnished complete with 1 1/4 x 1 1/8-inch poles.

Specify length desired.

Cat. No.	Description	Wt. Each
44-4	With 4 ft. pole and ferrule	3 lbs.
44-6	With 6 ft. pole and ferrule	3 1/2 lbs.
44-8	With 8 ft. pole and ferrule	4 lbs.
44-10	With 10 ft. pole and ferrule	4 1/2 lbs.
44-12	With 12 ft. pole and ferrule	5 lbs.
44-14	With 14 ft. pole and ferrule	5 1/2 lbs.
44-16	With 16 ft. pole and ferrule	6 lbs.

Bartlett Pole Saw Blades



To be used on Bartlett No. 44 Pole Saw shown above. Peg teeth cut the full length of the stroke.

Cat. No.	Description	Length of Blade
4402-12	Pole Saw Blade	12 in.
4402-16	Pole Saw Blade	16 in.
4402-20	Pole Saw Blade	20 in.

Seymour-Smith Pruning Saw



For line clearing work this is the ideal companion tool for the Seymour-Smith Tree Pruners as the same extension section poles may be used for both.

Unbreakable malleable iron head has a hook for pulling out dead or cut branches and a holder for a paint brush.

Saw blade is special steel, taper ground with fast, easy-cutting needle teeth. The saw is attached to the head by bolt and thumb nut with lock washer—it is adjustable to three different positions.

May be used with the same extension section poles as are used with the Seymour-Smith Tree Pruners shown on the opposite page.

Cat. No.	Description	Wt. Each
10	Saw head complete with blade (less pole)	1 1/4 lbs.
10-G	Heavy Leather Guard for Saw Blade	1/2 lb.
1-6 ft.	Head Section Pole	2 1/4 lbs.
1-8 ft.	Head Section Pole	2 1/2 lbs.
1-6 ft.	Extension Section Pole	3 lbs.
1-8 ft.	Extension Section Pole	3 1/4 lbs.
10-B	Extra Blade, 16 in. Long	1/2 lb.

TOOLS

Bartlett No. 1-W Pulley Type
Tree Trimmers

A very powerful cutting tool, this tree trimmer will easily sever any branch up to 1 1/4-inch diameter. In addition to the compound lever on the blade itself this trimmer has a double leverage due to the pulley which is attached to the curved lever. The pulley allows the operator to pull the rope from any angle, and efficiently work the knife without changing the position of the hand when cutting. A special coil spring returns the blade to a full cutting position.

The No. 1-W Tree Trimmer is furnished with 1 1/4 by 1 1/8-inch one-piece rectangular poles in lengths from 6 to 16 feet, or in short sections, 4, 6 or 8 feet long joined together with No. 156 rectangular brass sleeve which has a positive locking device.

When more than one section is ordered for each head the intermediate sections are fitted with ferrules on one end and sleeve body on the other; however, one section will be fitted with sleeve body only to be used for handle.

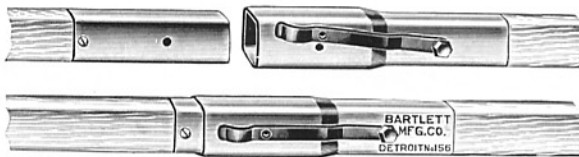
Cat. No.	Description	Wt. Each
1-W	Head complete with Pulley (less Pole)	1 3/4 lbs.
1-W-4	With 4 ft. Pole and P-156-2 Ferrule	4 lbs.
1-W-6	With 6 ft. Pole and P-156-2 Ferrule	4 1/2 lbs.
1-W-8	With 8 ft. Pole and P-156-2 Ferrule	5 lbs.
1-W-10	With 10 ft. Pole and P-156-2 Ferrule	5 1/2 lbs.
1-W-12	With 12 ft. Pole less Ferrule	6 lbs.
1-W-14	With 14 ft. Pole less Ferrule	6 1/2 lbs.
1-W-16	With 16 ft. Pole less Ferrule	7 lbs.

Bartlett No. 1-T Tree Trimmer

This tree trimmer has the same cutting head as the No. 1-W but is operated by a rope fastened to a lever on the side of the pole and does not have a pulley.

Cat. No.	Description	Wt. Each
1-T	Head Complete (less Pole)	2 lbs.
1-T-6	Complete with 6 ft. Pole and P-156-2 Ferrule	5 lbs.
1-T-8	With 8 ft. Pole and P-156-2 Ferrule	5 1/2 lbs.
1-T-10	With 10 ft. Pole and P-156-2 Ferrule	6 lbs.
1-T-12	With 12 ft. Pole less Ferrule	6 1/2 lbs.
1-T-14	With 14 ft. Pole less Ferrule	7 lbs.
1-T-16	With 16 ft. Pole less Ferrule	7 1/2 lbs.

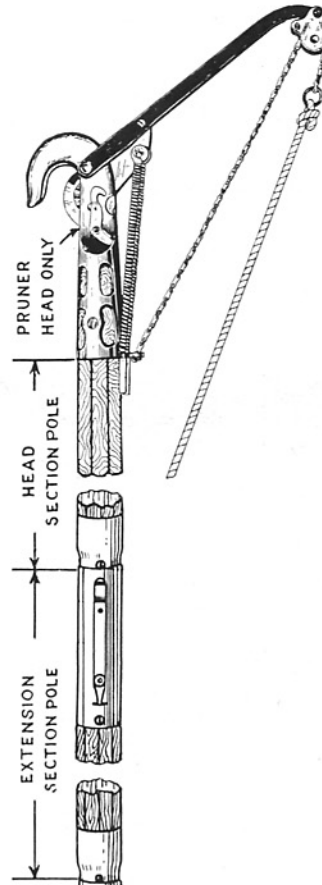
No. 156 Brass Sleeve



Designed for fastening together the jointed handle sections of the Nos. 1-W and 1-T tree trimmers and the No. 44 pole saw. When the pole is inserted into the sleeve, a pin automatically drops into place preventing the two sections from pulling apart. The sections are then as rigid as if a one-piece pole. Furnished complete less wood poles, or mounted on sections as preferred.

Cat. No.	Description	Wt. Each
P-156	Quick-Change Brass Sleeve complete	10 oz.
P-156-1	Sleeve Body on Pole Section	6 oz.
P-156-2	Sleeve Ferrule on Pole Sections	6 oz.

Seymour-Smith Tree Pruners



Built to stand the hard use that linemen give their tools in clearing the right of way for telephone and power lines.

The cutting and operating mechanism is all contained in the head—a simple construction with few parts. Seymour-Smith Tree Pruners have "center cut" action. A thin cutting blade is supported on both sides by heavy strong side pieces. The branch being cut is held on both sides of the cut by these same pieces. Thus this thin blade can cut easily and cleanly through large, tough branches without damaging the cutting edge and bark does not draw into the cutting parts.

Operation is by pulling a rope attached to a strong steel cable chain by a welded wire ring. The chain works through a ball bearing pulley—a simple and powerful action that easily cuts the toughest branches up to the full capacity of the pruner.

The head casting is malleable iron; the cutting blade is hardened, tempered cutlery steel; the double music wire compression coil spring is supported by tempered, flat wire guides and the lever is heat treated alloy steel with a safety catch. The pole is octagonal, of selected highest grade Sitka or Airplane Spruce, in jointed sections, furnished with two coats of weatherproof varnish.

No. 12

Cuts 1 1/2-inch Diameter Branches

Pole is 1 3/4 inches Diameter.

Cat. No.	Description	Shipping Wt. Each
12-18	Complete pruner with rope and 18 ft. pole	19 lbs.
12	Pruner Head only	4 lbs.
2-6 ft.	head section of pole	4 1/2 lbs.
2-8 ft.	head section of pole	4 3/4 lbs.
2-6 ft.	extension section of pole	5 1/2 lbs.
2-8 ft.	extension section of pole	5 3/4 lbs.

No. 11

Cuts 1-inch Diameter Branches

Pole is 1 1/4 inches Diameter.

Cat. No.	Description	Shipping Wt. Each
11-18	Complete pruner with rope and 18 ft. pole	10 lbs.
11	Pruner Head only	1 1/2 lbs.
1-6 ft.	head section of pole	2 1/4 lbs.
1-8 ft.	head section of pole	2 1/2 lbs.
1-6 ft.	extension section of pole	3 lbs.
1-8 ft.	extension section of pole	3 1/4 lbs.

Solid or unjointed poles, 6, 8 or 12 foot lengths and special length unjointed poles are available.

Line Supplies Section

TOOLS

Klein "Favorite" Tree Trimmers



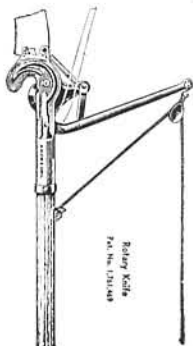
Will sever one-inch branches. Knife is held open by a flat steel spring and is operated by a rope attached to the end of a lever. Head is one piece and comprises hook portion with which knife engages and socket into which handle is inserted. This socket is straight, eliminating necessity of tapering end of handle.

Knife is forged from tool steel and is integral with lever. Furnished less rope and handle.

May be furnished with pruning saw attached to head.

Cat. No.	Description	Length Over All	Weight
3600-20	Less Saw	17 in.	3 1/2 lbs.
3600-21	With Straight Saw	23 in.	4 lbs.

No. 3628 Klein Rotary Knife Tree Trimmers



The entire head of this tool comprising hook and socket into which handle fits, is sturdily constructed of pressed steel. The knife, made of tempered tool steel, is round in shape and arranged to rotate slightly with each cut, thus providing the entire circumference of the blade for cutting and giving an edge more than 3 times the length of that on the ordinary blade.

The leverage makes this trimmer cut the heavier branches quite easily. Knife may be readily removed for sharpening or renewal.

Two threaded holes are provided for attaching saw. Furnished less saw, rope and handle.

Cat. No.	Description	Weight
3628	Rotary Knife Tree Trimmer	3 1/2 lbs.

Tree Trimmer Handles

Jointed handle with brass socket ferrules.

Cat. No.	Description	Total Length	Diameter	Weight Per Doz. Sets
3601-6	3-six foot sections	18 ft.	1 5/8 in.	120 lbs.
3601-9	2-nine foot sections	18 ft.	1 5/8 in.	118 lbs.

Klein Tree Trimmer Saws



No. 913-12



No. 913-15

Cat. No.	Description	Size	Weight
913-12	Straight Blade	12 in.	3/8 lb.
913-15	Curved Blade	15 in.	1/2 lb.

Klein Saw Handles



This handle makes an efficient hand saw for cutting heavy branches with either of the above tree trimmer saws. Either of the saws, No. 913-12 or 913-15, can be set in this handle in a few seconds and securely fastened with the thumb screw.

Cat. No.	Description	Wt. Per Doz.
913-G	Saw Handle	6 lbs.

"Super-Cut" Pruner



For difficult land and right-of-way clearing, brush cutting, etc. The cutting parts and handles are forged in one piece from special alloy steel, hardened, tempered and ground. Fitted with long hardwood hand grips, riveted so that they cannot loosen. Cuts 2-inch diameter branches.

Cat. No.	Length Over All	Shipping Wt. Each
726	26 inches	4 lbs.
730	30 inches	4 1/2 lbs.

Bartlett Two Hand Pruner



The blade and the hook of the No. 777 Bartlett Two Hand Pruner are made of hardened drop forged crucible tool steel. It is furnished with twenty-six-inch White Ash handles, riveted and double ferruled for absolute security. This tool, on account of its draw cut, is easily operated on large branches.

Cat. No.	Description	Weight
777	Two Handed Pruner	3 3/4 lbs.

Bartlett No. 400 Hand Pruner



Compact, durable — prunes small limbs and twigs easily without cramping or straining the wrist or forearms.

Cat. No.	Description	Size	Weight
400	Hand Pruner	8 in.	10 oz.

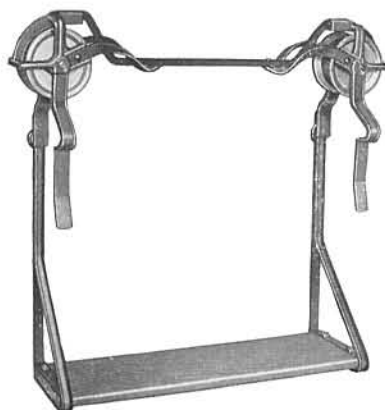
Wire Gauges



A gauge made from the best of steel, tempered, adjusted and warranted accurate. Gauge numbers stamped on one side and decimal equivalents on the reverse side.

Cat. No.	Gauge
688-A	American Standard, 0 to 36 B. & S.
688-B	American Standard, 5 to 36 B. & S.
690-A	English Standard, 1 to 36 B. W. G.
690-B	English Standard, 6 to 36 B. W. G.

TOOLS

Lineman's Safety Chair
Rigid Type

The design and construction of these chairs assure long, continuous service. Made strong and rigid to provide safety, service and convenience. They are correctly balanced for comfort and the rubber tread wheels give a smooth ride over cable rings. Equipped with hand brakes and can be furnished with wheel guards for added safety.

The chair frame is made of cold rolled steel and steel channels braced with steel straps. The seat is made of Western White Pine, reinforced with strap steel imbedded in wood to prevent bolts from pulling out of wooden ends.

Holes are provided in open side of chair frame for snapping on safety belt. If necessary chairs can be re-tired in a few minutes. Wheel guards available if specified.

Cat. No.	Height	Width	Weight Crated
20	25½ in.	21 in.	29 lbs.

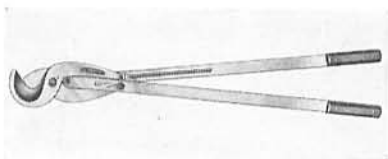
B & L Aerial Cable Car



Chain links permit adjustment between the messenger strand and seat. Sturdily constructed, light in weight and conforms to highest safety standard. Available with rubber wheels on special order.

Cat. No.	Description	Weight Each
PU-36	Aerial Cable Car	24 lbs.

Cable Cutter



this tool assures a quick, clean cut without distorting the cable.

Cat. No.	Length Over All	Wt. Each
P-1	12 inches	4 lbs.

Lineman's Safety Chair
Flexible Type

These Flexible Cable Chairs can be collapsed, strapped or tied for convenient transportation. Adjustable, up or down, by snaps and chain.

Can be furnished with No. 7 Seat or No. 8 Seat. The No. 7 Seat is made of high grade fir lumber, reinforced with strap steel imbedded in

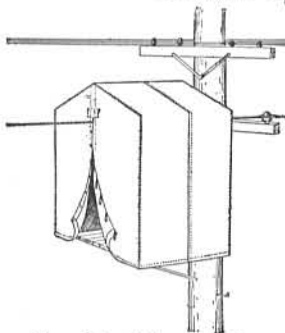
wood. No. 8 Seat is made with belting of the best canvas, riveted at ends with copper rivets around electric welded iron hangers.

Holes are provided in open side of chair frame for snapping on safety chains. Equipped with hand brake. The rubber tread wheels will give long service. Chairs can be re-tired in a few minutes if necessary.

Link chain is electrically welded, lineman's snaps are drop forged steel galvanized. Wheel guards are available if specified.

Cat. No.	Height Adjustable	Width	Weight Crated	Seat No.
27	Adjustable	21 in.	33 lbs.	No. 7
28	Adjustable	21 in.	33 lbs.	No. 8

Cable Splicer's Tent

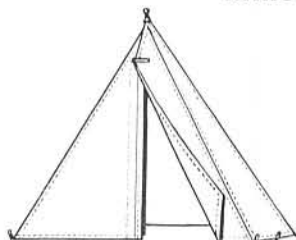


For use of aerial cable splicers during cold and stormy weather. Made of 10 oz. Army cotton duck. The roof is spread and supported by means of a collapsible three-ribbed galvanized metal framework which fastens to the cable suspension strand. On each of two opposite sides of the tent there is an opening which can be laced from the inside after the tent is erected.

Furnished in two sizes: Type "S" for general splicing uses. Type "L" for splicing work where more room is required. Frame is included with these tents.

Cat. No.	Length	Width	Height	Weight
S	3 ft., 2 in.	4 ft., 6½ in.	8 ft., 8 in.	42 lbs.
L	4 ft., 6 in.	4 ft., 6½ in.	8 ft., 8 in.	48 lbs.

Miner's Tent



To protect underground splicers during inclement weather. Made of 12 oz. white duck. Supported in center by means of wooden center-pole and staked down around bottom. Center-pole and stakes not included with tent. Single entrance.

Cat. No.	Width	Depth	Center Height	Weight
U-99	9 feet	9 feet	9 feet	19 lbs.

Line Supplies Section

TOOLS

Sheath Splitting Knife



Blade of Tool Steel tempered and ground to a keen edge. Strong, leather handle securely riveted.

Cat. No.	Length Over All	Blade Length	Weight Per Dozen
1515-1	9 1/4 in.	4 1/2 in.	13 lbs.

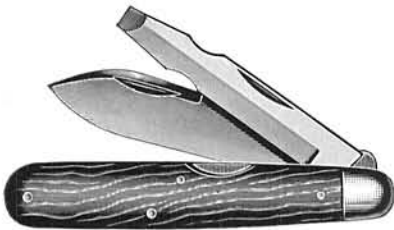
Cable Stripper Knife



For stripping heavy insulated wire and cable. Has hard rubber handle, molded on securely providing adequate insulation. Shoulder prevents accidental cutting of glove or finger. Back of blade ground flat for scraping. Forged from first quality cutting steel, individually tempered.

Cat. No.	Length Over All	Length Blade	Weight Per Dozen
1560-3	8 inches	3 inches	4 1/4 lbs.

Electrician's Knife

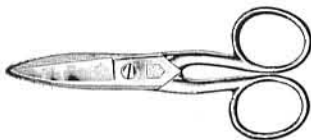


Combines an emergency screwdriver and a knife blade for cutting or stripping wire.

Blades are high grade cutting steel carefully tempered. Lock keeps blade safely open when in use.

Cat. No.	Description	Weight Per Dozen
1550-2	Electrician's Knife	2 lbs.

Electrician's Scissors



Designed for the electrician and mechanic. Will stand continued hard service. Made of high-grade steel properly tempered. Has a screw hinge, allowing adjustment. Nickel-plated finish.

Cat. No.	Size	Weight Per Dozen
2100-5	5 inch	2 lbs.

Shave Hook



Used for scraping lead sleeves, pipe, cable ends, pot heads, etc. The blade is fastened in place with a nut, so that it can be replaced when required.

Cat. No.	Pattern	Length	Weight Per Dozen
304	Oval	5 1/2 in.	2 3/4 lbs.

Hardwood Dressers



Made of hardwood for shaping and dressing lead sleeving, pipe, pot heads, etc.

Cat. No.	Description	Weight Per Dozen
295	Hardwood Dresser	15 lbs.

Turn Pins—Drift Plugs



Used for expanding ends and for smoothing out lead sleeves.

Turn Pins furnished in sizes 2 3/4, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2 and 6 inches.

Drift Plugs are furnished in sizes 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4 and 2 1/2 inches.

These sizes correspond to the inside diameter of the lead sleeves with which they are to be used. All are treated hardwood.



Splicers Fibre Test Boards

Used for classifying pairs when testing out cable. Numbers are easy to read and will not wash off. Standard numbering.

Cat. No.	Numbered	Cat. No.	Numbered
810	1-51	822	607-657
811	51-101	823	657-707
812	102-152	824	708-758
813	152-202	825	758-808
814	203-253	826	809-859
815	253-303	827	859-909
816	304-354	828	910-960
817	354-404	829	960-1010
818	405-455	830	1011-1061
819	455-505	831	1061-1111
820	506-556	832	1112-1162
821	556-606	833	1162-1212

Double-Jacketed Compound Kettles



Used for melting compounds on the job. Furnished complete with double ring on the bail for raising and lowering on a pole.

The double jacket that completely covers sides, top and spout prevents explosion of the compounds while melting by conducting the heat from the furnace to all parts of the kettle and insures even melting of the

compound in its entire mass. The outer jacket also keeps the compound at correct pouring temperature after removing from the furnace.

Made of heavy steel with bottom and spouts brazed.

Description	Capacity	Weight
Compound Kettle	5 quarts	6 1/2 lbs.

TOOLS

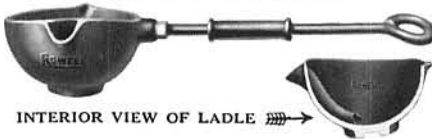
Unique Ventilated Balanced Ladles



These ladles enable the user to pour the metal more accurately and easily. Comfortable, insulated "close to the bowl" grip eliminates the strain. Fibre shield protects hand from reflected heat. Air space between shank and wood keeps handle cool. Bowl has formed lips. A screw extending from rear of handle to metal shank prevents ladle from twisting or pulling out. Handle can be attached or removed with a screwdriver.

Bowl Diam.	Bowl Depth	Capacity Pints	Overall Length	Weight
2½ in.	1⅜ in.	⅛	9 in.	10 oz.
3 in.	1½ in.	¼	10 in.	12 oz.
3½ in.	1¾ in.	⅜	10½ in.	14 oz.
4 in.	2 in.	½	11 in.	18 oz.

Bottom Pour Ladles



INTERIOR VIEW OF LADLE

Listed as standard by the Underwriters Laboratories. Pours from the bottom — skimming is never required. A twist of the wrist and the metal flows out finely through the spout which runs from the bottom of the bowl to the lip. On each side of the pouring spout there are small openings to convey the last of the metal into the spout and to let the heat gases escape.

Bowl is made of universal alloy iron, the handle of SAE analysis steel and the sliding sleeve of gray iron on all but the 3-inch.

The handle is made doubly secure against turning in the bowl by a heavy steel check nut. The sliding sleeve is a protection against burns as it can be pushed to the other end of the handle while the ladle is in the forge or other fire.

Cat. No.	Diameter of Bowl	Lead Capacity	Length Over All	Weight Each
3	3 in.	4 lbs.	15½ inches	2 lbs.
4	4 in.	4½ lbs.	20 inches	3 lbs.
5	5 in.	9 lbs.	31 inches	5 lbs.

Unique Melting Pots

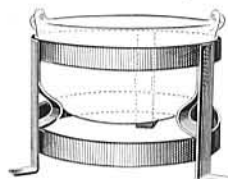
Made from select gray iron—well proportioned. Provided with steel handle. Handle clearance for removing metal when cold.



Cat. No.	Diameter Top of Pot	Lead Capacity	Weight
398-6	6 inches	24 lbs.	3½ lbs.
398-8	8 inches	50 lbs.	8 lbs.

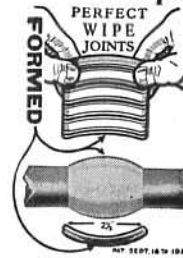
Unique Solder Pot Stands

This sturdy pot stand provides a safe resting place for a pot of molten solder. The broad base prevents tipping and spilling. Pot is supported off the floor or ground; saves truck floors; cuts down chances for accidents.



Stand is constructed of 1x½-inch steel bands; all joints are welded. Takes 8-inch pots only. Wt. 3 lbs.

Unique Wiping Cloths



6" x 6"

The permanent curved wiping surface of the formed finishing cloths produces perfectly symmetrical joints, uniform and smoothly finished. No waste of time or wear on cloths in breaking in. Used successfully on first joint. Solder will not stick to the smooth slick surface.

The catch cloths are straight edged, not formed.

Formed, Flexible Finishing Cloths

Supplied in moleskin or ticking. When ordering specify size and whether moleskin or ticking is desired.

The following sizes are available:

2 x2 inches	3½ x3½ inches
2½ x2½ inches	4 x4 inches
3 x3 inches	

Flat, Finished Catch Cloths

Supplied in moleskin or ticking. When ordering specify size and whether moleskin or ticking is desired.

The following sizes are available:

5x5 inches	7x8 inches
6x6 inches	8x8 inches
6x7 inches	

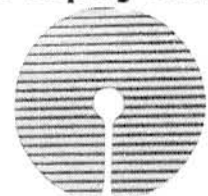
Flat Finishing Cloths

Supplied in moleskin or ticking. When ordering specify size and whether moleskin or ticking is desired.

The following sizes are available:

2 x2 inches	3½ x3½ inches
2½ x2½ inches	4 x4 inches
3 x3 inches	

Unique Up-right Joint Wiping Cloth



1¾" x 11"

This "Unique" Up-right Joint Wiping Cloth makes joint wiping on vertical cable splices as easy as on horizontal splices.

The wiping side which comes in contact with the hot molten solder is perfectly smooth and free from stitches, laps, folds, seams and edges. The wiping surface is treated with a specially prepared dressing that protects the cloth from the heat and prevents the half molten solder from sticking to the surface. The selected, imported English moleskin which forms the wiping surface is un-affected by the hot molten solder, and one upright cloth will last a splicer for years.

The five different sizes will handle all sizes of cables from the smallest to the largest.

Description	Size
Moleskin Facing	6 in. center opening x 17 in. O.D.
Moleskin Facing	3¾ in. center opening x 14 in. O.D.
Moleskin Facing	2¾ in. center opening x 12 in. O.D.
Ticking Facing	1¾ in. center opening x 11 in. O.D.
Ticking Facing	1 in. center opening x 9 in. O.D.

Line Supplies Section

TOOLS

Kellogg Soldering Irons



Kellogg Iron With Pointed Tip

A good, sturdy soldering iron built to give continuous, uninterrupted service under the hardest usage. The Kellogg factory as well as installing department have standardized on this iron because they can use it eight or more hours a day continuously without the slightest danger of burning it out.

The heating element is designed and insulated to furnish the correct amount of heat at the tip and yet keep the handle cool at all times. These irons can be furnished in two degrees of heat, "Medium Hot" or "Hot." The "Medium Heat" is for general use, being suitable for light work such as radio sets, telephone and switchboard wiring, etc. The "Hot Heat" is for heavier work and is more suitable for working with enameled wire. The heating element can be easily replaced when burned out.

The pointed tip furnished is most practical for general all around use. A heavier flat tip can be furnished in addition, at a small cost, by specifying 1 extra piece No. 47794 flat tip.

Designed to operate from either 110 volt alternating current or 115 volt direct current. Furnished with 6-foot heater cord and separable plug. Overall length less cord 14 inches. Net weight with cord and plug 28 ounces.

Code No.	Heat	Watts	Style of Tip
1-A	Medium	105	Pointed
2-A	Hot	150	Pointed

Parts for Kellogg Irons

47796 Pointed Tip only.	47778 "Hot" Element
47794 Flat Tip only.	47777 "Medium" Element

"American Beauty" Electric Soldering Irons



Designed for efficient and lasting service. Can be supplied in special wattages to meet particular conditions.

The core of the heating unit is made of solid steel rod, the outer surface of which is impregnated with zinc to reduce to the minimum oxidation and corrosion. Built with baffle-plate to prevent free conduction of heat from heating unit to wood handle.

Stands are supplied with all irons. Will operate on A.C. or D.C. circuits. In standard voltage ranges: 100-109; 110-120; 121-130; 190-209; 220-240; 241-260. Can also be supplied for 32 volts.

Can be equipped with 3-conductor cord, one wire grounded.

Cat. No.	Watts	Diameter of Tip	Length Over-All	Shipping Weight
3138	100	3/8 in.	12 3/4 in.	16 oz.
3158	200	5/8 in.	13 3/8 in.	28 oz.

"American Beauty" Copper Soldering Iron Tips

Tip is held in place in core of heating unit by a recessed set-screw and is treated with a heavy coating of pure nickel, to retard oxidation and corrosion. For No. 3138 Iron a special, long, semi-chisel shaped tip can be supplied for telephone and switchboard work.



Cat. No.	Description	For Soldering Iron
3738 for Iron	Copper Tip	3138
3758 for Iron	Copper Tip	3158

Vulcan Electric Soldering Irons



No. 30 — Screw Type Tip



No. 35 — Plug Type Tip

Correctly designed for the steady production and constant delivery of ample heat, and operates from either direct or alternating current. It is equipped with a perfectly "tinned" hand forged tip of purest copper, either screw type tip or plug-in type. The plug-in type is held by a set-screw. Has a hermetically sealed winding chamber which (by protecting its heating wire from the oxidation and corrosion that would otherwise steadily eat it away) gives the Vulcan High Powered Heating Element a prolonged life of unimpaired heat production.

The Vulcan construction is unique in the simplicity of its maintenance requirements, consisting of 5 complete, replaceable parts, a tip, a hermetically sealed heating head, a handle, a 6-ft. cord and a plug.

The No. 35 is recommended for telephone inspectors or linemen's tool kits, equal to 1 1/2 lbs. per pair coppers.

The No. 40 is for heavier work and suited for fast telephone work. Equal to 2 1/2 pounds per pair coppers.

No. 50 is for fast telephone work. Equal to 3 1/2 pounds per pair coppers.

Will operate from any light socket on either A.C. or D.C. Standard voltages are 32, 110, 115, 120, 125, 220, 230, 240 and 250 volts.

Plug Type Tip

Cat. No.	Watts	Tip Diameter	Length	Weight Each
35	100	3/8 in.	Adjustable	1 1/8 lbs.

Screw Type Tip

30	60	1/2 in.	Adjustable	3/4 lb.
40	90	...	Adjustable	7/8 lb.
50	130	7/8 in.	Adjustable	1 1/8 lbs.

Vulcan Soldering Iron Tips



The left hand picture illustrates the plug type tip and the right hand picture illustrates the screw type tip.

Cat. No.	Description	Tip Diameter
35-T	Plug Type for No. 35 Iron	3/8 in.
30-T	Screw Type for No. 30 Iron	1/2 in.
40-T	Screw Type for No. 40 Iron	7/8 in.
50-T	Screw Type for No. 50 Iron	7/8 in.

Vulcan Soldering Iron Holders



Holds and guards soldering tool when not in use. Rubber feet will not mar or scratch a polished surface.

Cat. No.	Description
2100	Soldering Iron Holder

TOOLS

Ohmite Rheostats



Proper heat control of soldering irons and pots produces superior soldering joints, and helps you do a better job, speeds up the work; reduces operating costs and saves money

on maintenance of soldering equipment.

This new Ohmite Rheostat Control quickly adjusts the operating heat of the soldering iron or pot to the best value for the type of job and grade of solder. It prevents overheating, minimizes the accumulation of oxidation on the soldering iron tip, makes less tip cleaning necessary, eliminates burnoffs, makes tinning last longer and increases "tip" life.

Mounted in a perforated, black-wrinkle finished metal cage with knob and dial, series plug and a six-foot cord. When used with irons or pots of recommended wattage these Ohmite Rheostats will reduce the wattage by approximately 50% maximum.

Cat. No.	Wattage of Iron or Pot to be Controlled		Size Inches	Weight Each
	Watts	Volts		
SRC-65	40-65	115	3 1/8 x 2	1 lb.
SRC-100	85-100	115	3 1/8 x 2	1 lb.
SRC-150	120-150	115	3 3/4 x 2 3/8	1 1/2 lbs.
SRC-220	175-220	115	3 3/4 x 2 3/8	1 1/2 lbs.
SRC-350	300-350	115	4 1/2 x 2 3/8	1 3/4 lbs.
SRC-500	430-500	115	7 1/2 x 3 1/4	4 lbs.

Temperature Regulating Stand



Thermostatically controlled for the regulation of the temperature of electric soldering irons. The thermostat may be set for the maintenance of any temperature from very low to full working temperature.

The body of the stand is of molded plastic, the holder proper is copper.

Stand is provided with cord and attachment-plug cap for connection to current and with a receptacle for connection of the soldering iron. Designed for use with electric soldering irons up to 660 watts capacity and on circuits up to 240 volts, A.C. only.

Cat. No.	Description
475	Temperature Regulating Stand

Soldering Coppers

Forged from highest grade pure copper bars. Uniformly made and perfectly balanced clincher type handle, positively will not loosen and will grip firmly as long as there is any copper left. Finished in red. Sizes from 1/2 pound to 10 pounds per pair.

Cat. No.	Weight Each	Weight Per Pair	Cat. No.	Weight Each	Weight Per Pair
1	1/2 lb.	1 lb.	4	2 lbs.	4 lbs.
2	1 lb.	2 lbs.	5	2 1/2 lbs.	5 lbs.
3	1 1/2 lbs.	3 lbs.	6	3 lbs.	6 lbs.

Unique Solder Copper Handles Only



This handle was specially designed for use around telephone main frames. A tight grip is maintained on the shank at all times.

Cat. No.	Handle for Shanks	Length of Handle	Weight
1	5/8 to 3/8 in.	6 in.	4 oz.
2	3/8 to 1/8 in.	6 1/4 in.	5 oz.

Warning Sign



Designed to provide convenience and safety. The solid black 5 1/2-inch letters on the 20x20-inch background of brilliant traffic yellow flash a signal which no driver could possibly miss.

It is light in weight, yet extremely durable — legs are made of 1/2-inch high carbon steel which will not bend. The 1 1/4-inch flange around the edge of the sign not only acts as a reinforcement, but also protects the lettering from becoming marred

when being transported. Lettering is on both sides.

Each sign is equipped with two convenient handles for adjusting the angle of the legs. These handles being hollow, also serve as flag sockets. Each handle is equipped with a handy lantern hook. The sign folds up into an easily portable bundle, 28x28x1 1/4 inches. Made of steel.

Height, Inches (Adjustable)	Width	Thickness	Colors	Shipping Weight
20 to 43	28 in.	1 1/4 in.	Black and Yellow	23 lbs.

Metal Flag

Whether the wind is blowing or not, it is always open, flashing its signal of caution. Light and strong, made of 16-gauge steel welded to a 5/8-inch hollow iron staff. The flag is painted bright red and the staff black.

The staff is 20 inches high and the flag is 12x10 inches.

Flag and Flag Holder



Holder is designed to fit all poles and is fitted with lock and chain to keep flag upright at all times. The chain wraps around the pole and hooks into main body of the clamp.

The red flag is 12x16 inches in size and is made of 6-ounce army duck. The hardwood staff is 1x18 inches.

Cat. No.	Description	Size	Weight
1110	Danger Flag	12x16 inches	1 lb.
1111	Danger Flag, complete with holder		3 lbs.

Highway Flare Torch



Made of steel with weighted bottom. It will right itself if knocked from its position by a passing vehicle. Has a capacity of 3 quarts of kerosene or other light fuel oil and will burn for more than 36 hours. Equipped with rain shield for stormy weather.

Cat. No.	Height	Diameter	Std. Pkg.	Weight Each
96	7 1/2 in.	8 in.	3	7 lbs.

TOOLS

Prest-O-Lite Equipment

The use of Prest-O-Lite Gas as a fuel saves delays and interruptions. It furnishes an intense heat in a concentrated, easily controlled flame. No preheating, pumping-up or generating required. Just turn on the gas and light the torch. This, together with the lightness and balance

of the torches, makes possible neater and stronger connections that are solid through and through. Experienced linemen require no special training to use Prest-O-Lite equipment. Gas tanks are ordered separately and are shown on Page No. 113.

No. 0-6119 Lineman's Outfit

Furnished Less Tank



Developed especially for telephone use. Includes a soldering copper and open flame torch stem with an interchangeable handle and a handle for carrying an MC tank. It will take care of the brazing, splicing and similar operations on wire, cable, transformers, switchboards, generators and lighting fixtures. The torch handle has two interchangeable heads so that two distinct torches may be assembled—one an open-flame torch, the other a soldering iron.

No. 0-6119 Lineman's Outfit weighs 4 pounds and consists of the following, any one of which may be ordered separately. (The

tank is not included.) Shipping weight of the outfit is 4½ pounds.

Cat. No.	Description
06-P-64	Soldering Iron
A-6085	Torch Stem and Mixer Assembly
A-3321	MC Handle Assembly
A-3881	Straight Union for MC Tank
A-963	Hose Clamps (Two Supplied)
Z-54	6 Feet, ¼-inch Hose

No. 0-6343—4 in 1 Outfit



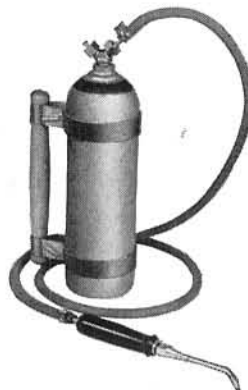
Has the same torch handle and open-flame torch stems as the 5 in 1 Outfit but omits the soldering copper. It is used for the same range of operations as the 5 in 1—very fine, light, medium and heavy soldering, brazing and heating. Packed in a waterproof carrying case.

No. 0-6343 Prest-O-Lite Outfit weighs 3¼ pounds and consists of the following, any one of which may be ordered separately.

Cat. No.	Description
07-R-05	Stem for very fine soldering and brazing
A-6086	Stem for light soldering and brazing
A-6083	Stem for medium soldering and brazing
A-6089	Stem for heavy soldering and brazing
A-6058	Handle
A-3879	Union for B Tank
A-3881	Union for MC Tank
L-6081	Wrench
Z-54	6 feet ¼-inch Hose
A-963	Hose Clamps
	Waterproof Carrying Case

No. 0-6120 Lineman's Outfit

Furnished Less Tank



Ideal for use where open flame work only will be encountered. Particularly suitable for wire splicing. In addition it may also be used for light brazing.

No. 0-6120 Prest-O-Lite Lineman's Outfit weighs 3½ pounds and consists of the following, any one of which may be ordered separately (the tank is not included): Shipping weight of the outfit is 4 pounds.

Cat. No.	Description
A-6103	Torch
A-3321	MC Handle Assembly
A-3881	Straight Union for MC Tank
A-963	Hose Clamps (Two Supplied)
Z-54	6 Feet, ¼-inch Hose

No. 0-6109—5 in 1 Outfit



Includes four interchangeable open-flame stems and one soldering copper so that five distinct units may be assembled. This wide assortment enables the user to apply the proper flame and the right temperature to obtain the best results for a large variety of soldering, brazing and other heating operations. Comes packed in a neat, durable metal box with snap lock and fitted with spring clips

to protect parts from loss or damage.

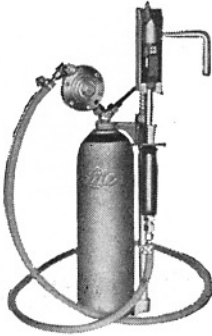
No. 0-6109 Prest-O-Lite 5-in-1 Outfit weighs 5½ lbs. and consists of the following, any one of which may be ordered separately:

Cat. No.	Description
A-6058	Handle
07-R-05	Stem for very fine soldering and brazing
A-6086	Stem for light soldering and brazing
A-6083	Stem for medium soldering and brazing
A-6089	Stem for heavy soldering and brazing
10-R-87	Soldering Iron Stem, Sleeve, Mixer, and Copper
23-S-32	Copper for Soldering Iron
A-3879	Union for B Tank
L-6081	Wrench
A-3881	Straight Union for MC Tank
Z-54	6 Feet of ¼-inch Hose
A-963	Hose Clamps (two)
09-R-76	Metal Case for "5-in1" Outfit

TOOLS

Prest-O-Lite Equipment No. 04-P-92 Lineman's Outfit

Furnished Less Tank



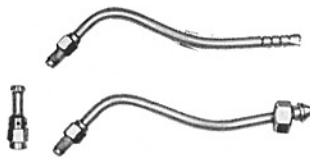
Suitable for use where a standard size soldering iron is required, capable of handling all but the heaviest operations. Efficient in any kind of weather and can be used for long line soldering and similar heavy duty work. The MC Holder Assembly which is included makes the outfit portable and convenient.

No. 04-P-92 Lineman's Outfit consists of the following, any one of which may be ordered separately (the tank is not included): Shipping weight of the outfit is 11 pounds.

Cat. No.
05-P-51
05-P-92
09-R-13
A-4983
Z-54
A-963

Description
Soldering Iron
10 lb. Regulator
MC Holder Assembly
Wheel Key for MC Tank
6 Feet, 1/4 in. Hose
Hose Clamps (Two Supplied)

No. 0-6102 Torch Combination Set



The Prest-O-Lite 0-6102 Torch Combination Set has two stems — one for connecting to a Prest-O-Lite Gas Tank with rubber hose, and the other with MC Union for attaching direct to Prest-O-Lite MC Tank. Convenient and efficient for light brazing and soldering. Easy to operate.

No. 0-6102 Prest-O-Lite Torch Combination weighs 1 pound and consists of the following, any of which can be ordered separately: No. L-6014, Torch Tip, No. L-6015, Stem for use with hose, and No. L-6016, Stem with MC Union.

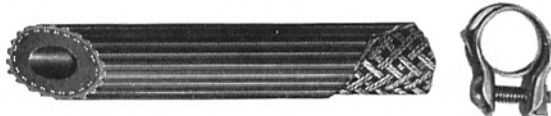
Prest-O-Lite Gas Tanks



Steel cylinders, charged with pure dry Acetylene which is ready for instant use at the turn of a valve. The flow of Acetylene is controlled by a key operated valve and can be turned on and off readily. A gauge indicates the portion of gas supply remaining. Any Prest-O-Lite station will exchange a full gas tank for an empty one. There will be a charge for the gas only.

Style	Rated Capacity	Length	Diameter	Weight Each
MC	10 cu. ft.	13 1/2 in.	4 in.	10 lbs.

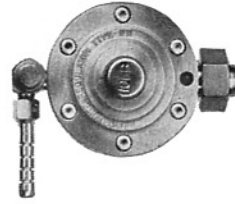
Prest-O-Lite Hose and Hose Clamp



The highest grade rubber hose obtainable. Prest-O-Lite Hose Clamps prevent the hose from slipping off the hose nipples. They will not cut the rubber.

Cat. No.	Description
Z-54	1/4 in. 1-ply Red Fabric Hose
A-963	Hose Clamp

Prest-O-Lite Equipment Prest-O-Lite Regulators



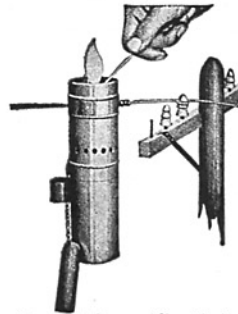
This device provides exact flame desired and holds flame without intermittent readjustment of the tank valve to compensate for reduced tank pressure. It saves time and gas. Each regulator is adjusted at the factory to deliver gas at a definite pressure which is plainly stamped on the regulator cap. This delivery pressure may be reduced by adjustment of the needle valve in the regulator outlet.

Cat. No.	Description
05-P-92	10 lb. Regulator for MC Tanks
05-P-91	5 lb. Regulator for MC Tanks

Prest-O-Lite Friction Lighter

Cat. No.	Description
A-3710	Friction Lighter
L-3711	Renewal Tip

Staysalite Lineman's Alcohol Torch



Showing Torch suspended on the line

The Staysalite torch is the invention of a practical, experienced telephone man. It stays lighted in the wind; it can be lighted and extinguished in a moment; it burns alcohol without odor or noise; it has no adjusting parts; therefore cannot get out of order; it can be carried on lineman's belt. Can be hung on wire under joint to be soldered.

Cat. No.	Description	Weight Each
3420	Staysalite Lineman's Torch	1 1/4 lbs.

Unique Fire Gun Burns Kerosene or Distillate



A powerful flame for burning weeds and brush from around poles to prevent pole fires. An all purpose torch for maintenance and repair jobs requiring a large concentrated flame. Can be used for preheating, thawing, bleeding creosote from poles, etc.

Burner is fitted with combustion tube; starts in 5 minutes; flame 3x30 inches — 2000° F. Fuel consumption 1 1/2 G.P.H. Welded steel tank; powerful pump, pressure gauge, fuel funnel filler; snap-on shoulder strap for easy carrying; 7 feet

Cat. No.	Description	Fuel Capacity	Weight Each
500-C	Weed Burner	4 gallons	21 lbs.

Line Supplies Section

TOOLS

C. & L. No. 32-A Blow Torch

For Gasoline or Kerosene—1 Quart Capacity



Designed for all around service either indoors or outdoors. It produces an intensely hot blue blast seven inches long which may be regulated for lighter work. The gas orifice is automatically cleaned out but never enlarged by the control needle cleaner tip.

Regularly supplied for gasoline but can be furnished for kerosene if specified when ordering.

Cat. No.	Capacity	Size Over-All	Weight Each
32-A	1 Quart	10½ in.	5 lbs.

C. & L. No. 308 Blow Torch

For Gasoline—1 Quart Capacity



A quick generating unit of the No. 32-A type plus a sub-burner. When starting this pre-heater directs an 1800 degree blast against the vaporizing veins of the gas generator. This arrangement is very economical as the pre-heater may be used to keep the gas generator hot and ready for instant use, the operator opening the main burner only when desiring the powerful blast. A windshield protects the gas generator during outdoor use.

Cat. No.	Capacity	Size Over-All	Weight Each
308	1 Quart	10½ in.	5½ lbs.

C. & L. No. 144-A Blow Torch

For Gasoline—1 Quart Capacity



This torch has the quality features of non-enlargeable jet block, replaceable cleaner pin and other high grade construction features. It has a somewhat smaller burner and flame than No. 32-A and is made for those who wish a high grade torch at a lower price.

The heavy drawn cartridge brass tank has interlocking fittings, forged brass handle brackets and filler plug and lock down pump. Fuel is gasoline.

Cat. No.	Capacity	Weight Each
144-A	1 Quart	4¾ lbs.

C. & L. No. 99 Blow Torch

For Gasoline—1 Pint Capacity



A pint size torch with a small mouthed burner which will burn in any position. The flame may be regulated from ¾x5-in. down to ¾x1¾-in. Because of its small size it will go into close quarters. While designed for soldering fittings on small sizes of copper tubing this torch has many other uses. Highest quality burner and tank features.

Cat. No.	Capacity	Weight Each
99	1 Pint	4¼ lbs.

Turner No. 30-A Blow Torch

For Gasoline—1 Quart Capacity



A high-quality low-priced blow torch for general use. The heavy, improved burner develops an extremely hot, blue flame and will give service indefinitely without clogging. Orifice enlargement is prevented by the taper design needle valve with set-back shoulder seat and the valve wheel is made of cool, composition material. The safety-type pump is sturdy and efficient.

Cat. No.	Capacity	Weight Each
30-A	1 Quart	4½ lbs.

Turner No. 45-A Blow Torch

For Gasoline—1 Quart Capacity



Super-design professional blow torch having finest performance and most modern improvements. Extremely powerful blast functions perfectly in most severe weather. Orifice cannot be enlarged by rough usage. Easily removable cleaning needle and orifice block. Convenient drip cup priming through lower valve. Seamless brass tank with safety valve and air release. Fuel is gasoline.

Cat. No.	Capacity	Weight Each
45-A	1 Quart	5½ lbs.

Turner No. 35-A Instant Lighting Blow Torch

For Gasoline—1 Quart Capacity

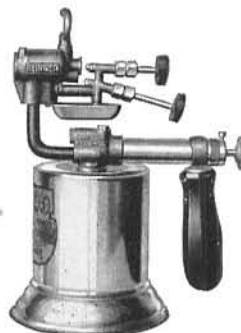


Developed for the professional user. The patented, grid-type generator lights instantly and applies a hot, blue flame to the burner, reducing the generating time in half. Neither orifice can become damaged through abuse and both the wire cleaning tips and orifice blocks may be easily replaced. An adjustable air syphoning tube insures a constant blue flame. Polished brass tank.

Cat. No.	Capacity	Weight Each
35-A	1 Quart	5½ lbs.

Turner No. 48-A Double Jet Blow Torch

For Gasoline—1 Quart and 1 Pint Capacities



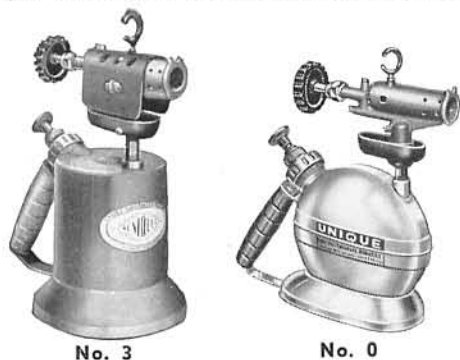
The No. 48-A Torch has a double jet burner and safety air release. The lower flame preheats the burner while the upper jet produces an intensely hot flame that retains its keenness when reduced for a small area. Shut-off valves with slender cleaning pins make orifice enlargement impossible. Tank is seamless brass.

Cat. No.	Capacity	Weight
48-A	1 Quart	5 lbs.
62-A	1 Pint (flat tank)	5 lbs.

TOOLS

Unique Blow Torches

For Gasoline or Kerosene—1 Quart and 1 Pint Capacities



May be used in cold and windy weather. It is simple in design and of sturdy construction. The long horizontal generating veins are placed parallel with and directly under

the flame, insuring the complete and thorough vaporizing of the fuel and producing an even, forceful, blue flame of intense heat, which can be throttled down fine.

The orifice is kept clear of dirt and foreign particles by means of a steel needle which works in and out as the flame regulating valve is opened and closed.

The orifice is located $\frac{3}{8}$ -inch forward of the fuel control valve seat — a separate threaded block which is easily replaced.

The tanks are of 18-gauge steel with brazed fittings and welded bottom with funnel filler.

The Unique Kerosene torch starts quickly on its own fuel, produces a clean blue blast flame and will operate efficiently in zero weather. It is preferred by many users because kerosene is a safer fuel to store and handle and is easier to obtain than clear white untreated gasoline.

Cat. No.	Fuel	Capacity	Flame Size	Weight Each
2	Gasoline	1 pint	7x1 in.	3½ lbs.
3	Gasoline	1 quart	7x1 in.	4 lbs.
3-K	Kerosene	1 quart	7x1 in.	4¼ lbs.
7	Gasoline	2 quarts	10x1 in.	5 lbs.
0	Gasoline	1 pint	6x1 in.	3 lbs.

No. 0 is similar in construction to No. 3 except it has a lighter generator and no shield.

Unique Gasoline Furnaces 1 Gallon Capacity

This furnace will melt 20 lbs. of solder in 7 minutes or 40 lbs. in 10 minutes. The ten-inch flame can be finely regulated to avoid overheating or burning the metal. This is an economical furnace to use, operating 4 to 6 hours on a gallon of fuel.

Upper structure can be removed in five seconds, leaving the burner unit completely exposed. Attaching the side handle converts the furnace into a heavy duty torch, for thawing, melting or preheating.

The generator is a seamless steel "U" tube which is encased in a removable cast housing. It will give long, satisfactory service with little attention, is readily cleaned, inexpensive to replace and is fitted with removable orifice tube and valve.

The rugged saucer-shaped top plate cuts heating time by curling the flame up around the pot; pot shield locks to top plate. Furnace size is 8x12 inches.



Cat. No.	Fuel	Capacity	For	Weight Each
43	Gasoline	1 gallon	5 and 6 in. pots	12 lbs.
43-A	Gasoline	1 gallon	7 and 8 in. pots	12 lbs.

Unique Spicer's Furnaces

For Gasoline or Kerosene—1 Gallon Capacity



Will melt 50 pounds of solder in 10 minutes and functions without attention. The patented figure "8" seamless steel tubing generator is responsible for the intense heat which actually consumes the carbon.

The flame is regulated as easily as a gas stove burner. As the control valve is opened and closed, the orifice (hole through which the gas blows) is automatically scraped and cleared of dirt particles.

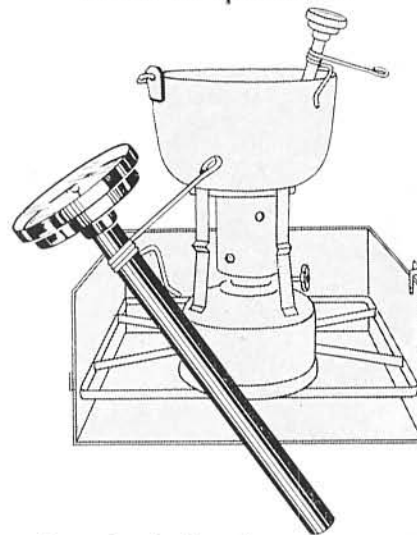
The generator, control valve and orifice scraper are removable for cleaning and repairing by simply loosening union and top plate gate.

Tank is a drawn shell of 16-gauge steel with welded fittings and bottom. A steel protecting ring is welded into the bottom of the finished tank.

The kerosene model (No. 55-1) is recommended for greater safety and longer generator life. It is equal to the gasoline model in every respect and produces a larger, hotter flame. Size is 8x12½ inches. Both models accommodate an 8-inch solder pot.

Cat. No.	Fuel	Capacity	For	Weight
53-1	Gasoline	1 gallon	8 in. Pot	12½ lbs.
55-1	Kerosene	1 gallon	8 in. Pot	12½ lbs.

Dillon Temperometer



Cableman's unbreakable thermometer registers the correct temperature of cable damming and impregnation waxes, paraffin, compounds and wiping solder. The dial of the Temperometer also shows the temperature to which these materials should be heated for the best results. Eliminates guesswork; makes for better workmanship.

Taking a temperature reading with the Temperometer is accomplished in a few seconds by dipping the tube two or three times in succession into the material being heated and holding it in the last time while reading the dial. Upon completing the test, material in the tube should be shaken out while hot. Linemen need this tool.

All working parts are spot welded. The Temperometer retains its accuracy under severe field usage.

Description	Diameter of Dial	Length Over-All	Weight Each
Dillon Temperometer	2½ in.	9 in.	1 lb.

TOOLS

C. & L. No. 44-A Fire Pot

For Gasoline or Kerosene—1 Gallon Capacity



The burner of No. 44-A fire pot is of the coil type. The coils can easily and cheaply be replaced when plugged with carbon. In addition to the regular shut-off valve this fire pot has the "Coiltrol" flame regulating valve. By the use of this valve a pot of metal can be quickly melted and the flame turned down, saving the loss of metal and use of fuel.

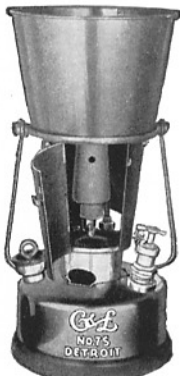
Handles a full 6-inch metal pot without being top heavy.

The tank is seamless, drawn from heavy steel and thickly coated with tin inside and out to prevent corrosion. All fittings are interlocking. A large size pump produces air pressure quickly. Supplied with a 6½-inch diameter top shield. Regularly supplied for burning gasoline. Kerosene may be used by changing burner jet which will be supplied at no extra charge if specified when ordering.

Cat. No.	Description	Capacity	Weight Each
44-A	Fire Pot	1 Gallon	13¾ lbs.

C. & L. No. 75 Fire Pot

For Gasoline or Kerosene—1 Gallon Capacity



A heavy duty fire pot with a 10¼-inch top shield to take a large metal pot.

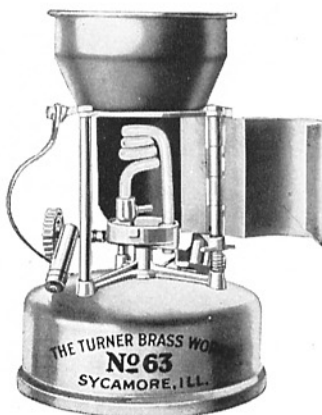
The flame of the large malleable iron burner can be regulated by the extra control which is separate from the shut-off valve. All parts are made for hard service.

The tank is seamless, drawn from heavy steel and thickly coated with tin inside and out to prevent corrosion. All fittings are interlocking. A large size pump produces air pressure quickly. Regularly supplied for gasoline but can be furnished for kerosene if specified when ordering.

Cat. No.	Description	Capacity	Weight Each
75	Fire Pot	1 Gallon	22½ lbs.

Turner No. 63 Fire Pot

For Gasoline or Kerosene—1 Gallon Capacity

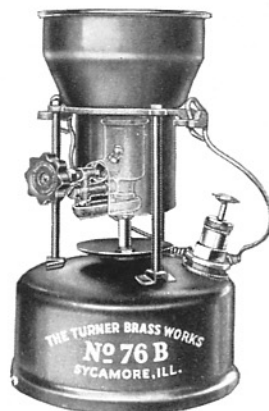


An exceptionally powerful coil furnace. Has cast bronze drip cup and extra large coil with patented baffle or flame spreader. Equipped with safety valve air release. Patented draw down nut makes a positive joint not depending on threads for seal against leakage in coil connection. Hinged windshield permits quick access to coil, drip cup and jet for cleaning or replacement of parts. Fuel is gasoline. If specified can be equipped to burn kerosene.

Cat. No.	Description	Capacity	Weight Each
63	Fire Pot	1 Gallon	12 lbs.

Turner No. 76-B Furnace

For Gasoline—1 Gallon Capacity



Extensively used by telephone and other public utility companies.

The patented, copper bronze burner will last a lifetime. It gives accurate and efficient control of the flame at all times. The gas orifice is automatically cleared when the shut-off valve is closed.

New design, malleable, cast top plate has handle which locks in vertical position or horizontal to support soldering coppers or may be removed entirely so that the fire pot may be used as a blow torch. The furnace is provided with cool, composition valve handle, effective quick-acting, trouble-free pump, heavy lead coated welded steel tank.

Cat. No.	Fuel	Capacity	Weight Each
76-B	Gasoline	1 Gallon	13 lbs.

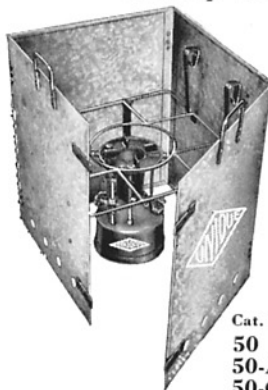
Safety Compound Kettles

A double flue extends through the kettle bottom and up and out to the sides, conducting the heat to every part of the compound. This insures a uniform melting, preventing all danger of explosion.

A short lip spout eliminates clogging and allows free pouring. The wide kettle opening provides ease in filling and also in dipping tubes.

Made of heavy steel, welded throughout. Has an extra heavy bottom which is inset 1-inch from the base. Tight fitting lid prevents loss of compound.

Capacity is 3 gallons; diameter is 10 inches, height is 12 inches. Shipping weight, 10 lbs.

Safety Folding Wind-Shield

Shields the furnace from wind and the public from danger and affords an excellent storage spot for solder pot, tools, etc. Folds flat for carrying with welded grate hanging upright.

Made of 22-gauge galvanized iron. Edges are reinforced by rolling ¼-inch wire. Size over all is 22½x-17½x17½ inches.

Cat. No.	Description	Weight
50	4-sided, with grate	28 lbs.
50-A	4-sided, no grate	22½ lbs.
50-C	3-sided, no grate	16 lbs.

TOOLS

Klein Standard and Lightweight Climbers



No. 1901

Safe, dependable and comfortable. They are designed for greatest strength and to fit the foot and limb, giving the lineman the greatest comfort and freedom of action. The gaff is of tool steel, individually tempered and set at the correct angle. The leg iron is produced from the best grade of steel individually tempered. The gaff and leg iron are securely hand riveted and tested.

Furnished less strap unless otherwise specified.

When ordering please specify the length of shank wanted. Stock sizes are from 15 to 18 inches measured from the instep to the end of the shank which should come one inch below the knee for comfort.

Cat. No.	Description	Style of Loop	Weight Per Pair
1901	Standard Climbers	Punched	3 3/8 lbs.
1900	Standard Climbers	Riveted	3 3/8 lbs.
1903	Lightweight Climbers	Riveted	2 7/8 lbs.

Klein No. 1939 "Streamlined" Climbers



A new design in which the use of any unnecessary metal has been carefully avoided. These climbers are approximately one-third lighter in weight than the Standard Pattern and about 10% lighter than the original Lightweight. They offer every possible comfort and a full measure of safety.

The leg irons are flexible and tapered in width and thickness. The critical section, from 3 inches above the gaff to half way across the stirrup has been designed for ample strength. A wrought ring carries the ankle strap.

The gaffs are the slender type — preferred on treated poles and are 3 1/2 inches long measured on the outside.

Furnished less strap unless otherwise specified.

Stock sizes are 15 to 18 inches, measured from the instep to the end of the shank which should come one inch below the knee. Other sizes to order. Use ankle straps Nos. 5301-16 or 5301-26.

Cat. No.	Description	Weight Per Pair
1939	Riveted Top Loop, Ring at Ankle	2 1/2 lbs.

Klein No. 1907 Tree Climbers



These climbers are similar to the No. 1901 but are furnished with extra long gaffs necessary to penetrate bark in tree climbing. The gaffs are 5 1/2 inches long measured on the outside and 3 1/2 inches long measured on the underside. They are set high in the leg iron so that the points clear the ground when walking.

Furnished less strap unless otherwise specified.

Stock sizes are 15 to 18 inches, measured from the instep to the end of the shank. Other sizes to order.

Cat. No.	Description	Weight Per Pair
1907	Punched Strap Loops	4 lbs.

Straps for Eastern Climbers



No. 5301-1

Made of first quality harness leather. All sewing lock stitched with genuine hot waxed, linen thread. The buckles and tongue are solid steel drop forgings tested to 1500 lbs.

The set consists of two upper straps 1 1/4-inch wide and 22 inches long with 4x4-inch plain leather pads and two lower straps 1 1/4 inches wide and 22 inches long.

Cat. No.	Description	Weight Per Doz.
5301-1	One set with plain pads	20 lbs.
5301-2	One set with sheep lined pads	20 lbs.
5301-3	One set with felt lined pads	20 lbs.
5301-4	One pair (2 straps) without pads	8 lbs.
5301-5	One pair (2 straps) with plain pads	12 lbs.

Klein Special Ankle Straps

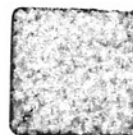


For ring attachment on Klein No. 1939 Climbers. Made in two pieces and are

punched and furnished with rivets and burrs, ready for quick attachment. If so ordered these straps will be riveted to No. 1939 Climbers.

Cat. No.	Description	Size	Weight Per Doz. Pairs
5301-16	One Pair (2 straps)	1 1/4 x 24 inches	10 lbs.
5301-26	One Pair (2 straps)	1 x 24 inches	8 1/2 lbs.

Klein Climber Pads



Standard square shape, made of select harness leather with loops at back through which climber straps pass.

Cat. No.	Description	Size	Weight Per Doz. Pairs
8200	One Pair (2 pcs.) Sheep Lined	4x4 in.	4 lbs.
8201	One Pair (2 pcs.) Felt-Lined	4x4 in.	4 lbs.
8202	One Pair (2 pcs.) Plain Leather	4x4 in.	4 lbs.

Klein Pear Shape Climber Pads



Made of two thicknesses of select harness leather riveted together. The outer piece is punched with two slots for the climber strap and one cross slot through which the leg iron of the climber is passed. Very comfortable as all edges are round.

Cat. No.	Description	Size	Weight Per Doz. Pairs
8206	One Pair (2 pcs.) Plain Leather	3 1/2 x 6	4 1/2 lbs.

Klein Climber Gaff Guards



Made of harness leather. The wings of the guard fit around the leg iron of climber just above the gaff and snap on. The gaff is covered and protected by the leather.

Cat. No.	Description	Weight Per Doz. Pairs
1929-G	One Pair (2 pcs.)	1 3/4 lbs.

Line Supplies Section

TOOLS

Klein Leather Safety Straps



No. 5251

Standard type for general use. These straps are cut from first quality harness leather, back or center stock only. All rivets solid copper, hand set with burrs. Snaps and buckles are solid steel drop forgings, galvanized and tested to 1500 pounds. Snaps may be lengthened or shortened by adjusting buckle.

center stock only. All rivets solid copper, hand set with burrs. Snaps and buckles are solid steel drop forgings, galvanized and tested to 1500 pounds. Snaps may be lengthened or shortened by adjusting buckle.

With Leather Wear Pad at Buckle

Cat. No.	Snaps	Width	Length	Weight Per Doz.
KL-5251	Klein-Lok	1 3/4 in.	5 ft., 8 in.	32 1/2 lbs.
5251	Standard	1 3/4 in.	5 ft., 8 in.	32 1/2 lbs.
H-5251	Hank's	1 3/4 in.	5 ft., 8 in.	32 1/2 lbs.

With Ends Reinforced with Stainless Steel Clips

Cat. No.	Snaps	Width	Length	Weight Per Doz.
KL-5250	Klein-Lok	1 3/4 in.	5 ft., 8 in.	32 1/2 lbs.
5250	Standard	1 3/4 in.	5 ft., 8 in.	32 1/2 lbs.
H-5250	Hank's	1 3/4 in.	5 ft., 8 in.	32 1/2 lbs.

Klein No. 5253 Leather Safety Straps



Cut from first quality harness leather, back or center stock only. All rivets are solid copper, set with burrs. Drop forged roller snaps and buckles are tested individually to 1500 pounds, and are galvanized finish. Straps may be lengthened or shortened by adjusting buckle. Reinforced both ends with stainless steel safety clips riveted through double thickness of leather.

For leather wear pad instead of stainless steel clip, add letter "T" after catalog number selected below.

Cat. No.	Type Snaps	Type Clips	Size Width	Length	Weight Per Doz.
5253	Standard	Stainless	2 in.	5 ft., 8 in.	40 lbs.
KL-5253	Klein-Lok	Stainless	2 in.	5 ft., 8 in.	40 lbs.
H-5253	Hank's	Stainless	2 in.	5 ft., 8 in.	40 lbs.

Klein No. 5257 Leather Safety Straps



A heavy duty strap, similar to the No. 5253 but has a double tongue buckle to conform to "Bell

System" (A.T.&T.Co.) specifications. One end reinforced with stainless steel safety clip. The single end is returned through roller of snap and securely sewed and riveted.

Cat. No.	Description	Width	Length	Weight Per Doz.
5257-S	Bell System Type	2 in.	5 ft., 1 1/2 in.	39 lbs.
5257-L	Bell System Type	2 in.	5 ft., 1 1/2 in.	41 lbs.

Klein No. 5258 Leather Safety Straps



Heavy duty type following the N.E. L.A. specifications. Snaps and buckle are solid steel drop forgings, galvanized, tested to 1500 pounds.

Reinforced at buckle end with safety stainless steel clip, at the fixed snap the strap is returned and secured by sewing and riveting.

Cat. No.	Snaps	Width	Length	Weight Per Doz.
KL-5258	Klein-Lok	2 in.	5 ft., 6 in.	40 lbs.
5258	Standard	2 in.	5 ft., 6 in.	40 lbs.
H-5258	Hank's	2 in.	5 ft., 6 in.	40 lbs.

Klein Leather Extension Straps



Worn permanently attached to one "D" ring on body belt. Brought into use when a large pole makes it necessary to extend the regular safety strap.

Cat. No.	Type "D" Ring	Width	Length	Weight Per Doz.
5215	Standard	1 3/4 in.	15 in.	15 1/2 lbs.
H-5215	Hank's	1 3/4 in.	15 in.	17 lbs.

Klein Leather Safety Harness



Designed for use where danger from gas is present.

The harness is made so that it slings the wearer in a perpendicular position so that he can be readily hauled through an ordinary manhole opening.

A solid harness leather back plate, 2 3/4 inches by 10 inches is stitched and riveted around the 1 1/4 inch adjustable belt strap. The back plate also carries a tested drop forged "D" ring to which the 3/4-inch manilla life line, 25 feet in length is permanently attached.

The adjustable shoulder straps are 3/4-inch wide and are riveted to the belt at the single ends. These straps serve to hold the belt in position around the chest so as not to encumber the wearer while working.

Cat. No.	Description	Weight Per Doz.
5209	Harness Complete with Safety Rope	75 lbs.

Klein Snaps



Klein-Lok



Standard



Hank's

Standard

Has wide nose covering spring latch, protecting it from accidentally twisting out of "D" ring. Can be used with any standard "D" ring.

Klein-Lok

Has a twin latch arrangement. Both latches must be pressed simultaneously to release. Full factor of safety. Can be used with any standard "D" ring.

Hank's

Once engaged cannot be released accidentally. Must be used with corresponding Hank's "D" rings on body belt.

Neatsfoot Oil

It pays to give safety straps and tool belts proper attention. Neatsfoot Oil should be rubbed into the leather at least every 90 days.



Cat. No.	Description	Weight Per Doz.
N.O.-1	Pint Can of Neatsfoot Oil	15 lbs.
N.O.-2	Qt. Can of Neatsfoot Oil	27 lbs.
N.O.-4	Half Gallon Can	52 lbs.

TOOLS

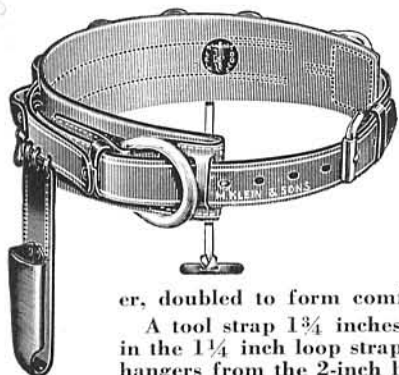
Directions to Ensure Proper Fit of Linemen's Belts

Linemen's belts are usually specified by waist or body size but to ensure comfort in use it is important that the "D" rings do not rest on the hip bones of the wearer. The correct position of the "D" rings is about 1 inch in front of the hip-bone on either side.

To obtain correct body size of Klein's Tool Belts, measure around the back from hip-bone to hip-bone and add two inches to this distance. Then refer to table below and select the corresponding belt size. Sizes are in inches.

Distance Between "D" Rings	20	22	22	24	26	28
Belt Size	36	38	40	42	44	46

Klein No. 5228 Leather Tool Belts



A new pattern providing the ultimate in safety and comfort. The cushion, 4½ inches wide at the center of back and tapered to 3½ inches wide at the front, is made of one piece of soft, russet latigo leather, doubled to form comfortable rolled edges.

A tool strap 1¾ inches wide with five loops in the 1¼ inch loop strap is carried on leather hangers from the 2-inch body strap to which it is looped at the ends. This arrangement keeps the tool loops from contracting when belt is buckled on and is also another comfort feature.

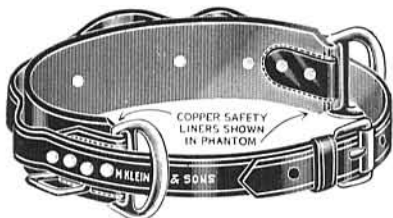
So constructed that no rivets come through to inside of belt, a safety insulation feature.

The "D" rings and buckle are solid steel drop forgings galvanized and tested to 1500 pounds. Fitted with leather plier pocket, knife snap and tape thong complete.

Made in sizes 36, 38, 40, 42, 44 and 46 inches, other sizes to order (see table). Specify size on order.

Cat. No.	Type "D" Rings	Width	Weight Per Doz.
5228	Standard, Single Bar	4½ in.	45 lbs.
H-5228	Hank's	4½ in.	45 lbs.

Klein No. 5204 Leather Tool Belts



Made of select first quality harness leather. The cushion, 3½ in. wide, carries the "D" rings. The outer or loop layer is 1½ in. wide formed into tool loops by riveting

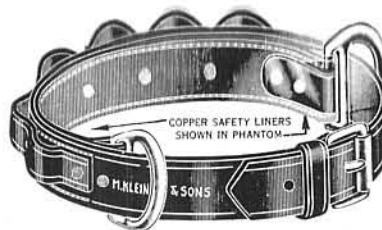
to the cushion. It also passes through the "D" rings.

Nos. 5204-D.E. and H-5204-D.E. are provided with a leather pocket for pliers and a convenient snap for carrying knife. At the other end of the belt, a rawhide thong is attached with fibre crossbar for carrying tape.

Made in sizes 36, 38, 40, 42, 44, 46 and 48 inches, other sizes to order (see table). Specify size on order.

Cat. No.	Type "D" Ring	Width	Weight Per Doz.
5204-D.E.	Standard	3½ in.	38 lbs.
H-5204-D.E.	"Hank's"	3½ in.	38 lbs.
5204	Standard	3½ in.	34 lbs.
H-5204	"Hank's"	3½ in.	34 lbs.

Klein No. 5205 Leather Tool Belts



Made of select first quality harness leather. The inner or cushion layer, 2¼ inches wide, carries the "D" rings and is lock stitched with hot waxed linen thread and copper riveted to the outer layer which also passes through the "D" rings.

The "D" rings and buckle are solid steel drop forgings, galvanized and tested to 1500 pounds. Surfaces which take the wear of the "D" rings are protected with copper safety liners riveted to the belt.

The loop strap is 1¼ inches wide formed into 6 loops. Made in sizes 36, 38, 40, 42, 44 and 46 inches, other sizes to order (see table). Specify size on order.

Cat. No.	Type "D" Rings	Width	Wt. Per Doz.
5205	Standard, Double Bar	2¼ in.	35 lbs.
H-5205	Hank's	2¼ in.	35 lbs.

Klein No. 5202 Leather Tool Belts



Made of select first quality harness leather. The cushion, 2¼ in. wide, carries the "D" rings. The outer or loop layer is 1½ inches wide formed into tool loops by riveting

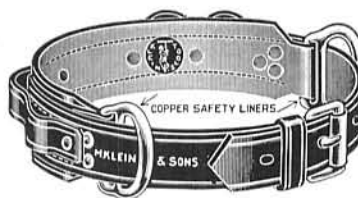
to the cushion. It also passes through the "D" rings.

The "D" rings and buckle are solid steel drop forgings, galvanized and tested to 1500 pounds. Surfaces taking the wear of the "D" rings are protected with copper safety liners riveted through the full thickness of belt. All rivets are solid copper set with burrs and sewing is with hot waxed linen thread, lock stitched.

Made in sizes 36, 38, 40, 42, 44 and 46 inches, other sizes to order (see table). Specify size on order.

Cat. No.	Type "D" Rings	Width	Wt. Per Doz.
5202	Standard, Double Bar	2¼ in.	32 lbs.
H-5202	Hank's	2¼ in.	32 lbs.

Klein No. 5211 Leather Tool Belts



First quality harness leather throughout. The inner or cushion layer, 3 in. wide, is narrowed at each end to carry the "D" rings. The body strap, 2 in. wide, is riveted and stitched to the cushion and

also passes through the "D" rings. Two tool straps are provided and formed into two tool loops at each side of the belt by riveting through the two layers of belt proper.

"D" rings and buckle are solid steel drop forgings, galvanized and tested to 1500 pounds. All rivets are solid copper, hand set with burrs. Sewing is with linen thread, hot waxed and lock stitched.

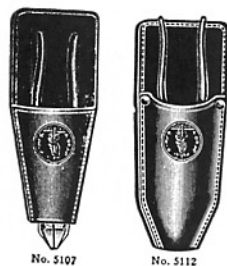
Made in lengths 36, 38, 40, 42, 44 and 46 inches, other sizes to order (see table). Specify size on order.

Cat. No.	Type "D" Rings	Width	Wt. Per Doz.
5211	Standard N.E.L.A. type	3 in.	34 lbs.
H-5211	"Hank's"	3 in.	34 lbs.

Line Supplies Section

TOOLS

Klein Plier Pockets

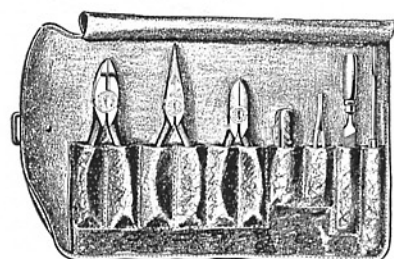


Made of good quality leather. For carrying 6, 7, 8 or 9-inch pliers. A loop is riveted at back through which belt may be passed or can be riveted on. No. 5107 has bottom left open to prevent accumulation of dirt and water.

Cat. No.	Size	Weight Per Doz.
5107	3½x9 inches	3 lbs.
5112	3½x9 inches	4¾ lbs.

Klein Pocket Tool Roll

Roll with strap and buckle, complete with tools. Available less tools on special order.

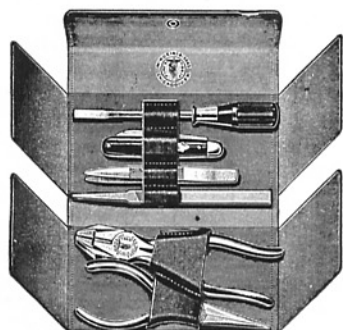


Consists of the following:
 No. 201-6 N. E. Side Cutting Plier
 No. 301-6 Long Nose Plier
 No. 202-5-A Oblique Cutting Plier
 No. 1550-2 Electrician's Knife
 Electrician's Tweezers
 Insulated Screwdriver
 File
 Tool Roll

Cat. No.	Description	Weight Each
1305-33-A	Pocket Tool Roll Complete	1½ lbs.

Klein Inspectors' Pocket Tool Kit

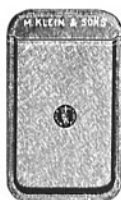
A very handy assortment that fits the pocket. Consists of tools in a black leather folding case, strongly reinforced.



Consists of:
 No. 201-6 Side Cutting Plier
 No. 301-5 Long Nose Plier
 No. 1550-2 Electrician's Knife
 Electrician's Tweezers
 Insulated Screwdriver
 Special File

Cat. No.	Description	Size Closed	Weight
1305-2	Complete Tool Kit	6½x3½x1½ in.	1¼ lbs.

Klein Hip Pocket Tool Case



For carrying pliers or other tools in hip pocket. Prevents cutting of clothes or possible injury to the person. Made of black leather.

Cat. No.	Size	Weight Per Doz.
5111	5 x 7 inches	5½ lbs.

Klein Inspectors' Tool Bag—Harness Leather

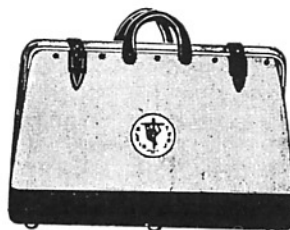


This bag offers a combination of good features. It is made of harness leather and will stand rough and hard usage and still always look well. The shoulder strap is combined with a pad and hand strap. The bottom is three-ply and is studded with steel studs. Retaining straps pass clear

around the bag so that it may be loaded to the limit of its capacity and be securely held intact. All seams are sewed with hot waxed linen thread, lock stitched. The leather used does not absorb moisture.

Cat. No.	Size Inches	Weight Each	Cat. No.	Size Inches	Weight Each
5108-14	14x8	5 lbs.	5108-20	20x8	6½ lbs.
5108-16	16x8	5¾ lbs.	5108-22	22x8	7 lbs.
5108-18	18x8	6 lbs.	5108-24	24x8	7¼ lbs.

Klein Lineman's Tool Bag



Type 5102

Made of one-piece white duck reinforced all around the bottom with heavy bag leather, 3¼ inches up on the 5102 series and 8 inches up on the 5105 series. The bottom is made of heavy leather outside with duck inside, lock stitched all around. This lock stitch forms an independent knot in each stitch, making it impos-

sible to rip. The bottom is studded with strong steel studs. Bottoms and sides are joined together with lock-stitched leather welt seams. Mouth of the bag is formed by a 12-gauge steel frame; the canvas is clinched between this frame and an inside secondary steel frame. Has harness leather handles and two retaining straps with buckles.

Cat. No.	Size Inches	Weight Each	Cat. No.	Size Inches	Weight Each
5102-12	12	2¼ lbs.	5102-24	24	4 lbs.
5102-14	14	2½ lbs.	5105-16	16	3 lbs.
5102-16	16	3 lbs.	5105-18	18	3½ lbs.
5102-18	18	3¼ lbs.	5105-20	20	3¾ lbs.
5102-20	20	3½ lbs.	5105-22	22	4 lbs.
5102-22	22	3¾ lbs.	5105-24	24	4¼ lbs.

Linemen's Non-Metallic, Collapsible Tool Buckets



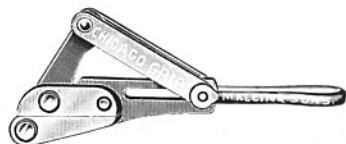
Collapsible buckets for raising tools, supplies and materials to the pole top. Round tops are held open by non-metallic rings.

Made of No. 6, 18-ounce duck. The heavy leather bottom extends 2½ inches up the sides. A ¾-inch rope handle is firmly spliced to the bag through leather reinforcements.

Cat. No.	Diameter	Height	Weight Each
40	8 in.	14 in.	1¾ lbs.

TOOLS

Klein "Chicago" Grips for Bare Wires Without Pulleys



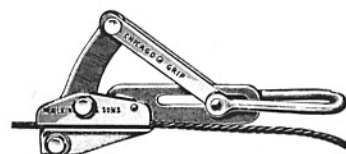
The harder the pull, the tighter this grip holds. It pulls straight without leaving kinks in the wire. Handy to put on and holds itself in place by means of a spring acting on the compressing lever.

Main body piece and lever are forged steel. Draw parts are of wrought steel. Gripping jaws are machined smooth.

Cat. No.	For Wire Size	Maximum Opening	Safe Load Pounds	Weight Each
1613-30	No. 6 and smaller	$\frac{3}{8}$ in.	1500	1½ lbs.
1613-30B	Same as 1613-30 but with bronze lined jaws.			
1613-40	No. 0 and smaller	$\frac{7}{16}$ in.	2250	3 lbs.
1613-40B	Same as 1613-40 but with bronze lined jaws.			
1613-50	No. 0000 and smaller	$\frac{1}{2}$ in.	4000	8 lbs.
1613-50B	Same as 1613-50 but with bronze lined jaws.			

Klein Improved "Chicago" Grips

For Messengers, Guys and Conductors up to ½ in. in Diam.



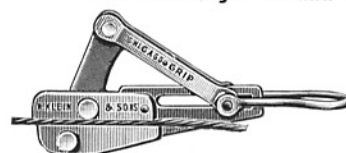
Has bronze-lined jaws to prevent slippage and consequent damage to galvanized finish or to copper or aluminum conductor. Forged from alloy steel, heat treated.

Maximum cable size: 4/0 B.&S. 7 strand copper (.522 in.), 3/0 A.C.S.R. Minimum cable size: No. 4 B.&S. solid copper (.202 in.) No. 6 A.C.S.R.

Cat. No.	Max. Opening	Safe Load	Weight Each
1628-5B	.58 in.	8000 lbs.	6 lbs.
1628-5	Same as 1628-5B but with steel jaws.		

Klein "Chicago" Grips

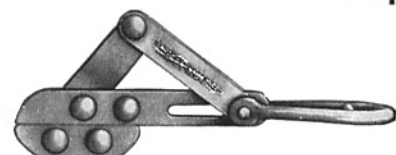
For Messenger Strand and Heavy Cables



Similar in construction to No. 1613 series, but heavier. They can be modified on special order to accommodate strand and cable of larger diameters.

Cat. No.	Maximum Cable Size	Minimum Cable Size	Safe Load Pounds	Weight Each
1628-6	$\frac{7}{16}$ in.	$\frac{3}{16}$ in.	8,000	8½ lbs.
1628-16	$\frac{5}{8}$ in.	$\frac{5}{16}$ in.	15,000	15½ lbs.

Buffalo Grips



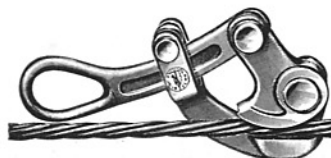
For bare and insulated wire — with and without pulleys.

These Grips will receive wire in open position without manipulation.

Efficient, reliable and simple, they are made entirely of steel and will not slip or injure the most delicate insulation.

Cat. No.	For Wire or Strand Size	Description	Max. Opening	Weight Each
420-1	No. 6 and smaller	With Loop	1/5 in.	1½ lbs.
420A-1	No. 6 and smaller	With Pulley	1/5 in.	2 lbs.
421-2	No. 0 and smaller	With Loop	$\frac{3}{8}$ in.	2½ lbs.
421A-2	$\frac{7}{16}$ in. and smaller	With Pulley	$\frac{3}{8}$ in.	3 lbs.

Haven's Steel Grips



No. 1604-20

All parts are solid steel drop forgings, heat treated for maximum strength and service. A roller fitted to the body yoke makes the motion free and allows the load to come on smoothly. Instantaneous hold yet a shake on the tackle rope releases the grip. These grips will not slip due to the hand cut serration in the face of the eccentric. All galvanized except eccentric.

Cat. No.	Maximum Opening	For Wire or Strand Size	Safe Load Pounds	Weight Per Doz.
1604-10	$\frac{1}{4}$ in.	No. 4 B.&S. and smaller	2500	12 lbs.
1604-20	$\frac{1}{2}$ in.	½ in. and smaller	5000	28½ lbs.
1625-20	$\frac{3}{4}$ in.	¾ in. to No. 2 B.&S.	8000	45 lbs.

Klein Self-Locking Block Tackle



Especially for use with Klein Wire Grips. Consists of galvanized steel shell

blocks, fitted with a detachable snubbing hook to lock load in any position and 25 feet of 4-strand, ¾-inch waterflex Manilla rope and detachable hook. To lock the load, simply pull the luff rope under the hook. To release pull the rope. The blocks of No. 1802-30 are arranged with spring guard snap hooks and the blocks of No. H-1802-30 have guarded snaps.

Cat. No.	Description	Weight Each
1802-30	Self-Locking Block Tackle	3 lbs.
H-1802-30	Self-Locking Block Tackle with Guarded Snaps	3½ lbs.

Klein Self-Lubricating Heavy Block Tackle

Consists of two special double sheave blocks with wrought side plates, spring guarded snap hooks and drop forged eye. Pulleys are bronze bushed and self-lubricating. Shells are galvanized. 30 feet of four strand Manilla rope is spliced to the eye of block with galvanized thimble.

Cat. No.	Description	Size Rope	Weight Each
1802-40	Heavy Block Tackle	½ in.	15½ lbs.
1802-50	Heavy Block Tackle	$\frac{5}{8}$ in.	17¾ lbs.
1802-60	Heavy Block Tackle	$\frac{3}{4}$ in.	19½ lbs.

Klein Howe's Wire Tool



Consists of a harness leather strap, 1¼ inches wide and 7 feet long. At one end

is a forged steel swivel hook with opening to permit anchoring around insulator pin. Forward end has a locking device to hold load at any distance and is so arranged that a wire grip can be readily attached. Metal parts are galvanized.

Cat. No.	Description	Size of Strap Width	Length	Weight
1702-20	Single Purchase	1¼ in.	7 ft.	2½ lbs.

Klein "Chicago" Linemen's Tool



A combination of Chicago Grip No. 1613-30 and Howe's Wire Tool, No. 1702-20.

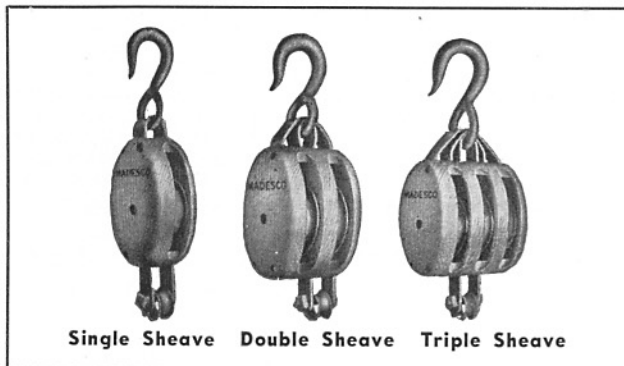
Cat. No.	For Wire Size	Weight Each
1700-30	No. 6 to No. 13	4 lbs.

Line Supplies Section

TOOLS

Wood Pulley Blocks

For Manilla Rope



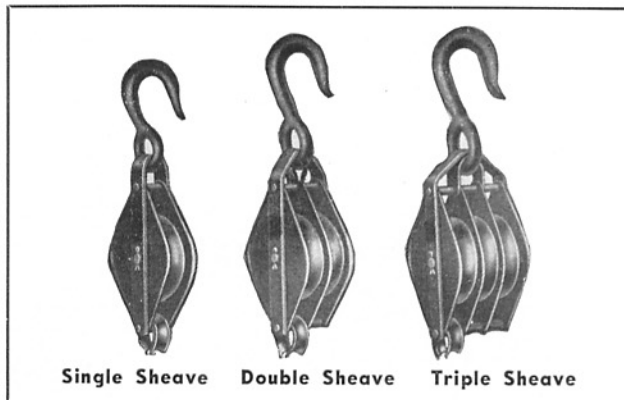
Single Sheave Double Sheave Triple Sheave

Hard wood shells, steel strapped on the inside with iron sheaves, loose side hooks and becketts. Sheaves are furnished with iron roller bushings.

Cat. No.	Description	For Rope Size	Size Shell	Weight Each
1001-1/2-S	Single	1/2 in.	4 in.	1 1/4 lbs.
1001-1/2-D	Double	1/2 in.	4 in.	2 1/2 lbs.
1001-1/2-T	Triple	1/2 in.	4 in.	2 3/4 lbs.
1001-5/8-S	Single	5/8 in.	5 in.	2 1/4 lbs.
1001-5/8-D	Double	5/8 in.	5 in.	3 3/4 lbs.
1001-5/8-T	Triple	5/8 in.	5 in.	5 1/4 lbs.
1001-3/4-S	Single	5/8 or 3/4 in.	6 in.	3 1/2 lbs.
1001-3/4-D	Double	5/8 or 3/4 in.	6 in.	6 lbs.
1001-3/4-T	Triple	5/8 or 3/4 in.	6 in.	8 3/4 lbs.

Steel Pulley Blocks

For Manilla Rope



Single Sheave Double Sheave Triple Sheave

Shell is made of pressed steel with rounded edges to prevent chafing rope. Equipped with iron sheaves and round, loose side hook. Sheaves are furnished with iron roller bushings. Shell is black japanned.

Cat. No.	Description	For Rope Size	Size Shell	Weight Each
2001-1/2-S	Single	1/2 in.	4 in.	1 1/4 lbs.
2001-1/2-D	Double	1/2 in.	4 in.	2 lbs.
2001-1/2-T	Triple	1/2 in.	4 in.	2 1/2 lbs.
2001-5/8-S	Single	5/8 in.	5 in.	2 lbs.
2001-5/8-D	Double	5/8 in.	5 in.	3 lbs.
2001-5/8-T	Triple	5/8 in.	5 in.	4 1/4 lbs.
2001-3/4-S	Single	3/4 in.	6 in.	3 lbs.
2001-3/4-D	Double	3/4 in.	6 in.	5 1/4 lbs.
2001-3/4-T	Triple	3/4 in.	6 in.	6 3/4 lbs.

Steel Snatch Blocks

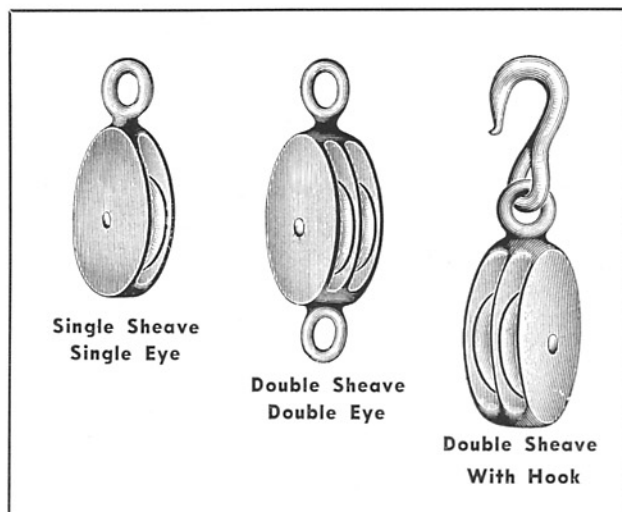
For Manilla Rope



Heavy steel shell with full length double steel straps, iron sheaves, steel heads and links and flat, stiff swivel hook. Rounded edges prevent chafing of rope. Sheaves are furnished with iron roller bushings, and blocks are black japanned.

Cat. No.	For Rope Size	Length of Shell	Weight Each
2706-3/4	3/4 in.	6 in.	5 3/4 lbs.
2706-7/8	7/8 in.	7 in.	7 lbs.
2706-1	1 in.	8 in.	12 1/4 lbs.
2706-1 1/4	1 1/4 in.	10 in.	21 1/2 lbs.

Malleable Iron Pulley Blocks



Single Sheave Single Eye

Double Sheave Double Eye

Double Sheave With Hook

Single or double sheave with single eye, double eye or hook.

Cat. No.	Description	Lgth. of Shell Inches	For Rope Size Inches	Weight Each
932-1/8	Single Sheave, Single Eye	2	1/8	1/4 lb.
933-1/8	Double Sheave, Single Eye	2	1/8	3/8 lb.
932-3/8	Single Sheave, Single Eye	2 1/4	3/8	3/8 lb.
933-3/8	Double Sheave, Single Eye	2 1/4	3/8	5/8 lb.
932-1/2	Single Sheave, Single Eye	3	1/2	3/4 lb.
933-1/2	Double Sheave, Single Eye	3	1/2	1 1/4 lbs.
935-1/8	Single Sheave, Double Eye	2	1/8	1/8 lb.
936-1/8	Double Sheave, Double Eye	2	1/8	1/8 lb.
935-3/8	Single Sheave, Double Eye	2 1/4	3/8	1/8 lb.
936-3/8	Double Sheave, Double Eye	2 1/4	3/8	5/8 lb.
935-1/2	Single Sheave, Double Eye	3	1/2	7/8 lb.
936-1/2	Double Sheave, Double Eye	3	1/2	1 1/4 lbs.
937-1/8	Single Sheave, with Hook	1 3/8	1/8	3/8 lb.
938-1/8	Double Sheave, with Hook	1 3/8	1/8	1/8 lb.
937-3/8	Single Sheave, with Hook	1 1/2	3/8	1/8 lb.
938-3/8	Double Sheave, with Hook	1 1/2	3/8	3/4 lb.
937-1/2	Single Sheave, with Hook	2	1/2	1 lb.
938-1/2	Double Sheave, with Hook	2	1/2	1 1/2 lbs.

TOOLS

Pole Pulling and Straightening Jacks



No. 329

These pole jacks enable one or two men to pull or straighten poles, pull butts or move loaded poles, regardless of size or depth, without digging around them or interrupting service. Both types listed here pivot on their base.

The No. 329 is a strong powerful jack built to pull or straighten the heaviest poles. Single acting automatic raising and lowering—will not trip. Equipped with 8-ft. steel chain, 5-ft. steel lever bar and steel I-beam base.

The No. 325 is a light but strong jack designed for pulling poles up to 30 ft. in height.

Also valuable for tightening guy wires, taking up slack in messenger wire and for pulling underground cable. Furnished with pike pole, steel chain, detachable base and steel lever bar.

The No. 318 is similar to the No. 329 but has a tripping type mechanism.

Cat. No.	Capacity	Height	Lift	Weight Jack Only
329	15 tons	37¾ in.	23 in.	95 lbs.
325	5 tons	50 in.	36 in.	34 lbs.
318	15 tons	37¾ in.	23¼ in.	95 lbs.

Simplex General Utility Jack



Cat. No.	Capacity	Lift	Height	Weight Complete
310-A	15 tons	14 in.	22 in.	109 lbs.

Same hinged base and general construction as the No. 329 Pole Jack. Single acting, automatic raising and lowering and cannot be tripped. An especially desirable jack for smaller telephone poles and general work around the exchange. Furnished with 5-ft. steel chain, steel auxiliary shoe and 5-ft. steel pinch bar.

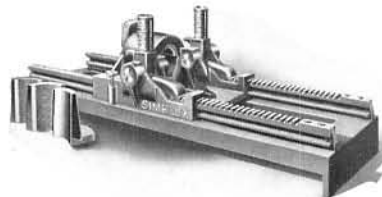
Cope Cable Reel Jack



Cat. No.	Description	Capacity	Weight Per Pair
C-8	Cable Reel Jack	8 tons	140 lbs.

Constructed of heavy welded steel channel sections, base size is 21 inches across and 21 inches in width. The wrought steel square thread has a diameter of 1¾ inches and a length of 18 inches. The swivel yoke has a minimum height of 25 inches and a maximum height of 40 inches. For cable reels up to 78 inches in size.

Pipe Pushing Jacks



Designed for pushing pipe despite unfavorable soil conditions. Can be operated by two or four men, depending upon the soil encountered. The double levers can be operated singly,

alternately or together, depending on the size of pipe, soil condition or cribbing. When solid cribbing or block is difficult to obtain it is possible to hold the jack against back pressure with one lever while the other lever is being operated. Pipe can be pulled for lead pipe and duct installations or "backed out" by reversing the machine.

Each size of pipe requires a pilot and set of tapered jaws to avoid crushing. When ordering specify size of jaws and pipe.

Cat. No.	For Pipe Size Inches	Capacity Tons	Travel Inches	Weight of Jack	Weight Complete
R-332-R	¾ to 2	15	30	150 lbs.	218 lbs.
R-334-R	2 to 4	25	28½	208 lbs.	321 lbs.

Simplex Standard Reel Jacks



Above: No. 320-A

Left: No. 322

The No. 322 is a double acting, automatic raising and lowering jack designed for reels from 36 to 84 inches in diameter. Furnished in pairs (one right and one left hand) for uniform operation on both sides of the reel. The "T" shaped base, with three adjustable braces, insures a firm non-rocking foundation.

The No. 321 is a single jack for reels from 20 to 96 inches in diameter and the No. 320-A, also a single acting unit, is for reels from 20 to 60 inches in diameter.

The No. 322 is recommended for outside work and the No. 321 and 320-A (which is identical in appearance with the No. 321 except for size) are recommended for warehouse service. All are furnished with steel lever bars.

Cat. No.	Capacity	Height	Lift	Wt. Each
320-A	5 tons	21 in.	10 in.	46 lbs.
321	10 tons	34½ in.	15 in.	108 lbs.
322	10 tons	29 in.	14 in.	104 lbs.

Simplex Screw Type Cable Reel Jacks

Quick acting, efficient and inexpensive. Made in two sizes. No. 1-CR is built for cable reels from 40 to 60 inches, No. 2-CR is built for cable reels from 60 to 90 inches.

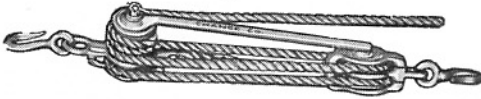


Cat. No.	Height	Lift	Weight Each
1-CR	19¾ in.	13¼ in.	60 lbs.
2-CR	30½ in.	18 in.	88 lbs.

Line Supplies Section

TOOLS

Capstan



Used for attaching guys, pole raising and placing, cable pulling and general work in line construction. A rope pulley block with which one man can exert a direct pull or lift from 1000 to 4000 pounds.

Pulleys and drum are aluminum. Handle, housings and hooks are drop-forged steel. Rope is manilla. Numbers C-2, C-4, C-22 and C-44 include 33 feet of rope.

Cat. No.	Description	Capacity	Size of Rope	Weight Each
C-2	With Rope	2000 lbs.	1/2 in.	15 lbs.
C-2A	Less Rope	2000 lbs.	1/2 in.	13 lbs.
C-4	With Rope	4000 lbs.	5/8 in.	25 1/4 lbs.
C-4A	Less Rope	4000 lbs.	5/8 in.	20 1/2 lbs.
C-22	With Rope	3000 lbs.	1/2 in.	19 1/2 lbs.
C-22A	Less Rope	3000 lbs.	1/2 in.	16 3/4 lbs.
C-44	With Rope	5000 lbs.	5/8 in.	31 1/4 lbs.
C-44A	Less Rope	5000 lbs.	5/8 in.	25 3/4 lbs.

Detachable capstan to be used with ordinary blocks—will increase the leverage ratio 8 to 1.

Cat. No.	Capacity	Weight Each
C-3	2000 lbs.	5 lbs.
C-5	4000 lbs.	11 lbs.

Coffing Power Pike Pole

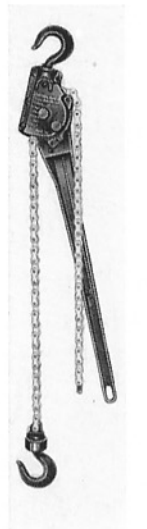


Made of two pieces of galvanized pipe, one telescoping the other. Power may be obtained through the use of a Coffing Load Binder or Safety Pull Hoist. For straightening leaning poles one man with this tool can do the work of from two to six men.

The Power Pike Pole has a heavy steel base and the top is so constructed that it cannot slip off pole.

Cat. No.	Minimum Height	Maximum Height	Weight Each
C-2	8 ft., 2 in.	11 ft., 7 in.	32 lbs.

Coffing Safety-Pull Hoists



Built on the ratchet and pawl principle. The load is always locked by sprocket and ratchet pawls. (Cannot slip or drop load.) Has free chain for quick up-or-down adjustment when there is no weight on the hoist. A reversible handle permits operating the hoist in any position. Safety stops prevent handle from spinning in case hand should slip off the handle.

Hooks are drop forged, heat treated alloy steel; frame and lever parts are malleable iron; sprocket and ratchet are cut from solid bar of special alloy steel, heat treated and ground. The handle will bend at maximum overload before chain will break or hooks will straighten out.

All Safety-Pull Hoists are factory tested at 100% over rated capacity.

Cat. No.	Rated Capacity	Lifting Speed Per Minute	Standard Lift	Weight Each
A	3/4 ton	36 in.	56 1/2 in.	14 lbs.
F	1 1/2 ton	48 in.	56 1/2 in.	25 lbs.

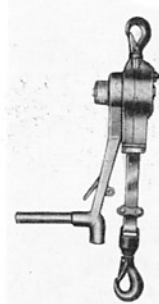
Coffing Safety Load Binder



For booming telephone poles, logs, pipe, etc. Operates on straight ratchet principle with a free chain device for quick adjustment of the load chain. If load becomes loose it can be bound tight simply by drawing on lever. Furnished with 3/8-inch grab hooks and 24-inch load chain. By the use of the Super Attachment the pulling capacity is doubled. When ordering the Super Attachment please specify whether it is to be used with Model A or F Load Binders.

Cat No.	Description	Standard Lift	Capacity	Weight
A	Load Binder	2 feet	4000 lbs.	11 1/2 lbs.
F	Load Binder	2 feet	6000 lbs.	24 lbs.

Coffing Lite Line Puller

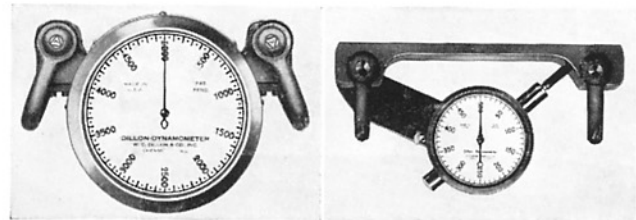


A tool entirely new in its field—used for pulling telephone and light wires.

Built on the ratchet or crank principle and equipped with a special steel load tape with 6-ft. pull. This tape has the advantage of being very compact and strong, having a tensile strength of 2500 pounds. Although rated at 400 pounds, all pullers are factory tested at 100% over rated capacity.

Cat No.	Rated Capacity	Weight Each
C-1	400 lbs.	5 lbs.

Dillon Traction Dynamometer



Used in series with a block and tackle to measure the pound pull being applied to a cable, guy or messenger. The instrument cannot be injured by a 100% overload or by a recoil due to breakage of equipment or messenger.

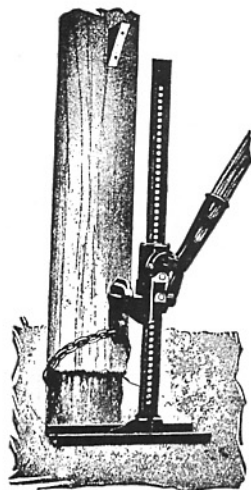
With the dynamometer the wire can be pulled to the tension the wire manufacturer recommends for specific load strains resulting in a saving in the life of wire or strand.

The dynamometer is self-contained, simple in construction, accurate, light-weight and rugged. Furnished with shackles and carrying case.

Cat No.	Capacity	Size	Diam. of Dial	Weight Each
B	500 lbs.	6 x 3 1/4 x 1 in.	2 1/4 in.	5 lbs.
B	750 lbs.	6 x 3 1/4 x 1 in.	2 1/4 in.	5 lbs.
B	1000 lbs.	6 x 3 1/4 x 1 in.	2 1/4 in.	5 lbs.
A	2500 lbs.	7 1/2 x 5 3/4 x 2 3/8 in.	5 in.	9 1/2 lbs.
A	3500 lbs.	7 1/2 x 5 3/4 x 2 3/8 in.	5 in.	9 1/2 lbs.
A	5000 lbs.	7 1/2 x 5 3/4 x 2 3/8 in.	5 in.	9 1/2 lbs.
A	7500 lbs.	7 1/2 x 5 3/4 x 2 3/8 in.	5 in.	9 1/2 lbs.
A	10,000 lbs.	7 1/2 x 5 3/4 x 2 3/8 in.	5 in.	9 1/2 lbs.
A	12,500 lbs.	7 1/2 x 5 3/4 x 2 3/8 in.	5 in.	9 1/2 lbs.

TOOLS

Handyman Pole Puller

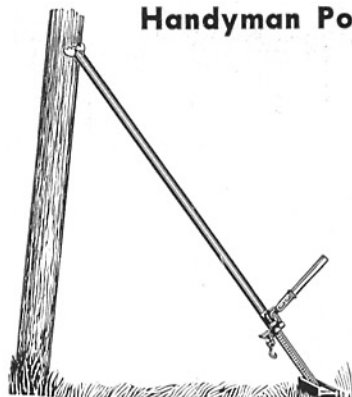


Successfully pulls 25 and 35-foot poles under all conditions. The pole clamp keeps the jack from rubbing against the pole. Pulls a pole 3 feet without stopping to take a new hitch. Lifts on the down stroke. Can be used as a cable reel jack and on every job where there is heavy lifting and pulling. It can also be equipped with a metal pike pole for straightening poles.

Comes complete with I-Beam base 6 x 24-inches, one hardwood handle, and malleable iron pole clamp with 5-ft. steel chain.

Cat. No.	Description	Weight
H-I	Handyman Pole Puller	91 lbs.
H-P	6-foot Metal Pike Pole	16 lbs.

Handyman Pole Pusher



Includes one jack, mounted on 48-inch standard and 8-foot pike pole made of hollow steel tubing, which telescopes the standard and rests on the running gear of the tool. Also 24-inch I-Beam base, 6-inches wide. For protection, a crescent guard is fitted to the pike.

Cat. No.	Weight
H-2	75 lbs.

Handyman Guy Stretcher



Used for taking up slack, pulling underground cable, lifting cable reels, etc. Can be taken to top of pole for stretching cable messenger. Includes one jack mounted on a 48-inch standard and two swivel hooks which are readily attached with thumb bolts.

Cat. No.	Description	Weight
H-3	Guy Stretcher	33 lbs.

Combination Pole Pusher and Guy Stretcher

A combination of the Handyman Pole Pusher and the Handyman Guy Stretcher. Can also be used for pulling small poles. Handles a 20 foot pole very nicely. Furnished with 48-inch Handyman Jack, 2 swivel hooks, I-Beam Base, 8-ft. metal pike pole.

Cat. No.	Description	Weight
H-4	Combination Pole Pusher and Guy Stretcher	81 lbs.

Matthews Slack Pullers

Used for line maintenance, for pulling slack from conductor and guy wires, etc.

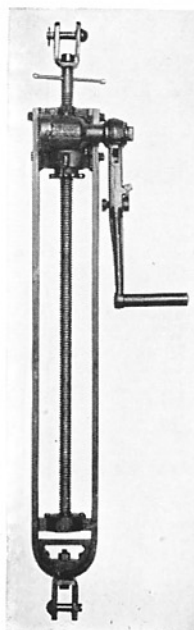
One man can pull as much strain with a Slack Puller as four men with block and tackle. No slack is lost in dead-ending because the strain is held to the exact point to which it has been pulled. After the job is done the Slack Puller is readily removed.

No. 732 is the same as No. 731 but is equipped with a quick take-up feature. No. 7110 is also equipped with a quick take-up.

With the new, quick release feature, when the entire take-up has been used the wire is temporarily dead ended and the lock released. This permits the Slack Puller to be immediately extended.

Nos. 730, 731 and 732 have a maximum take-up of 19 inches and Nos. 7100 and 7110 have a maximum take-up of 27 inches.

No. 732 is illustrated, showing a clevis at each end.



Cat. No.	Description	Pulling Strain	Weight
730	With Hook and Clevis	3,000 lbs.	17 lbs.
731	With Clevis at both Ends	6,000 lbs.	17 lbs.
732	With Clevis at both Ends	6,000 lbs.	17 lbs.
7100	With Clevis at both Ends	10,000 lbs.	45 lbs.
7110	With Clevis at both Ends	10,000 lbs.	45 lbs.

Simplex Aerial Cable Jack



Sufficiently powerful to easily pull up overhead and underground cables and to take up slack in trolley and guy wires. Because it weighs only 14 pounds, it does not handicap a man in overhead work. The steel lever is furnished with a safety spring clip that prevents it from falling. The jack is easy to set up because of its non-flexible rack bar. It exerts a direct line pull.

Cat. No.	Capacity	Travel	Weight Each
324	2 tons	20 inches	14 lbs.

Cope Push-Pull Jack

May be used for taking up slack in wires, guys, cables, luffing in underground cables, etc. Has a leverage of 30 to 1. Double action makes a secure lock at every half inch, extending the safety factor.

Easily and quickly converted into a pusher by reversing the draw bar — can be used for re-racking cables, pole stubbing, etc.

All wearing parts are made of high carbon, heat treated steel. Supplied with drop forged clevis and bronze double shackle swivel.

Cat. No.	Description	Capacity	Weight
C-4000	Push-Pull Jack	4,000 lbs.	11 lbs.

Line Supplies Section

TOOLS

Joslyn Shovels

Plain Back, Strap Pattern

Heat treated 12 gauge blades. Strap is 22 inches long. Handles are lacquer finished.

Shovels with Straight Handles



Maple		Hickory or Ash		Length Feet	Size Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
T-42	T-15	6	9x12	7 lbs.		
T-43	T-16	7	9x12	8 lbs.		
T-44	T-17	8	9x12	9 lbs.		
T-44-A	T-18	9	9x12	10 lbs.		
T-44-B	T-19	10	9x12	11 lbs.		
....	T-20	12	9x12	13 lbs.		

Shovels with Bent Handles



Maple		Hickory or Ash		Length Feet	Size Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
T-36	T-5	6	9x12	7 lbs.		
T-37	T-6	7	9x12	8 lbs.		
T-38	T-7	8	9x12	9 lbs.		
T-38-A	T-8	9	9x12	10 lbs.		
....	T-9	10	9x12	11 lbs.		
....	T-10	12	9x12	13 lbs.		

Solid Shank, Socket Pattern

Blade and shank are made of special analysis 13 gauge steel, forged in one piece. All blades are fully heat treated and guaranteed against splitting under the severest service. Socket is 22 inches long. Handles are lacquer finished.

Shovels with Straight Shanks

Maple		Hickory or Ash		Length Feet	Size Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
T-706	T-700	6	9 1/2 x 12	9 lbs.		
T-707	T-701	7	9 1/2 x 12	9 1/2 lbs.		
T-708	T-702	8	9 1/2 x 12	10 lbs.		
T-709	T-703	9	9 1/2 x 12	10 1/2 lbs.		
T-709-A	T-704	10	9 1/2 x 12	11 1/2 lbs.		
....	T-705	12	9 1/2 x 12	12 1/2 lbs.		

Shovels with Bent Shanks

Maple		Hickory or Ash		Length Feet	Size Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
T-716	T-710	6	9 1/2 x 12	9 lbs.		
T-717	T-711	7	9 1/2 x 12	9 1/2 lbs.		
T-718	T-712	8	9 1/2 x 12	10 lbs.		
T-719	T-713	9	9 1/2 x 12	10 1/2 lbs.		
T-719-A	T-714	10	9 1/2 x 12	11 1/2 lbs.		
....	T-715	12	9 1/2 x 12	12 1/2 lbs.		

Long Shovel Handles

Straight Handles Only

Fit both straight and bent, solid shank type shovels and straight type, strap pattern shovels. Lacquer finish. Crooked handles for strap pattern shovels are shown in the next column.

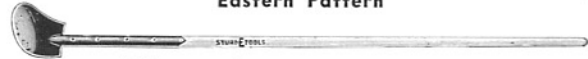
Length Feet	Maple		Hickory or Ash	
	For Strap Pattern	For Solid Shank	For Strap Pattern	For Solid Shank
6	....	....	T-27	T-27-A
7	T-74	T-74-G	T-28	T-28-A
8	T-74-A	T-74-H	T-29	T-29-A
9	T-74-B	T-74-I	T-30	T-30-A
10	T-74-F	T-74-J	T-31	T-31-A
12	....	....	T-32	T-32-A

Joslyn Spoons

Plain Back, Strap Pattern

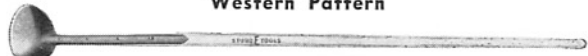
13 gauge blade with 22-inch straps. Handles lacquer finished.

Eastern Pattern



Maple		Hickory or Ash		Length Feet	Size Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
....	TA-55	6	9 1/2 x 10 1/2	7 lbs.		
T-64-A	T-55	7	9 1/2 x 10 1/2	8 lbs.		
T-64-B	T-56	8	9 1/2 x 10 1/2	9 lbs.		
T-64-C	T-57	9	9 1/2 x 10 1/2	10 lbs.		
T-64-D	T-58	10	9 1/2 x 10 1/2	11 lbs.		
....	T-58-A	12	9 1/2 x 10 1/2	13 lbs.		

Western Pattern



Maple		Hickory or Ash		Length Feet	Size Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
....	T-49	6	8 1/2 x 9 3/4	7 lbs.		
T-62	T-50	7	8 1/2 x 9 3/4	8 lbs.		
T-63	T-51	8	8 1/2 x 9 3/4	9 lbs.		
T-64	T-52	9	8 1/2 x 9 3/4	10 lbs.		
TA-64	T-53	10	8 1/2 x 9 3/4	11 lbs.		
....	T-54	12	8 1/2 x 9 3/4	13 lbs.		

Solid Shank, Socket Pattern

Blade and shank are forged in one piece. Blades are heat treated 13 gauge steel. Handle is lacquer finished.

Eastern Pattern

Maple		Hickory or Ash		Length Feet	Size of Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
T-736	T-724	6	9 1/2 x 10 1/4	9 lbs.		
T-737	T-725	7	9 1/2 x 10 1/4	9 1/2 lbs.		
T-738	T-726	8	9 1/2 x 10 1/4	10 lbs.		
T-739	T-727	9	9 1/2 x 10 1/4	10 1/2 lbs.		
T-739-A	T-728	10	9 1/2 x 10 1/4	11 1/2 lbs.		
....	T-729	12	9 1/2 x 10 1/4	12 1/2 lbs.		

Western Pattern

Maple		Hickory or Ash		Length Feet	Size of Blade Inches	Weight Each
Cat. No.	Cat. No.	Cat. No.	Cat. No.			
T-740	T-730	6	9 1/2 x 9	9 lbs.		
T-741	T-731	7	9 1/2 x 9	9 1/2 lbs.		
T-742	T-732	8	9 1/2 x 9	10 lbs.		
T-743	T-733	9	9 1/2 x 9	10 1/2 lbs.		
T-743-A	T-734	10	9 1/2 x 9	11 1/2 lbs.		
....	T-735	12	9 1/2 x 9	12 1/2 lbs.		

Long Spoon Handles

For Eastern or Western pattern spoons. Maple, lacquer finish.

Cat. No.	For Strap Pattern		For Solid Shank		Length Feet	Weight Each
	Cat. No.	Cat. No.	Cat. No.	Cat. No.		
T-65	T-65	T-65-A	6	4 lbs.		
T-66	T-66	T-66-A	7	5 lbs.		
T-67	T-67	T-67-A	8	6 lbs.		
T-68	T-68	T-68-A	9	7 lbs.		
T-69	T-69	T-69-A	10	8 lbs.		
T-70	T-70	T-70-A	12	9 lbs.		

Long Shovel Handles

Crooked Handles

For strap pattern shovels, lacquer finish.					
Cat. No.	Length Feet	Weight Each	Cat. No.	Length Feet	Weight Each
T-21	6	5 lbs.	T-24	9	7 lbs.
T-22	7	6 lbs.	T-25	10	7 lbs.
T-23	8	6 lbs.	T-26	12	8 lbs.

TOOLS

Oshkosh Shovels

Plain Back, Strap Pattern

Handles are 1 1/8 inches in diameter. Blades are made of special carbon steel. Straps are 22 inches long. Blades are not polished as the natural black finish wears better, cleans better and resists rust.

Shovels with Straight Handles



Maple Cat. No.	Ash or Hickory Cat. No.	Length Feet	Size of Blade Inches	Weight Each
867	1032	7	9x12 in.	8 lbs.
868	1033	8	9x12 in.	9 lbs.
869	1034	9	9x12 in.	10 lbs.
870	1035	10	9x12 in.	11 lbs.

Shovels with Crooked Handles



Maple Cat. No.	Ash or Hickory Cat. No.	Length Feet	Size of Blade Inches	Weight Each
874	1040	7	9x12 in.	8 lbs.
875	1041	8	9x12 in.	9 lbs.
...	1042	9	9x12 in.	10 lbs.
...	1043	10	9x12 in.	11 lbs.

Handles for Oshkosh Shovels

Maple		Ash or Hickory		Lgth. Feet	Wt. Each
Straight Cat. No.	Crooked Cat. No.	Straight Cat. No.	Crooked Cat. No.		
993	1000-B	1005	1014	7	4 lbs.
994	1000	1006	1015	8	5 lbs.
995	....	1007	1016	9	6 lbs.
996	....	1008	1017	10	7 lbs.

Oshkosh Master Shovels — Strap Pattern

Special alloy steel blades individually checked by a Brinnell reading for hardness. The straps are electrically welded to the blades. Strap is 22 inches long.

Shovels with Straight Handles

Cat. No.	Ash or Hickory		Wt. Each
	Length, Feet	Size of Blade	
2032	7	9x12 in.	8 lbs.
2033	8	9x12 in.	9 lbs.
2034	9	9x12 in.	10 lbs.
2035	10	9x12 in.	11 lbs.

Shovels with Crooked Handles

Cat. No.	Ash or Hickory		Wt. Each
	Length, Feet	Size of Blade	
2040	7	9x12 in.	8 lbs.
2041	8	9x12 in.	9 lbs.
2042	9	9x12 in.	10 lbs.
2043	10	9x12 in.	11 lbs.

Handles for Oshkosh Master Shovels

Ash or Hickory

Straight Handles			Crooked Handles		
Cat. No.	Length Feet	Weight Each	Cat. No.	Length Feet	Weight Each
2005	7	6 lbs.	2014	7	6 lbs.
2006	8	6 lbs.	2015	8	6 lbs.
2007	9	7 lbs.	2016	9	7 lbs.
2008	10	7 lbs.	2017	10	7 lbs.

Oshkosh Spoons

Plain Back, Strap Pattern

Blades are made of special carbon steel. Straps are 22 inches long. Blades are not polished as the natural black finish wears better, cleans better and resists rust.

Straps are 22 inches long.

Eastern Pattern



Maple Cat. No.	Ash or Hickory Cat. No.	Length Feet	Size Blade	Weight Each
859-E	1023-E	7	8 3/4 x 11 in.	10 lbs.
860-E	1024-E	8	8 3/4 x 11 in.	10 lbs.
861-E	1025-E	9	8 3/4 x 11 in.	11 lbs.
862-E	1026-E	10	8 3/4 x 11 in.	12 lbs.
...	1027-E	12	8 3/4 x 11 in.	14 lbs.

Western Pattern



Maple Cat. No.	Ash or Hickory Cat. No.	Length Feet	Size Blade	Weight Each
859	1023	7	9 1/2 x 10 in.	10 lbs.
860	1024	8	9 1/2 x 10 in.	10 lbs.
861	1025	9	9 1/2 x 10 in.	11 lbs.
862	1026	10	9 1/2 x 10 in.	12 lbs.
...	1027	12	9 1/2 x 10 in.	14 lbs.

Handles for Oshkosh Spoons

Eastern Pattern or Western Pattern

Maple Cat. No.	Ash or Hickory		Length Feet	Weight Each
	Cat. No.	Length Feet		
993	1005	7	6 lbs.	
994	1006	8	6 lbs.	
995	1007	9	7 lbs.	
996	1008	10	7 lbs.	
...	1009	12	8 lbs.	

Oshkosh Master Spoons — Strap Pattern

Blade forged, heat treated and individually Brinnell tested for hardness. Strap is 22 inches long.

Eastern Pattern

Cat. No.	Ash or Hickory Handles		Wt. Each
	Length, Feet	Size Blade	
2023-E	7	8 3/4 x 11 in.	10 lbs.
2024-E	8	8 3/4 x 11 in.	10 lbs.
2025-E	9	8 3/4 x 11 in.	11 lbs.
2026-E	10	8 3/4 x 11 in.	12 lbs.
2027-E	12	8 3/4 x 11 in.	14 lbs.

Western Pattern

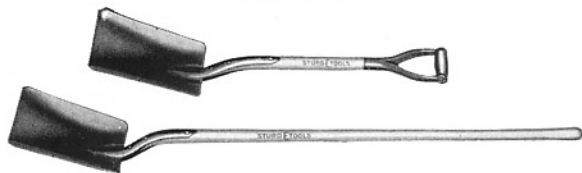
Cat. No.	Ash or Hickory Handles		Wt. Each
	Length, Feet	Size Blade	
2023	7	9 1/2 x 10 in.	10 lbs.
2024	8	9 1/2 x 10 in.	10 lbs.
2025	9	9 1/2 x 10 in.	11 lbs.
2026	10	9 1/2 x 10 in.	12 lbs.
2027	12	9 1/2 x 10 in.	14 lbs.

Handles for Oshkosh Master Spoons

Eastern or Western Pattern — Ash or Hickory Handles				
Cat. No.	Length	Weight Each	Cat. No.	Length
2005	7 ft.	6 lbs.	2008	10 ft.
2006	8 ft.	6 lbs.	2009	12 ft.
2007	9 ft.	7 lbs.		

TOOLS

Shovels



Top: Square Point with "D" Handle
Bottom: Square Point with Short Handle



Top: Round Point with "D" Handle
Bottom: Round Point with Short Handle

With Steel "D" Handles

The tubular, pressed metal "D" handle is strong and durable. The grip is wide, comfortable and held securely in place, it will not come loose. Heat treated, 14-gauge blades. Handles Northern White Ash, lacquer finished.

Square Point

Cat. No.	Length Handle	Size Blade	Wt. Each
T-840-1092S	30 in.	9¾ x 11¾ in.	4 lbs.

Round Point

T-842-1092R	30 in.	9 x 11¾ in.	4 lbs.
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Steel "D" Handles Only

Strap Pattern, Double Bend, for plain back, round or square point.

Cat. No.	Length	Grade	Std. Pkg.	Weight Each
T-75	30 in.	XX	6	2 lbs.
T-76	30 in.	X	6	2 lbs.
T-77	30 in.	No. 1	6	2 lbs.

Short Handled Shovels

Plain back, strap pattern, special high carbon steel blades. Handles of Northern White Ash, lacquer finish.

Square Point

Cat. No.	Length Handle	Size Blade	Wt. Each
T-841-1090S	4½ ft.	9¾ x 11¾ in.	5 lbs.

Round Point

T-843-1090R	4½ ft.	9 x 11¾ in.	5 lbs.
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Short Shovel Handles Only

Heavy Double bend, for round or square point shovels. Northern White Ash—lacquer finished.

Cat. No.	Length	Weight Each
T-82	4½ feet	2 lbs.
T-83	4½ feet	2 lbs.
T-84	4½ feet	2 lbs.
1091	4½ feet	2 lbs.

Plain Digging Bars



Double beveled 2-inch cutting blade at one end.

Cat. No.	Description	Size	Std. Bundle	Weight Each
1084	Octagon	1½ in. x 7 ft.	2	26 lbs.
T-414-1085	Octagon	1½ in. x 8 ft.	2	30 lbs.
T-413-1084	Round	1½ in. x 8 ft.	2	28 lbs.

Electric Digging Spud and Tamper



Steel tubing with malleable iron tamping shoe and forged crucible steel blade 3½ inches wide. This tool is well balanced and the broad blade makes digging easy. A very serviceable tool for general use. Painted black.

Cat. No.	Diameter of Tubing	Length	Std. Bundle	Weight Each
T-415-852	1½ in.	9 feet	2	20 lbs.

Octagon Tamping and Digging Bars



Double beveled 2-inch cutting blade at one end; fitted with heavy malleable iron tamping shoe at the other end.

Cat. No.	Size	Std. Bundle	Weight Each
T-408-1071	1 in. x 7 ft.	2	21 lbs.
T-409-1072	1 in. x 8 ft.	2	24 lbs.
T-411-1074	1½ in. x 7 ft.	2	27 lbs.
T-412-1075	1½ in. x 8 ft.	2	30 lbs.

Octagon Crow and Digging Bars



Double beveled 2-inch cutting blade at one end; pointed at the other.

Cat. No.	Size	Std. Bundle	Weight Each
T-401-1061	1 in. x 7 ft.	2	20 lbs.
T-402-1062	1 in. x 8 ft.	2	23 lbs.
T-404-1064	1½ in. x 7 ft.	2	26 lbs.
T-405-1065	1½ in. x 8 ft.	2	28 lbs.
T-406-1066	1¼ in. x 8 ft.	2	31 lbs.

Slick or Loy Digging Tools



Select maple handles, 2 inches in diameter, tapered at lower end; fitted with extra heavy tool steel blades 4 inches by ½ inch, with sharp cutting edge, held securely in place by two extra large head rivets. Blade end dipped in creosote to prevent decay. Handles smoothly sand finished.

Cat. No.	Diameter of Handle	Length	Std. Bundle	Weight Each
T-423	2 in.	7 feet	2	16 lbs.
T-424-853	2 in.	8 feet	2	18 lbs.

TOOLS

Heavy Shoe Tamping Bars



Select maple handle, 1 $\frac{5}{8}$ -inches in diameter, tapered at lower end. Fitted with heavy steel shoe $\frac{1}{2}$ x1 $\frac{1}{4}$ -inches. Size of tamping face is 1 $\frac{1}{4}$ x3 $\frac{1}{2}$ -inches. Securely riveted to handle. Tamping end dipped in creosote to prevent decay. Handles smoothly sand finished.

Cat. No.	Diameter of Handle	Length	Std. Bundle	Weight Each
T-419-1054	1 $\frac{5}{8}$ in.	7 ft.	2	13 lbs.
T-420-1055	1 $\frac{5}{8}$ in.	8 ft.	2	15 lbs.
1056	1 $\frac{5}{8}$ in.	9 ft.	2	17 lbs.

A. T. & T. Pattern Tamping Bars



Select maple handles, 1 $\frac{5}{8}$ -inches in diameter, tapered at lower end; fitted with extra heavy one-piece shoe, made of 1 $\frac{1}{4}$ -inch square steel. Rivets passing through the handle and shoe with heads countersunk, hold the shoe firmly in place. An extremely high-grade tamper. Tamping end dipped in creosote to prevent decay. Handles smoothly sand finished.

Cat. No.	Diameter of Handle	Length	Std. Bundle	Weight Each
T-421	1 $\frac{5}{8}$ in.	7 ft.	2	12 lbs.
T-422	1 $\frac{5}{8}$ in.	8 ft.	2	13 lbs.

Light Shoe Tamping Bars



Selected maple handle, 2 inches in diameter, tapered at lower end, fitted with steel shoe 1 $\frac{3}{4}$ x1 $\frac{1}{4}$ -inches securely riveted to handle. Tamping end dipped in creosote to prevent decay. Handles smoothly sand finished.

Cat. No.	Length	Std. Bundle	Weight Each
T-417-854	7 ft.	2	13 lbs.
T-418-855	8 ft.	2	14 lbs.
856	9 ft.	2	16 lbs.

Electric Tamping Bars



Steel tubing with iron tamping shoes. Painted black.

Cat. No.	Length	Std. Bundle	Weight Each
T-416	7 $\frac{1}{2}$ ft.	2	18 lbs.

Maple Tamping Bar or Slick Handles Only

Cat. No.	Handle	Std. Bundle	Weight Each
T-425-1002	7 ft. for No. 417 Tamper	6	7 lbs.
T-426-1003	8 ft. for No. 418 Tamper	6	8 lbs.
1003A	9 ft. for No. 856 Tamper	6	9 lbs.
T-427-2002	7 ft. for No. 419 Tamper	6	5 lbs.
T-428-2003	8 ft. for No. 420 Tamper	6	5 lbs.
2003A	9 ft. for No. 1056 Tamper	6	6 lbs.
T-429	7 ft. for No. 421 Tamper	6	6 lbs.
T-430	8 ft. for No. 422 Tamper	6	7 lbs.
T-431	7 ft. for No. 423 Slick	6	7 lbs.
T-432-1001	8 ft. for No. 424 Slick	6	8 lbs.

Reversible Point Pike Poles



A new pike pole design with removable point that may be inserted into the Ferrule, point first, for carrying on the truck, thus eliminating the hazard of sharp projections. The gimlet or spiral point holds without slipping. When point becomes worn, replace point only — no need to buy complete new pike pole. Parts are: Heat treated Steel point — malleable ferrules — and Douglas Fir pole.

Cat. No.	Diameter	Length	Wt. Each
210P	2 in.	10 ft.	8 lbs.
212P	2 in.	12 ft.	9 lbs.
214P	2 in.	14 ft.	11 lbs.
216P	2 in.	16 ft.	13 lbs.
218P	2 in.	18 ft.	15 lbs.
220P	2 in.	20 ft.	17 lbs.
F-2X	Ferrule Only		
PP-2X	Pike Point Only		

A. T. & T. Pattern

Cat. No.	Diameter	Length	Weight
212-HP	2 $\frac{1}{2}$ in.	12 ft.	12 lbs.
214-HP	2 $\frac{1}{2}$ in.	14 ft.	14 lbs.
216-HP	2 $\frac{1}{2}$ in.	16 ft.	16 lbs.
218-HP	2 $\frac{1}{2}$ in.	18 ft.	18 lbs.
220-HP	2 $\frac{1}{2}$ in.	20 ft.	20 lbs.

Heavy Duty Type Fir Pike Poles



Diameter at center 2 $\frac{1}{2}$ -inches, tapering to 2 inches at ends. This gives extra strength at center where needed with very little increase in weight. Pike projects 4 inches from end.

Cat. No.	Size	Std. Bundle	Weight Each
817	2 $\frac{1}{2}$ in.x10 ft.	6	12 lbs.
T-219-818	2 $\frac{1}{2}$ in.x12 ft.	6	13 lbs.
T-220-819	2 $\frac{1}{2}$ in.x14 ft.	6	14 lbs.
T-221-820	2 $\frac{1}{2}$ in.x16 ft.	6	15 lbs.
T-222-821	2 $\frac{1}{2}$ in.x18 ft.	6	18 lbs.
T-223-822	2 $\frac{1}{2}$ in.x20 ft.	6	20 lbs.

Light Type Pike Poles



Poles of Douglas Fir with pikes of $\frac{3}{8}$ -inch crucible steel protruding 4 inches and set in creosote. Poles are 2 inches in diameter — not tapered.

Cat. No.	Size	Std. Bundle	Weight Each
T-204-805	2 in.x10 ft.	6	6 lbs.
T-205-806	2 in.x12 ft.	6	8 lbs.
T-206-807	2 in.x14 ft.	6	10 lbs.
T-207-808	2 in.x16 ft.	6	11 lbs.
T-208	2 in.x18 ft.	6	15 lbs.
T-209	2 in.x20 ft.	6	17 lbs.

Pike Pole Guard



Provides complete protection from the pike point. The guard fastens securely in either the guarded or open position. When in the unguarded position the guard is completely out of the way snugly fitted around the pole.

Cat. No.	Fits Pike Poles	Wt. Each
10	2 to 2 $\frac{1}{2}$ inch	$\frac{3}{4}$ lb.

Line Supplies Section

TOOLS

Guarded Pike Poles
or Raising Forks

Made of selected Douglas Fir with one-piece malleable iron ferrule and fork driven onto pole and secured by a rivet. Handles are furnished in two sizes—the 2-inch are straight, and the 2½-inch are tapered to 2 inches at the ends.

Cat. No.	Size	Std. Bundle	Weight Each
T-226-832	2 in. x 10 ft.	6	10 lbs.
T-227-833	2 in. x 12 ft.	6	12 lbs.
T-228-834	2 in. x 14 ft.	6	13 lbs.
795	2 in. x 16 ft.	6	15 lbs.
796	2½ in. x 12 ft.	6	13 lbs.
797	2½ in. x 14 ft.	6	14 lbs.
T-229-835	2½ in. x 16 ft.	6	15 lbs.
T-230-836	2½ in. x 18 ft.	6	16 lbs.
T-231-837	2½ in. x 20 ft.	6	18 lbs.

Pike Pole and Raising Fork Handles Only

Made of selected Douglas Fir. Smooth finished.

Cat. No.	Size	Std. Bundle	Weight Each
T-240-970	2 in. x 10 ft.	6	6 lbs.
T-241-971	2 in. x 12 ft.	6	7 lbs.
T-242-972	2 in. x 14 ft.	6	9 lbs.
T-243-973	2 in. x 16 ft.	6	11 lbs.
T-244	2 in. x 18 ft.	6	14 lbs.
T-245	2 in. x 20 ft.	6	16 lbs.
981	2½ in. x 10 ft.	6	11 lbs.
T-248-982	2½ in. x 12 ft.	6	12 lbs.
T-249-983	2½ in. x 14 ft.	6	13 lbs.
T-250-984	2½ in. x 16 ft.	6	14 lbs.
T-251-985	2½ in. x 18 ft.	6	17 lbs.
T-252-986	2½ in. x 20 ft.	6	19 lbs.

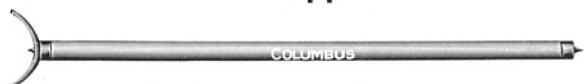
Standard Deadman



Made of 2x4-inch Maple with special steel fork and spike; fitted with steel bands at each end to prevent splitting. Fork is securely fastened by rivet through the band. This support is adapted for the heaviest kind of work.

Cat. No.	Size	Length	Weight Each
T-306-848	2x4 inches	8 ft.	29 lbs.

Mule Supports



Made of selected Fir, round shape, reinforced with strong steel bands at each end. Heavy crucible steel fork and spikes.

Cat. No.	Diameter	Length	Weight Each
T-303-845	4 inches	6 feet	23 lbs.
T-304-846	4 inches	7 feet	26 lbs.
T-305-847	4 inches	8 feet	29 lbs.

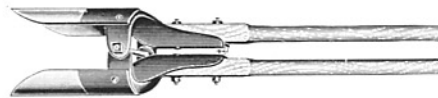
Jenney Supports

The best selected hardwood is used in this support. The fork is of crucible steel; heavy braces and bolts make it very serviceable. Spikes are bolted to each leg to avoid slipping. This support is shipped knocked down.



Cat. No.	Size of Supports Inches	Height Feet	Weight Each
T-301-842	1¾ x 3½	6	25 lbs.
T-302-843	1¾ x 3½	7	30 lbs.
T-303-844	1¾ x 3½	8	35 lbs.

Hercules Diggers



A two-handled digger that has enjoyed universal popularity. Castings are bolted together from the outside, with bolt passing through the center, making a stronger and more rigid tool. Blades are malleable iron and handles are hardwood.

Cat. No.	Length Handle	Size of Blades	Each Weight
1924	4 feet	6x9 in.	9 lbs.
1927	7 feet	6x9 in.	11 lbs.

When ordering extra handles please specify the length desired.

Eureka Diggers



Lacquered, ash handles, polished steel blades, malleable iron castings. Iron work and upper half of blades painted black.

Cat. No.	Length Handle	Size of Blades	Each Weight
T-434	4 feet	5¼ x 9 in.	9 lbs.
T-436	7 feet	5¼ x 9 in.	11 lbs.

Eureka Digger Handles

Cat. No.	Length	Std. Bundle	Weight Each
T-437	4 feet	12	2 lbs.
T-438	7 feet	12	3½ lbs.

Iwan Augers

Very slight pressure is necessary to operate this handy post hole auger. Two sharp cutting edges are formed to both cut and hold the earth, leaving a round, clean cut hole.



Size	Length	Wt. Each
4 inches	4 feet	7 lbs.
5 inches	4 feet	7½ lbs.
6 inches	4 feet	8½ lbs.
7 inches	4 feet	9 lbs.
8 inches	4 feet	9½ lbs.
9 inches	4 feet	10 lbs.

TOOLS

Peavies and Cant Hooks

Handles are selected, air-seasoned hickory or hard maple with hand-turned knobs, smoothly sand finished. Sockets, clasps and toe rings are of malleable iron and duck-bill hooks and pikes are hammered out of crucible steel. A stop is provided to prevent hook from falling back onto handle and injuring fingers of user. Handles are lacquered.

Peavies



Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-124-137	Hickory	2 1/2 in. x 4 ft.	6	9 lbs.
T-125-138	Hickory	2 1/2 in. x 4 1/2 ft.	6	10 lbs.
T-126	Hickory	2 1/2 in. x 5 ft.	6	10 lbs.
T-127-124	Maple	2 1/2 in. x 4 ft.	6	9 lbs.
T-128-125	Maple	2 1/2 in. x 4 1/2 ft.	6	9 lbs.
T-129	Maple	2 1/2 in. x 5 ft.	6	10 lbs.

Cant Hooks



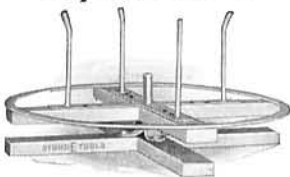
Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-118-199	Hickory	2 1/2 in. x 4 ft.	6	8 lbs.
T-119-200	Hickory	2 1/2 in. x 4 1/2 ft.	6	9 lbs.
T-120	Hickory	2 1/2 in. x 5 ft.	6	9 lbs.
T-121-188	Maple	2 1/2 in. x 4 ft.	6	8 lbs.
T-122-189	Maple	2 1/2 in. x 4 1/2 ft.	6	9 lbs.
T-123	Maple	2 1/2 in. x 5 ft.	6	9 lbs.

Cant Hook and Peavie Handles Only

These handles are of the same high quality used in the above tools—selected, air-seasoned hickory or hard maple, with hand-turned knobs, smoothly finished.

Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-130-575	Hickory	2 1/2 in. x 4 ft.	6	4 lbs.
T-131-576	Hickory	2 1/2 in. x 4 1/2 ft.	6	4 lbs.
T-132	Hickory	2 1/2 in. x 5 ft.	6	4 1/2 lbs.
T-133-544	Maple	2 1/2 in. x 4 ft.	6	3 lbs.
T-134-545	Maple	2 1/2 in. x 4 1/2 ft.	6	4 lbs.
T-135	Maple	2 1/2 in. x 5 ft.	6	4 1/2 lbs.

Pay-Out Reels



This reel is of hardwood, reinforced and braced throughout with metal strips. The pins are adjustable for 12, 18, 21 and 24-inch coils.

Cat. No.	Description	Wt. Each
T-510-902	Pay-Out Reel	40 lbs.

Carrying or Lug Hooks



Standard Type

For handling poles, ties and heavy timbers. Handles are selected, air-seasoned hickory or hard maple with hand-turned knobs, smoothly sand finished. Hooks with duck-bill points are forged out of crucible steel hung in heavy malleable iron clasp and swivel.

Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-100-295	Maple	2 1/2 in. x 4 ft.	6	7 lbs.
T-101-296	Maple	2 1/2 in. x 4 1/2 ft.	6	8 lbs.
T-102-297	Maple	2 1/2 in. x 5 ft.	6	8 lbs.
T-103	Hickory	2 1/2 in. x 4 ft.	6	7 lbs.
T-104	Hickory	2 1/2 in. x 4 1/2 ft.	6	8 lbs.
T-105	Hickory	2 1/2 in. x 5 ft.	6	9 lbs.

Heavy Duty Type

For handling extra large poles and timbers. Handles are selected, air-seasoned hard maple with hand-turned knobs, smoothly sand finished. Extra large, heavy hooks of crucible steel, hung from heavy malleable iron swivel attached to a malleable iron clasp on band around the handle.

Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-112-298	Maple	3 in. x 5 ft.	4	5 lbs.
T-113-299	Maple	3 in. x 6 ft.	4	6 lbs.
T-114-300	Maple	3 in. x 7 ft.	4	7 lbs.

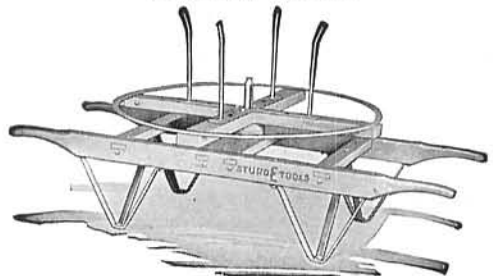
Carrying or Lug Hook Handles Only

Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-105-593	Maple	2 1/2 in. x 4 ft.	6	3 lbs.
T-107-594	Maple	2 1/2 in. x 4 1/2 ft.	6	4 lbs.
T-108-595	Maple	2 1/2 in. x 5 ft.	6	4 lbs.
T-109	Hickory	2 1/2 in. x 4 ft.	6	3 lbs.
T-110	Hickory	2 1/2 in. x 4 1/2 ft.	6	4 lbs.
T-111	Hickory	2 1/2 in. x 5 ft.	6	5 lbs.

Heavy Duty Type Handles Only

Cat. No.	Wood	Size	Std. Bundle	Weight Each
T-115-963	Maple	3 in. x 5 ft.	6	5 lbs.
T-116-964	Maple	3 in. x 6 ft.	6	6 lbs.
T-117-965	Maple	3 in. x 7 ft.	6	7 lbs.

Barrow Reels



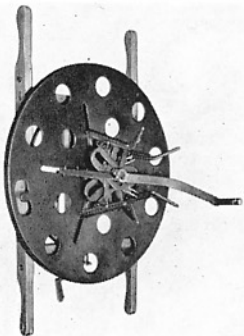
Reel pins are adjustable for 12, 18, 21 and 24-inch coils.

Cat. No.	Description	Wt. Each
T-520-900	Barrow Reel	30 lbs.
T-521-901	Extra Set of 4 Guard Pins	4 lbs.

Line Supplies Section

TOOLS

Matthews Adjustable Reel Pay Out and Take Up



May be used for both paying out and taking up wire. When used for taking up the old wire is coiled perfectly without kinks.

Very ruggedly built — no sharp edges to damage wire. The steel table can easily be grounded. The frame is made of durable white oak.

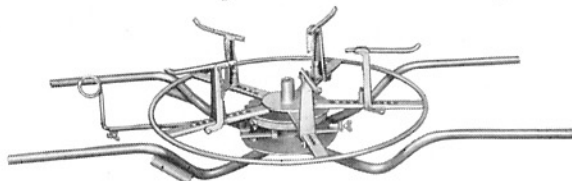
The steel table is supported on the under side by roller bearings eliminating any side bending strain on the center shaft. The five arms for holding the coil of wire can be contracted or expanded to

snugly fit inside coils of any diameter from 13 to 18 inches inside diameter.

If the reel is to be used only for taking up wire the brake is not necessary.

Description	For Coil Size	Weight
Reel with Brake	13 to 18 in.	105 lbs.
Reel without Brake	13 to 18 in.	103 lbs.

Combination Pay-Out and Take-Up Reel



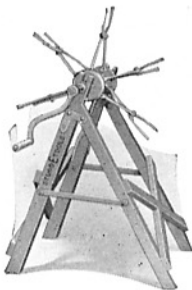
Easy to handle with no back-lash or tangling—one man can tend several reels. May be used either as a pay-out reel or it may be set upright and used as a take-up reel. Braces and crank are furnished. The reel is easily portable as the guide pins fold flat making the reel compact. These guide pins are adjustable to take any size coil of wire from 13 to 27 inches in inside diameter—just press the lock spring and the guide slides to any required adjustment.

An important feature is the automatic brake. As the wire is pulled the brake releases and the wire pays out freely. The instant tension is released, the brake sets and any possibility of back-lashing is prevented.

The carrier frame is easily removable so that the reel can be bolted to a truck. A thumb screw terminal is provided for grounding the reel. Light weight but of strong, durable all-metal construction.

Size Over All		Takes Coil Size		Weight
Length	Width	Inside Diam.	Outside Diam.	
63 in.	34 in.	13 to 27 in.	34 in.	75 lbs.

Folding Take-Up Reel

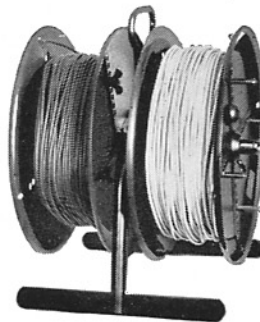


This reel is the collapsible type, composed of two parts—the wooden stand and the metal reel. The stand is of hardwood mortised and framed—reinforced with steel. Reel is malleable iron and steel.

Takes up wire, making a coil with an inside diameter of 21 inches.

Cat. No.	Size of Coil	Wt. Each
T-501-897	21 inches	42 lbs.

Jumper Wire Reels



Double Unit

Single or double units are available. Wire may be reeled from the top or bottom at any angle without kinking or snarling. The reel turns easily but never coasts as the correct tension is held by a center spring.

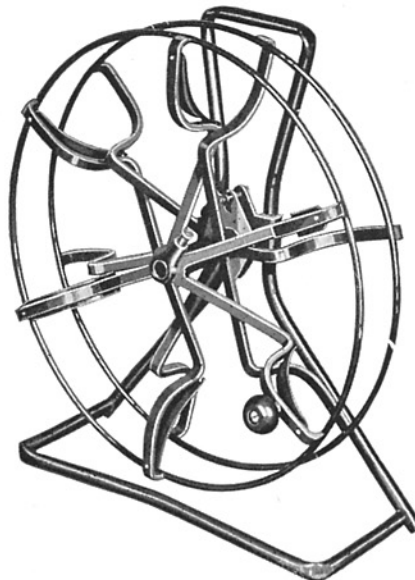
The diameter of the coil eye may be adjusted from 5 inches to 8½ inches. To load, the reel is placed on its side and the tension cone face plate is removed. The coil of wire is placed in position and pins adjusted to correct tension. The face plate is replaced and the reel is ready for use. A hole is

provided in the face plate to anchor the free end of the wire.

The Individual Reel is made for mounting to a framework or on service trucks, etc. The Double and Single Unit Reels rest on the floor on legs. All are of metal with black enamel finish.

Description	Size Reel	Weight Each
Individual Reel	15 inches	14 lbs.
Individual Reel	21 inches	22 lbs.
Single Unit Reel	21 inches	48 lbs.
Double Unit Reel	15 inches	30 lbs.
Double Unit Reel	18 inches	36 lbs.

Type PR Pay-Out and Take-Up Reels



Designed to pay out drop wire, but also may efficiently be used as a take-up reel. It may be mounted on a truck or can be used in a vertical or horizontal position when removed from the vehicle. The outer spider is removable and adjustable with a plunger type lock. This facilitates placing and removal of wire coils.

It is equipped with a variable tension brake whereby the speed of reel is controlled when paying out the wire.

Will take a coil of wire with an inside diameter of 15 inches and an outside diameter of 25 inches.

Construction is of malleable castings and high grade steel. Weight is 32 pounds. In ordering, specify type PR.

CABLE GRIPS

Flexible Cable Grips



Used for drawing aerial cable through rings. They save trouble by feeding

through aerial rings without displacing the rings.

Single Weave—Single Eye

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1/2 to 5/8	821	18	831	24
3/4 to 7/8	822	24	832	36
1 to 1 3/8	823	24	833	36
1 1/2 to 1 7/8	824	24	834	36
2 to 2 3/8	825	24	835	36
2 1/2 to 2 7/8	826	24	836	36
3 to 3 3/8	827	24	837	36
3 1/2 to 3 7/8	828	24	838	36

Double Weave—Single Eye

Used for pulling underground cable where wear is light and the use of reinforced grips is not warranted.

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1 to 1 3/8	923	24	933	36
1 1/2 to 1 7/8	924	24	934	36
2 to 2 3/8	925	24	935	36
2 1/2 to 2 7/8	926	24	936	36
3 to 3 3/8	927	24	937	36
3 1/2 to 3 7/8	928	24	938	36

Reinforced Flexible Pulling Grips

Single Eye—Double Weave

For pulling underground cable. The reinforcement protects wires of the grip at shoulder where wear is greatest. The eye is formed of the wires themselves and reinforced. As there is no joint at the working end of the grip there is no loss of strength.

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1 to 1 3/8	1023	24	1033	36	1043	48
1 1/2 to 1 7/8	1024	24	1034	36	1044	48
2 to 2 3/8	1025	24	1035	36	1045	48
2 1/2 to 2 7/8	1026	24	1036	36	1046	48
3 to 3 3/8	1027	24	1037	36	1047	48
3 1/2 to 3 7/8	1028	24	1038	36	1048	48

Hard Wire Grips

Single Eye—Double Weave



Hard, tough wire grip for attaching pulling line to the end of a cable. Resists

wear in rough, sandy conduits. Large sizes used on aerial cable. The grip must fit exactly for best performance. May be used for swabbing ducts by packing with waste.

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1/2 to 5/8	801	18	811	24
3/4 to 7/8	802	22	812	30
1 to 1 3/8	803	22	813	30
1 1/2 to 1 7/8	804	22	814	30
2 to 2 3/8	805	22	815	30
2 1/2 to 2 7/8	806	30	816	45
3 to 3 3/8	807	30	817	45
3 1/2 to 3 7/8	808	30	818	45

Double Eye Split Grips



Used for pulling slack in working cables. Can be attached and removed without cutting

cables. A special hooking arrangement makes the grip easy to fasten or unfasten.

Single Weave

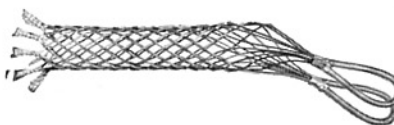
For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
3/4 to 7/8	862*	18	872	24
1 to 1 3/8	863	18	873	24
1 1/2 to 1 7/8	864	18	874	24
2 to 2 3/8	865	18	875	24
2 1/2 to 2 7/8	866	18	876	24
3 to 3 3/8	867	18	877	24
3 1/2 to 3 7/8	868	18	878	24

* No hooks — rawhide lacing furnished.

Double Weave

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1 1/2 to 1 7/8	964	18	974	24
2 to 2 3/8	965	18	975	24
2 1/2 to 2 7/8	966	18	976	24
3 to 3 3/8	967	18	977	24
3 1/2 to 3 7/8	968	18	978	24

Double Eye Luffing Grips



Used for pulling slack or removing old cable. Pull is distributed as evenly as possible

on all wires which results in a very long wearing grip. Shortest body permits longest pull in cramped manhole.

Single Weave—For Light Pulls

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
3/4 to 7/8	842	18	852	24
1 to 1 3/8	843	18	853	24
1 1/2 to 1 7/8	844	18	854	24
2 to 2 3/8	845	18	855	24
2 1/2 to 2 7/8	846	18	856	24
3 to 3 3/8	847	18	857	24
3 1/2 to 3 7/8	848	18	858	24

Double Weave—For Heavy Pulls

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1 1/2 to 1 7/8	944	18	954	24
2 to 2 3/8	945	18	955	24
2 1/2 to 2 7/8	946	18	956	24
3 to 3 3/8	947	18	957	24
3 1/2 to 3 7/8	948	18	958	24

Single Eye Luffing Grips

When the strain is applied the eye lies flat against the cable.

Single Weave

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
3/4 to 7/8	1842	18	1852	24
1 to 1 3/8	1843	18	1853	24
1 1/2 to 1 7/8	1844	18	1854	24
2 to 2 3/8	1845	18	1855	24
2 1/2 to 2 7/8	1846	18	1856	24
3 to 3 3/8	1847	18	1857	24
3 1/2 to 3 7/8	1848	18	1858	24

Double Weave

For Cable Diam., Inches	Cat. No.	Length Inches	Cat. No.	Length Inches
1 1/2 to 1 7/8	1944	18	1954	24
2 to 2 3/8	1945	18	1955	24
2 1/2 to 2 7/8	1946	18	1956	24
3 to 3 3/8	1947	18	1957	24
3 1/2 to 3 7/8	1948	18	1958	24

STRAND

Crapo Galvanized Steel Guy and Messenger Wire

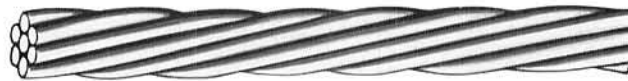


Reel of Crapo Galvanized Steel Strand

Manufactured by the Indiana Steel and Wire Company, Crapo galvanized steel strand is made from start to finish to meet the exacting demands of the service for which it is intended. All wire used in its manufacture is scientifically processed from steel of selected analysis and galvanized by the Crapo Process. This exclusive Crapo Galvanizing Process insures a dense, uniform, tightly-adherent zinc coating which has demonstrated its superiority in actual service over a long period of years.

Each wire used in forming a particular size and grade of strand is produced from the same special steel and processed in the same way to insure uniformity. Both wire and strand are laboratory checked for tensile strength, elongation, galvanizing and ductility to make certain that the finished product conforms to the most rigid specifications. We recommend double or extra galvanized strand for all construction work.

Crapo Galvanized Steel Strand is regularly furnished in the following standard lengths: 250, 500 and 1,000 foot coils; 1,000, 2,500 and 5,000 foot reels. Special lengths will be supplied if specified.



7 Wire, Standard Grade—Single Galvanized

Nominal Diameter of Strand	Nominal Diameter of Wire	Approximate Weight per 1000 feet	Minimum Breaking Strength
$\frac{3}{16}$ in.	0.062 in.	72.9 lbs.	1,150 lbs.
$\frac{1}{4}$ in.	0.080 in.	121 lbs.	1,900 lbs.
$\frac{5}{16}$ in.	0.104 in.	205 lbs.	3,200 lbs.
$\frac{3}{8}$ in.	0.120 in.	273 lbs.	4,250 lbs.
$\frac{7}{16}$ in.	0.145 in.	399 lbs.	5,700 lbs.
$\frac{1}{2}$ in.	0.165 in.	517 lbs.	7,400 lbs.

7 Wire, High Strength—Extra Galvanized

Nominal Strand Diameter	Nominal Wire Diameter	Weight per 1000 feet	Minimum Breaking Strength
$\frac{3}{16}$ in.	0.062 in.	72.9 lbs.	2,850 lbs.
$\frac{1}{4}$ in.	0.080 in.	121 lbs.	4,750 lbs.
$\frac{5}{16}$ in.	0.104 in.	205 lbs.	8,000 lbs.
$\frac{3}{8}$ in.	0.120 in.	273 lbs.	10,800 lbs.
$\frac{7}{16}$ in.	0.145 in.	399 lbs.	14,500 lbs.
$\frac{1}{2}$ in.	0.165 in.	517 lbs.	18,800 lbs.

7 Wire, Standard Grade—Extra Galvanized

$\frac{3}{16}$ in.	0.062 in.	72.9 lbs.	1,150 lbs.
$\frac{1}{4}$ in.	0.080 in.	121 lbs.	1,900 lbs.
$\frac{5}{16}$ in.	0.104 in.	205 lbs.	3,200 lbs.
$\frac{3}{8}$ in.	0.120 in.	273 lbs.	4,250 lbs.
$\frac{7}{16}$ in.	0.145 in.	399 lbs.	5,700 lbs.
$\frac{1}{2}$ in.	0.165 in.	517 lbs.	7,400 lbs.

7 Wire, Extra High Strength—Extra Galvanized

$\frac{3}{16}$ in.	0.062 in.	72.9 lbs.	3,990 lbs.
$\frac{1}{4}$ in.	0.080 in.	121 lbs.	6,650 lbs.
$\frac{5}{16}$ in.	0.104 in.	205 lbs.	11,200 lbs.
$\frac{3}{8}$ in.	0.120 in.	273 lbs.	15,400 lbs.
$\frac{7}{16}$ in.	0.145 in.	399 lbs.	20,800 lbs.
$\frac{1}{2}$ in.	0.165 in.	517 lbs.	26,900 lbs.

7 Wire, Siemens-Martin Grade—
Extra Galvanized

$\frac{3}{16}$ in.	0.062 in.	72.9 lbs.	1,900 lbs.
$\frac{1}{4}$ in.	0.080 in.	121 lbs.	3,150 lbs.
$\frac{5}{16}$ in.	0.104 in.	205 lbs.	5,350 lbs.
$\frac{3}{8}$ in.	0.120 in.	273 lbs.	6,950 lbs.
$\frac{7}{16}$ in.	0.145 in.	399 lbs.	9,350 lbs.
$\frac{1}{2}$ in.	0.165 in.	517 lbs.	12,100 lbs.

3 Wire, Utilities Grade—Extra Galvanized

$\frac{1}{4}$ in.	0.120 in.	116.7 lbs.	3,150 lbs.
$\frac{5}{16}$ in.	0.120 in.	116.7 lbs.	4,500 lbs.
$\frac{3}{8}$ in.	0.145 in.	170.6 lbs.	6,500 lbs.
$\frac{7}{16}$ in.	0.165 in.	220.3 lbs.	8,500 lbs.

7 Wire, A.T.&T. Specification—Extra Galvanized

Trade Designation	Nominal Strand Diameter	Nominal Wire Diameter	Weight per 1000 feet	Minimum Breaking Strength
2200-pound	$\frac{3}{16}$ in.	0.065 in.	80.3 lbs.	2,400 lbs.
4000-pound	$\frac{5}{16}$ in.	0.093 in.	164 lbs.	4,600 lbs.
6000-pound	$\frac{3}{8}$ in.	0.109 in.	225 lbs.	6,000 lbs.
10000-pound	$\frac{7}{16}$ in.	0.120 in.	273 lbs.	11,500 lbs.
16000-pound	$\frac{1}{2}$ in.	0.145 in.	399 lbs.	18,000 lbs.
25000-pound	$\frac{1}{2}$ in.	0.165 in.	517 lbs.	25,000 lbs.



Crapo Process

Old Process

The zinc coating applied by the patented Crapo Galvanizing Process is so adherent and so ductile that wire to which it is applied can be wrapped tightly around its own diameter and subjected to sharp bending and twisting without the galvanizing cracking, flaking or peeling.

IRON LINE WIRE

Crapo Extra Galvanized Telephone and Telegraph Wire



Crapo Galvanized Telephone and Telegraph Wire is manufactured from start to finish in accordance with specifications based on sound research and years of actual experience. Each grade is drawn from iron, or steel, of specific analysis, processed under laboratory supervision, extra galvanized by the Crapo Patented Process and rigidly inspected. The care and precision followed in manufacture guarantees to users line wire which meets rigid specifications for electrical conductivity, tensile strength, elongation, galvanizing and ductility.

"BB" is slightly higher in resistance than EBB but combines conductivity with tensile strength, having a maximum electrical resistance of 5,800 mile ohms.

"Extra BB" is highest in electrical conductivity, having a range of electrical resistance of 4,850 to 5,000 mile ohms.

"Steel" is designed for short-line service where electrical conductivity can be sacrificed for tensile strength. Maximum resistance, 6,500 mile ohms.

BB Grade

Size B.W.G.	Nominal Diameter	Weight per Mile	Coil Length	Minimum Breaking Strength	Maximum Resistance per Mile
4	0.238"	811 lbs.	¼ mile	2,271 lbs.	7.15 Ohms
6	0.203"	590 lbs.	½ mile	1,652 lbs.	9.83 Ohms
8	0.165"	390 lbs.	¾ mile	1,092 lbs.	14.87 Ohms
9	0.148"	314 lbs.	1 mile	879 lbs.	18.47 Ohms
10	0.134"	258 lbs.	1 ½ mile	722 lbs.	22.48 Ohms
11	0.120"	206 lbs.	2 miles	577 lbs.	28.16 Ohms
12	0.109"	170 lbs.	2 ½ miles	476 lbs.	34.12 Ohms
14	0.083"	99 lbs.	3 miles	277 lbs.	58.59 Ohms

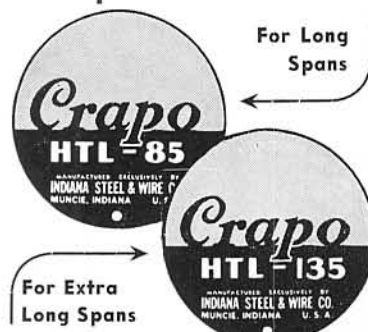
Extra BB Grade

4	0.238"	811 lbs.	¼ mile	2,028 lbs.	5.98 Ohms
6	0.203"	590 lbs.	½ mile	1,475 lbs.	8.22 Ohms
8	0.165"	390 lbs.	¾ mile	975 lbs.	12.43 Ohms
9	0.148"	314 lbs.	1 mile	785 lbs.	15.44 Ohms
10	0.134"	258 lbs.	1 ½ mile	645 lbs.	18.79 Ohms
11	0.120"	206 lbs.	2 miles	515 lbs.	23.54 Ohms
12	0.109"	170 lbs.	2 ½ miles	425 lbs.	28.52 Ohms
14	0.083"	99 lbs.	3 miles	247 lbs.	48.98 Ohms

Steel Grade

4	0.238"	811 lbs.	¼ mile	2,433 lbs.	8.32 Ohms
6	0.203"	590 lbs.	½ mile	1,770 lbs.	11.44 Ohms
8	0.165"	390 lbs.	¾ mile	1,170 lbs.	17.31 Ohms
9	0.148"	314 lbs.	1 mile	942 lbs.	21.50 Ohms
10	0.134"	258 lbs.	1 ½ mile	774 lbs.	26.16 Ohms
11	0.120"	206 lbs.	2 miles	618 lbs.	32.77 Ohms
12	0.109"	170 lbs.	2 ½ miles	510 lbs.	39.71 Ohms
14	0.083"	99 lbs.	3 miles	297 lbs.	68.18 Ohms

Crapo High-Tensile, Low-Resistance Telephone Line Wire



A high-tensile, low-resistance telephone line wire that makes possible longer-span, lower-cost construction on new lines; provides stronger spans, with lower maintenance expense on present lines. Development of Indiana Steel & Wire Company.

Crapo HTL-85 High Tensile

Provides for spans of 225 feet in heavy loading districts, 325 feet in medium loading districts and 375 feet in light loading districts. Used on existing pole structures, it tends to increase strength of line, lessen hazards of ice and wind, minimize service interruptions, reduce maintenance costs. Affords improved transmission at voice frequency with currents of voice frequency magnitude.

It is extra galvanized by the Crapo Patented Process.

Furnished in continuous lengths without splices and joints. Galvanized steel compression-type sleeves are recommended for splicing this wire.

Size B.W.G.	Nominal Diameter	Weight per Mile	Coil Length	Minimum Breaking Strength	Maximum Resistance per Mile
9	0.148"	314 lbs.	½ mile	1,462 lbs.	18.47 Ohms
10	0.134"	258 lbs.	¾ mile	1,199 lbs.	22.48 Ohms
12	0.109"	170 lbs.	1 mile	793 lbs.	34.12 Ohms
14	0.083"	99 lbs.	1 ½ miles	460 lbs.	58.59 Ohms

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Crapo HTL-135 Extra High Tensile

For extra long spans of 350 feet in heavy loading districts, 450 feet in medium loading districts and 500 feet in light loading districts. Has a minimum tensile strength approximately two and one-half times that of standard B.B. wire. Affords improved transmission at voice frequencies with currents of voice frequency magnitude.

Galvanized by time-tested Crapo Process to insure a uniform, tightly adherent zinc coating which provides lasting protection against corrosion.

Regularly furnished in No. 12 B.W.G. and in continuous lengths without splices or joints. Galvanized steel compression type sleeves are recommended for splicing.

Size B.W.G.	Nominal Diameter	Weight per Mile	Coil Length	Weight per Coil	Minimum Breaking Strength	Maximum Resistance per Mile
12	0.109"	170 lbs.	4659 ft.	150 lbs.	1213 lbs.	38.23

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Crapo Galvanized Tie Wire

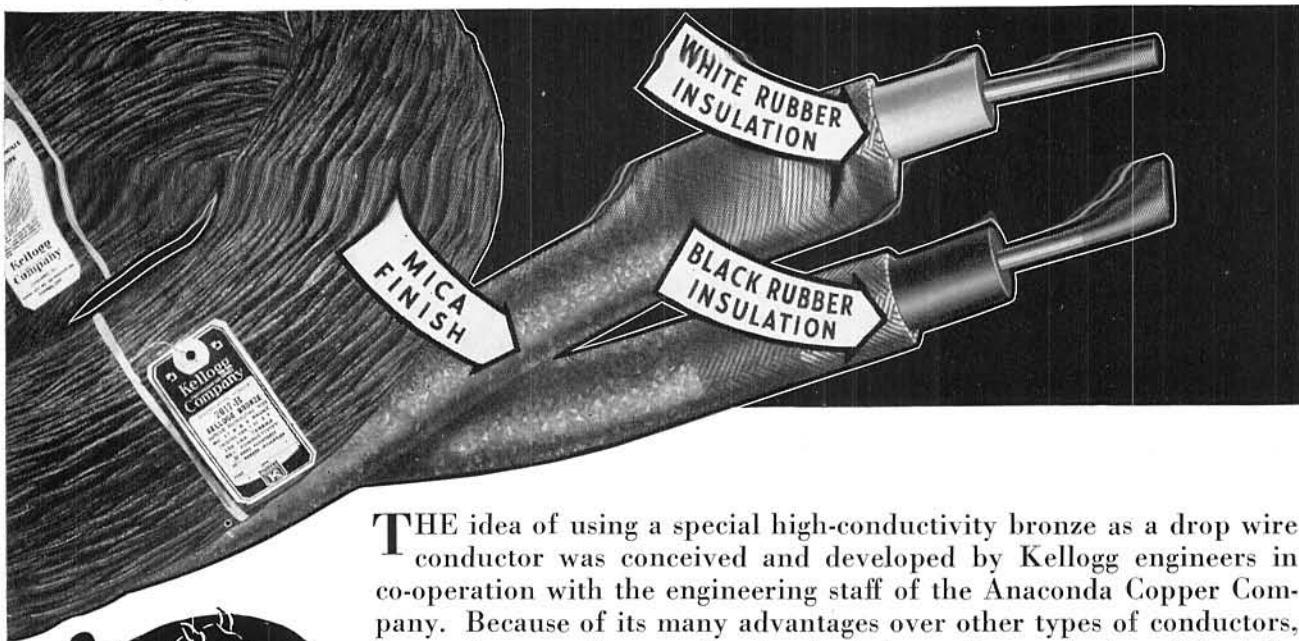
Manufactured specially to facilitate tying in telephone line wire at the supports. Galvanized by the Crapo Patented Process. Furnished in coils or straightened and cut to length. Specify Horseshoe or Armor Ties, as desired.

Unless otherwise specified tie wires for Horseshoe Ties are fully wrapped in burlap and Armor Ties are packed with the ends only burlapped.

Straightened and Cut to Length

Size B.W.G.	Coil Lgth.	Weight per Coil	Horseshoe Ties			Armor Ties		
			Lgth. Each	Standard Pes.	Pkg. Wt.	Lgth. Each	Standard Pes.	Pkg. Wt.
9	1700 ft.	100 lbs.	13"	395	25 lbs.	---	---	---
10	2040 ft.	100 lbs.	18"	350	25 lbs.	48"	260	50 lbs.
10	2040 ft.	100 lbs.	16"	390	25 lbs.	46"	270	50 lbs.
12	3100 ft.	100 lbs.	14"	675	25 lbs.	44"	430	50 lbs.
14	2650 ft.	50 lbs.	14"	1150	25 lbs.	40"	810	50 lbs.

Line Supplies Section



THE idea of using a special high-conductivity bronze as a drop wire conductor was conceived and developed by Kellogg engineers in co-operation with the engineering staff of the Anaconda Copper Company. Because of its many advantages over other types of conductors, bronze has now become the standard drop wire conductor of the telephone industry.

This pioneering of bronze and the many years of subsequent research and engineering devoted to drop wire development and manufacture has given Kellogg a position of unequalled leadership. Kellogg Bronze Drop Wire has consistently led the field in performance, in value and in service life.

Back of Kellogg Bronze Drop Wire is a combination of organizations representing longer experience and a thorough understanding of the application of bronze to the telephone field . . . plus almost

limitless wire research and manufacturing facilities which are continually on the job. Millions of feet of Kellogg Bronze Drop Wire are now in service throughout the country — practical evidence of the unusual efficiency and useful life which is built into Kellogg drop wire.

Experienced telephone men know that it is good practice and real economy to purchase the best drop wire because the cost of installing a drop generally exceeds the cost of the wire itself and the installation of a cheap, poor quality wire is usually very expensive in the end.

Hi-Conducto Bronze Conductor

Kellogg Hi-Conducto Bronze is the most practical bronze conductor obtainable for this purpose. It meets every service requirement. It will withstand the snow, sleet and ice conditions encountered in the field. It is the only bronze conductor having that unusual combination of 85% conductivity, high tensile strength, flexibility and ductility. It is easy to splice, easy to tie and easy to work with. It is not springy or stiff.

Its 32 ohms resistance per mile (only 6 ohms per thousand feet!) is less than one-half that of ordinary bronzes. Drawn of one solid metal, bronze eliminates all danger of high resistance joints due to electrolytic action between different basic metals. Bronze will not rust or corrode; will not deteriorate under any climatic condition.

Another important feature of Kellogg Bronze Drop Wire is its reclaim value. Here the telephone company saves approximately 9% of the original cost.

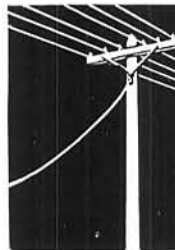
Braid, Saturant and Mica Finish

The service life of drop wire depends directly upon the quality of the insulation. Results in the field show that Kellogg Armored insulation lasts 30% longer because of its specification insulation which provides a mica finish and a stearine pitch that is applied through a special impregnation process.

This is the finest insulation ever used on drop wire. Actual "life tests" performed by unbiased experts on this insulation and that of other makes of drop wire in the laboratories of a prominent mid-western university, conclusively proved the superiority of Kellogg insulation.

Unlike some other drop wires which have powdered mica dusted on, Kellogg Armored insulation comes to you with the mica impregnated into the very fibres of the braid. It is mixed with and beat into the saturant so that when the saturant penetrates the braid the mica is carried right down into the pores. This penetration stops only when the saturant reaches down through the braid to the rubber. At the same time, tiny scales of mica are piled up and cemented to the outside of the braid forming that tough, flexible shield much the same as a coat of armor is formed by overlapping scales of steel.

Mica is ideal for this purpose. Because it is waterproof, it forms a perfect shield against moisture. Its glazed surface reflects the sun's heat, and because of this power to cast off heat, it keeps the insulating compounds from softening and preserves the wall thickness of the insulation. Mica on the outside of the braid eliminates friction between the twisted pairs like oil eliminates





KELLOGG ARMOR-INSULATED

Hi-Conducto Bronze
DROP WIRE

featuring 85% Conductivity

Braid, Saturant and Mica Finish—Continued

friction between metal bearings. It shields the braid from wear at knobs, tubes and fixtures; and because it is dielectric it adds to the insulating qualities of the rubber. This U.R.C. Compression Tested Stearine Pitch "Mica-Finish" insulation assures longer drop wire life.

Rubber Insulation Colored Tracers



Kellogg has banished the old-fashioned way of wrapping a raised tracer cord around the conductor in order to code it. Instead, the rubber around each conductor is a different color — a white rubber around one wire and a black rubber around the other. There can now be no mistakes as to which side of the line is being worked with.

The black rubber is the same as that used by Kellogg for years . . . 30% pure rubber compounded with special anti-oxidants — an exclusive Kellogg formula that prevents drying out and cracking. Its normal 2500 megohm per 1000 feet breakdown test shows a table of unusually high dielectric values at all temperatures. The white rubber, also 2500 megohm test, is essentially the same as the black except that it is has a slightly higher pure rubber content. It is equal to the black rubber in toughness — both having a tensile strength of 1000 pounds per square inch.

Because of this new idea in using colored rubber tracers, longer life is added to the braid. There are no more sharp ridges to cut into and wear the braid of the opposite wire. No surplus bulk and no chance to go wrong in splicing. By eliminating the old tracer cord humps, sleet and wind resistance is substantially reduced.

Coiling, Wrapping and Easy Opening

Kellogg Armored Bronze Drop Wire is delivered in coils of 1000 feet each with a large 15-inch eye. Both ends of the coil are accessible. Each coil is securely bound with tape and wrapped with two sewings of weatherproof paper to prevent mechanical injury in transportation.

To assure easy removal of the outer paper wrapping without injury to the wire, each coil has a bare copper wire laid under the wrapping with an exposed loop at one end. By pulling the loop away from and around the coil, the covering is slit down the center and easily removed. The length and gauge of the wire is designated by two tags attached to each coil of Kellogg Armored Hi-Conducto Bronze Drop Wire.

Due to volume production and vast buying power of raw materials Kellogg Armor Insulated Hi-Conducto Bronze Drop Wire is reasonably priced — affording a real saving to telephone men in first cost, in installation, in maintenance and in reclaim value.

Specification 2017-B — Twisted Pair



The two insulated and braided conductors are twisted together with a regular and uniform right hand lay. The length of the twist is from 3 to 5 inches. Each bare conductor is 17 B.&S. Gauge.

Cat. No.	Size B.&S.	Description	Diameter Over Rubber	Length Per Coil	Weight Per 1000 ft.
2017-B	17	Twisted Pair	.1093 in.	1000 ft.	35 lbs.

Specification 2017-P — Parallel



The two insulated conductors are laid parallel and covered with one special braid. The braid is tightly woven about the conductor at an angle which produces greatest resistance to braid damage from parallel drop wire clamps or tie strain. The conductor and rubber insulation are the same as supplied with 2017-B twisted pair.

Cat. No.	Size B.&S.	Description	Diameter Over Rubber	Length Per Coil	Weight Per 1000 ft.
2017-P	17	Parallel	.1093 in.	1000 ft.	31 lbs.

Drop Wire Sag Table

Recommended Minimum for Average Conditions.

Span Length	Sag	
	Heavy Load Area	Light Load Area
Under 40 feet	1/2 foot	1/2 foot
40 to 75 feet	1 foot	1/2 foot
75 to 100 feet	3 feet	1 foot
100 to 120 feet	4 feet	2 feet
120 to 135 feet	6 feet	3 feet
135 to 150 feet	8 feet	4 feet
150 to 165 feet	10 feet	6 feet
165 to 180 feet	12 feet	7 feet
180 to 200 feet	16 feet	8 feet

Line Supplies Section

WIRE

Ironite Drop Wire



A special conductor of BB grade Crapo galvanized iron, accurately annealed to provide great tensile strength, high conductivity, great flexibility and freedom from crystallization and corrosion.

It is insulated with a 30% pure rubber compound by the continuous vulcanizing process which assures absolute centering of conductor. Color coded, black and white rubber for tracing. Braid is 2-ply, thoroughly saturated with heat resisting Stearine pitch and impregnated with powdered mica.

Shipped in standard 1,000 ft. coils with large 15-inch eyes. USE B.W.G. GAUGE WHEN ORDERING.

Cat. No.	Size B.W.G.	Conductors	Diameter Over Rubber	Wt. Per 1000 Feet
3014-B	14	Twisted Pair	$\frac{1}{16}$ in.	75 lbs.
3016-B	16	Twisted Pair	$\frac{3}{32}$ in.	60 lbs.
3018-B	18	Twisted Pair	$\frac{1}{8}$ in.	39 lbs.
3019-B	19	Twisted Pair	$\frac{7}{32}$ in.	29 lbs.
3018-P	18	Parallel	$\frac{1}{8}$ in.	35 lbs.
3019-P	19	Parallel	$\frac{7}{32}$ in.	25 lbs.

Ironite Tree Wire

A drop wire of great strength and friction resistance to be used where trees are a difficult problem. While moderate in cost Ironite Tree Wire has an unusually long life, under even the most severe conditions.

The conductor is Crapo double galvanized iron wire. Each conductor has a tensile strength of 170 pounds. It is insulated with a 30% rubber compound and over this is woven a double braid. The inner braid is a 2-ply long-fibre cotton thoroughly saturated with Stearine pitch, then covered with a heavy braid of toughest Seine Twine which is also saturated with heat resisting Stearine pitch and impregnated with powdered mica.

Shipped in 1000 ft. coils, with 15-inch eye. USE B.W.G. GAUGE WHEN ORDERING.

Cat. No.	Size B.W.G.	No. of Conductors	Tensile Strength	Wt. Per 1000 Feet
718-B	18	Twisted Pair	170 lbs.	59 lbs.
718-P	18	Parallel	170 lbs.	52 lbs.

Hard Drawn Copper Drop Wire



Conductors are hard drawn copper for strength; tinned in accordance with A.S.A. specification.

Insulation is special formula 30% pure rubber compound, applied by the continuous vulcanizing process that assures perfect centering of the conductor. Color coded, black and white rubber for tracing.

Weatherproof braid is 2-ply, thoroughly saturated with heat resisting Stearine pitch and impregnated with powdered mica.

Shipped in standard 1000 ft. coils, with 15-inch eye to fit standard reels. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B.& S.	Conductors	Diameter Over Rubber	Wt. Per 1000 Feet
1216-B	16	Twisted Pair	$\frac{1}{32}$ in.	42 lbs.
1214-B	14	Twisted Pair	$\frac{3}{32}$ in.	60 lbs.

Bridle or Spider Wire



Used in ring wiring, bridling, and to connect open lines to cable terminals. Conductor is soft drawn copper, double tinned to A.S.A. specifications.

30% pure rubber insulation is applied by the continuous vulcanizing process that assures perfect centering of the conductor. Duplex is color coded black and white, triplex black, white and red. Weatherproof braid is 2-ply thoroughly saturated with Stearine pitch and impregnated with powdered mica.

Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B.& S.	Conductors	Diameter Over Rubber	Wt. Per 1000 Feet
1518-A	18	Single	$\frac{1}{16}$ in.	15 lbs.
1518-B	18	Twisted Pair	$\frac{3}{32}$ in.	31 lbs.
1519-A	19	Single	$\frac{3}{32}$ in.	11 lbs.
1519-B	19	Twisted Pair	$\frac{1}{8}$ in.	22 lbs.
1522-B	22	Twisted Pair	$\frac{1}{8}$ in.	12 lbs.
1522-C	22	Triplex	$\frac{1}{8}$ in.	18 lbs.

Copper Interior Telephone Wire



Used for interior telephone wiring. Conductors are of soft drawn copper, double tinned in accordance with A.S.A. specification. Each conductor is insulated with a special 30% high grade rubber compound applied by the continuous vulcanizing process that assures perfect centering of the conductor.

The Dry Braid is of closely woven, hard glazed, 2-ply two-end cotton in olive green, ivory or brown color. The duplex and triplex types have color threads in the braid for tracing. Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B.& S.	Conductors	Color	Diameter Over Rubber	Wt. Per 1000 Ft.
1622-B	22	Twisted Pair	Olive Green	.056 in.	10 lbs.
1622-C	22	Triplex	Olive Green	.056 in.	15 lbs.
1722-B	22	Twisted Pair	Ivory	.056 in.	10 lbs.
1722-C	22	Triplex	Ivory	.056 in.	15 lbs.
2122-B	22	Twisted Pair	Brown	.056 in.	10 lbs.
2122-C	22	Triplex	Brown	.056 in.	15 lbs.
1619-A	19	Single	Olive Green	.098 in.	10 lbs.
1619-B	19	Twisted Pair	Olive Green	.098 in.	21 lbs.
1619-C	19	Triplex	Olive Green	.098 in.	30 lbs.
1618-B	18	Twisted Pair	Olive Green	.109 in.	26 lbs.

Pot Head Wire



Used to terminate paper insulated cable for distribution in cable terminals and cable boxes. Conductors are double tinned, soft copper, rubber insulated with no braid. The rubber insulation is a special formula that will withstand the heat of the sealing compound without softening or losing its insulating properties.

Available in both single and duplex. When furnished duplex, the rubber is color coded for tracing.

Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B.& S.	Conductors	Diameter Over Rubber	Wt. Per 1000 Feet
1419-B	19	Twisted Pair	$\frac{3}{32}$ in.	20 lbs.
1420-B	20	Twisted Pair	$\frac{1}{8}$ in.	19 lbs.
1422-B	22	Twisted Pair	$\frac{1}{8}$ in.	17 lbs.

WIRE

Flameproof Jumper Wire



Used on main and intermediate distributing frames, distributing boxes and cross connecting racks. Conductor is soft copper, double tinned to A.S.A. specifications and insulated with special 30% rubber applied by the continuous vulcanizing process assuring perfect centering of the conductor. The closely woven cotton braid is finished with moisture proof and flameproof compound. Color coded for tracing. Diameter over rubber is .056 in.

Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B.&S.	Conductor	Color	Weight Per 1000 Feet
1322-A	22	Single	White	6 lbs.
1322-B	22	Twisted Pair	Red, White	12 lbs.
1322-C	22	Triplex	Red, White and White with Red Tracer	18 lbs.

Densheath Flameproof Jumper
or Interior Wire

Conductor is soft copper, double tinned to A.S.A. specifications. Insulation is a special plastic, called Densheath, is flexible, moisture proof, absolutely flameproof (it melts under flame but does not drip or burn), and is an excellent insulator. The small diameter and smooth hard finish makes it ideal in crowded locations. Color coded for tracing. Diameter over rubber of the 22 gauge is .055 in. and 19 gauge is .065 in.

Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING AND SPECIFY COLOR.

Cat. No.	Size B.&S.	Conductors	Color	Weight Per 1000 Feet
2422-B	22	Twisted Pair	Red and White	7 lbs.
2422-B	22	Twisted Pair	Red and Black	7 lbs.
2422-B	22	Twisted Pair	Brown	7 lbs.
2422-B	22	Twisted Pair	Cream	7 lbs.
2419-B	19	Twisted Pair	Red and White	14 lbs.
2422-C	22	Triplex	Brown	7 lbs.
2222-C	22	Triplex	Cream	7 lbs.

Weatherproof Copper Wire



Weatherproof copper wire, specially adaptable to telephone, telegraph and railway signal work, combines high conductivity with great tensile strength. Consists of hard drawn copper conductor with either double or triple close cotton braid, impregnated with moisture proofing and weatherproofing compound.

Always sold by weight, Nos. 6 and 8 are put up in standard coils weighing 150 or 300 lbs. Nos. 10, 12, 14 and 16 are put up in standard coils weighing 100 to 125 lbs. and can also be furnished in 25-lb. coils. USE B. & S. GAUGE WHEN ORDERING. Specify whether double or triple braid is desired.

Size B.&S.	Weight Per 1000 Ft.		Weight Per Mile	
	Double Braid	Triple Braid	Double Braid	Triple Braid
6	100 lbs.	112 lbs.	528 lbs.	591 lbs.
8	66 lbs.	75 lbs.	348 lbs.	396 lbs.
10	46 lbs.	53 lbs.	243 lbs.	280 lbs.
12	30 lbs.	35 lbs.	158 lbs.	185 lbs.
14	20 lbs.	25 lbs.	106 lbs.	132 lbs.
16	16 lbs.	20 lbs.	84 lbs.	106 lbs.

Kellogg Special Tree Wire



Kellogg special tree wire was designed to replace the ordinary two and three braid weatherproof iron tree wire. It is low in cost and has triple the life of ordinary weatherproof wire.

The conductor is "Crapo" double galvanized iron wire with a $\frac{3}{32}$ -inch wall of 30% rubber to seal the conductor against moisture and to prevent braid slipping. The rubber is covered with a tough two-ply cotton weatherproof braid thoroughly saturated with Stearine pitch. This is followed by a special hard service Seine twine cable cord which is finished with an extra impregnation of powdered mica.

Put up in 1000-foot coils with 15-inch eye. USE B.W.G. GAUGE WHEN ORDERING.

Cat. No.	Size B.W.G.	Conductors	Tensile Strength	Weight Per 1000 Feet
710-A	10	Single	1300 lbs.	80 lbs.
712-A	12	Single	850 lbs.	65 lbs.
714-A	14	Single	350 lbs.	49 lbs.
716-A	16	Single	225 lbs.	39 lbs.

Weatherproof Iron Tree Wire



This wire is especially adapted for runs through trees or moist locations. Its construction prevents grounding that might be caused by dampness. Consists of "BB" double galvanized iron conductor, insulated with double or triple close cotton braid impregnated with moisture proofing and weatherproofing compound. Has the new pitch and mica finish.

Put up in $\frac{1}{2}$ mile coils wrapped in burlap. Always sold by weight. USE B.W.G. WHEN ORDERING and specify whether double or triple braid is desired.

Cat. No.	Size B.W.G.	Insulation	Weight Per Mile
910-AA	10	Double Braid	350 lbs.
910-AAA	10	Triple Braid	400 lbs.
912-AA	12	Double Braid	225 lbs.
912-AAA	12	Triple Braid	260 lbs.
914-AA	14	Double Braid	145 lbs.
914-AAA	14	Triple Braid	175 lbs.
916-AA	16	Double Braid	90 lbs.
916-AAA	16	Triple Braid	120 lbs.

Duct Wire



Used in building conduit systems, for interior wiring in damp locations and for cross wiring in cable terminals.

Conductors are soft drawn copper, heavily tinned in accordance with A.S.A. specifications. Insulation is special rubber applied by the continuous vulcanizing process and braid is 2-ply long fiber cotton, saturated with asphalt compound and finished with special colored pitches. Diameter over rubber is .063 inch.

Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B.&S.	Conductor	Color	Weight Per 1000 Feet
2822-A	22	Single	Yellow	7 lbs.
2822-B	22	Twisted Pair	Red and Green	14 lbs.
2822-C	22	Triplex	Red, Green and Yellow	21 lbs.

Line Supplies Section

WIRE

Bare Copper Wire



Supplied in soft, medium hard or hard drawn grades. The standard for toll line construction is hard drawn grade and unless otherwise specified this grade will be furnished on all orders. The table below applies only to the hard drawn grade.

Shipped in standard coils weighing from 200 to 300 pounds, USE B. & S. GAUGE WHEN ORDERING. Always sold by weight.

Size	Diameter Inches	Weight per 1000 ft.	Weight per Mile
6 B. & S.	.1620	79 lbs.	420 lbs.
8 B. & S.	.1285	50 lbs.	264 lbs.
10 B. & S.	.102	31 lbs.	166 lbs.
12 N. B. S.	.104	33 lbs.	174 lbs.
12 B. & S.	.0808	20 lbs.	104 lbs.

Rubber Covered Underground Cable



A twin ply all-rubber parallel wire without lead sheath for laying directly in a trench for drop wires on rural telephone lines and other underground locations where lead covered cable is not necessary and too expensive and where a tough, soil-acid resisting insulation will give complete protection.

Conductors are soft drawn No. 17 B. & S. solid copper or bronze, heavily tinned in accordance with A. S. A. specifications.

Insulation is double, but is vulcanized into a single casting, making for flexibility and ease of handling. First the conductors are encased in a special formula soft rubber by the continuous vulcanizing process which places the conductors in absolutely accurate position. This special rubber is highly resistant — impervious to most soil-acids and chemicals. Around this soft rubber core is vulcanized a tough black rubber jacket with an extra hard finish. This makes a sheath that protects against moisture as well as abrasion and cutting to a marked degree.

Shipped in 500, 1000 and 2500 foot coils with 15-inch eye.

Cat. No.	Size B. & S.	Conductors	Weight per 1000 ft.
4017-P	17	Two, Parallel	42 lbs.

Electric Light or Power Wire



This wire is used for electrical and power work, also radio aerials and ground wire. Consists of a soft drawn tinned copper conductor, insulated with new code rubber saturated braid.

Shipped in 500 ft. coils. USE B. & S. GAUGE WHEN ORDERING.

Cat. No.	Size B. & S.	Conductor	Braid	Weight per 1000 ft.
802-AA	2	Stranded	Double	278 lbs.
804-AA	4	Stranded	Double	190 lbs.
806-AA	6	Stranded	Double	126 lbs.
806-A	6	Solid	Double	120 lbs.
808-A	8	Stranded	Single	80 lbs.
810-A	10	Solid	Single	49 lbs.
812-A	12	Solid	Single	35 lbs.
814-A-Black	14	Solid	Single	26 lbs.
814-A-White	14	Solid	Single	26 lbs.

Lead Sheathed Underground Cable



Used directly in trench or conduit where drop wire must be placed underground as from conduits in city installations and where soil conditions require complete lead protection.

Conductors are No. 19 solid copper, heavily tinned in accordance with A. S. A. specifications.

Insulation is 30% pure rubber applied by the continuous vulcanizing process which insures perfect centering of conductors. Black and white color coded for tracing.

Around this twisted pair of insulated wires is extruded a seamless sheath of pure lead, $\frac{1}{16}$ in. thick. This is absolutely impervious to moisture, soil-acids or other forms of decay and will give a lifetime of service.

Shipped in 500 ft. and 1000 ft. coils or on reels.

Cat. No.	Size B. & S.	Conductors	Weight per 1000 ft.
5019-B-L	19	Two	262 lbs.
5019-D-L	19	Four	313 lbs.

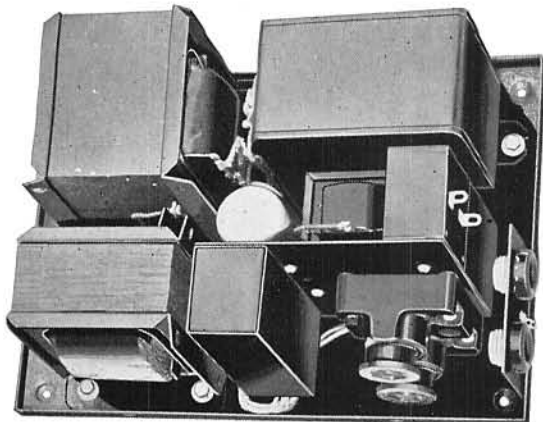
Comparison of Wire Gauges

No.	— Diameter in Inches —			No.	— Diameter in Inches —		
	B. & S.	B. W. G.	N. B. S.		B. & S.	B. W. G.	N. B. S.
1	.2893	.300	.300	16	.0508	.065	.054
2	.2576	.284	.276	17	.0453	.058	.056
3	.2294	.259	.252	18	.0403	.049	.048
4	.2043	.238	.232	19	.0359	.042	.040
5	.1819	.220	.212	20	.0320	.035	.036
6	.1620	.203	.192	21	.0285	.032	.032
7	.1443	.180	.176	22	.0254	.028	.028
8	.1285	.165	.160	23	.0226	.025	.024
9	.1144	.148	.144	24	.0201	.022	.022
10	.1019	.134	.128	25	.0179	.020	.020
11	.0907	.120	.116	26	.0159	.018	.018
12	.0808	.109	.104	27	.0142	.016	.0164
13	.0720	.095	.092	28	.0126	.014	.0148
14	.0641	.083	.080	29	.0113	.013	.0136
15	.0571	.072	.072	30	.0100	.012	.0124

Always use B.&S. gauge when ordering copper or bronze wire. Use B.W.G. when ordering iron wire. Orders not specifying the gauge will be filled according to this method.

RINGING MACHINES

Sub-Cycle Ringing Converter



Produces a powerful ringing current entirely independent of frequency variations in the commercial power supply. Has no moving parts — nothing to adjust, requires no routine maintenance. The output frequency is always one-third of the input frequency, regardless of fluctuations in the power supply.

With 60-cycle input current the output is 20 cycles; with 50-cycle input the output is 16 $\frac{2}{3}$ cycles.

Model S—For Offices up to 1600 Stations

Produces 16 $\frac{2}{3}$ or 20-cycle ringing A.C. supply. Operates on 105-125 volts, 50 or 60-cycle A.C. supply. Output is approximately 20 watts at 90 volts. It is necessary to indicate the frequency desired when ordering.

Cabinet is finished in black, wrinkle lacquer. Size 8x11 $\frac{1}{2}$ x5 inches. Shipping weight, 30 lbs.

Model SP—For Offices up to 1600 Stations

Produces positive and negative impulses without moving parts for biased selective ringing in addition to 16 $\frac{2}{3}$ or 20-cycle A.C. ringing supply. Operates on 105-125 volts 60-cycle A.C. supply. Output is approximately 20 watts at 90 volts. Made for use with either 60-cycle or 50-cycle power supply but it is necessary to indicate which frequency is desired when ordering.

Cabinet is finished in black, wrinkle lacquer. Size, 8x11 $\frac{1}{2}$ x5 inches. Shipping weight, 31 lbs.

Model B—For Offices up to 1600 Stations

Produces 20-cycle A.C. ringing supply. Output is approximately 15-20 watts at 90 volts. Operates on 105-125 volts 60-cycle A.C. supply. Equipped with safety switch and enclosed fuse cutout.

Cabinet is finished in aluminum lacquer. Size is 9 $\frac{1}{2}$ x14x5 $\frac{3}{8}$ inches. Shipping weight, 37 lbs.

Model C—For Offices up to 4000 Stations

Designed particularly for use in cases where the ringing load is abnormally heavy. Produces 20-cycle A. C. ringing supply. Operates on 105-125 volts, 60-cycle A.C. supply. Output is approximately 40-50 watts. There are two output voltages, 130 and 90 volts.

Cabinet is finished in black, wrinkle lacquer. Size is 11x15x5 $\frac{5}{8}$ inches. Shipping weight, 49 lbs.

Model CP—For Offices up to 4000 Stations

Same as model C but includes built-in pulsator. Shipping weight, 51 lbs.

Step-Down Transformers

To operate "Sub-Cycle" on 210-240 volts commercial supply the use of step-down transformers is recommended.

Cat. No.	Step-Down	Use with Model	Weight Each
T-155	220 V. to 110 V. 50 or 60 Cycles	S, SP, B.	8 lbs.
T-203	220 V. to 110 V. 50 or 60 Cycles	C, CP.	13 lbs.

Auxiliary Transformers for Use with "Sub-Cycle"

Special Transformer T-2259

For use with Sub-Cycle, Models S or B.

This transformer should be used in offices having super-imposed ringing. The T-2259 transformer is connected to the output of the "Sub-Cycle" and provides a path for the direct current used in super-imposed ringing. However, the A.C. voltage on the output terminals of the transformer is the same as the voltage obtained directly from the "Sub-Cycle."

Size is 3 $\frac{7}{8}$ x4 $\frac{1}{2}$ x4 $\frac{1}{8}$ inches. Shipping weight, 8 lbs.

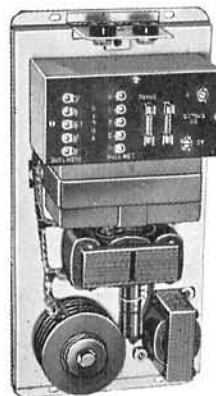
Special Transformer T-2378

For use with Sub-Cycle, Model C.

The T-2378 transformer is used where high ringing voltages are required. By means of this transformer it is possible to obtain ringing voltages of 90, 150, 175, 200, 250 or 300 volts. Under certain conditions these higher ringing voltages can be used advantageously.

Size is 6x5x4 $\frac{1}{4}$ inches. Shipping weight, 17 lbs.

Model A Lorain Tone Generators



For dial type offices. Operates directly from the regular 60-cycle commercial A.C. supply, 105-125 volts.

The high and low tones are produced by making use of the harmonics generated when a magnetic material is saturated. Model A has an output of 100 milliwatts for the low tone and 65 milliwatts for the high tone, with unity power factor load. These ratings are conservative and under normal operating conditions the generator will supply 50% more power than rated capacity. Thus, ample tone power is provided for the large dial office up to 5000 lines, and a reserve tone power is available for the future growth of the small dial office.

There are seven high tone voltages and six low tone voltages. There are no adjustments to make and no operating maintenance attention is necessary.

Housed in an aluminum finished cabinet.

Cat. No.	Size	Weight
A	13x7x4 $\frac{1}{2}$ inches	17 lbs.

Telering Model H

A simple, dependable converter of the vibrating type for converting commercial 60-cycle current to 20-cycle ringing current or 50-cycle current to 16 $\frac{2}{3}$ -cycle ringing current. Suitable for both central office and P.B.X. ringing. Each machine is guaranteed not to interfere with radio reception. Has only one vibrator and single contact with adjustable screw to take up wear.

One Telering is usually adequate for most loads but where conditions require an output in excess of the maximum capacity of one machine, any number of them can be connected in multiple. The output is regulated by the size of lamp used in the left hand receptacle which is in the transformer primary feed circuit. The standard machine is equipped with a 50-watt lamp which is more than sufficient for average loads but lamps ranging from 10 watts to 200 watts can be furnished on special order. Housed in a compact cast aluminum cabinet. Mounted on walls with two No. 8 round head wood screws.

When ordering it is necessary to state the voltage and frequency of the input current.

Cat. No.	Description	Size	Wt. Each
H	Telering	11 $\frac{5}{8}$ x8 $\frac{1}{2}$ x4 inches	12 lbs.

*Line Supplies Section***POLES****Creosoted Southern Yellow Pine — Northern White Cedar — Western Red Cedar**

Typical Pole Yard from which Kellogg Poles are Shipped.

There are three species of wood poles commonly used in telephone work — Southern Yellow Pine, Northern White Cedar and Western Red Cedar. These comprise about 95 per cent of the poles in current use. Advantages of Cedar and Pine are discussed below and complete information on Cedar Poles will be found on pages No. 150 to 153. Complete information on Pine Poles will be found on pages No. 143 to 148.

Cedar

The two cedars which are among the most durable woods known contain powerful decay and termite-resistant toxins in their fibrous substance, particularly in the heartwood which is over 90 per cent of their volume. Cedar sapwood, while much more durable than Pine sapwood, is less toxic than Cedar heartwood. For this reason, Cedar poles are usually given a preservative butt treatment by the open tank method to secure extra protection of the butts, particularly in the region of the ground line where the pole is subjected to conditions which foster decay, such as prolonged moisture, fungus, and termites. The sapwood above the ground line of sound poles, free from infection when erected, has seldom been known to decay prematurely except under extreme conditions of moisture, or shade, or from lack of air circulation about the pole.

Complete specifications of Cedar Poles are on pages No. 150 to 153.

Concentrating Yards and Treating Plants

Large stocks of seasoned poles in concentrating yards, adequate treating facilities and a diversified location of plants permit prompt shipment. The utmost care in production, seasoning and yarding provides the necessary insurance against incipient decay and deterioration in storage.

Prompt service is assured from producing plants strategically located to conveniently serve Kellogg customers:

Creosoted Southern Yellow Pine

Brewton, Ala.	New Orleans, La.	Gulfport, Miss.
Heber Springs, Ark.	Shreveport, La.	Louisville, Miss.
Savannah, Ga.	Winnfield, La.	Panama, Okla.
Chicago, Ill.	Fernwood, Miss.	Jackson, Tenn.
	Norfolk, Va.	

Northern White Cedar

Chicago, Ill.
Gladstone, Mich.
Minneapolis, Minn.
Minnesota Transfer, Minn.
Appleton, Wis.

Western Red Cedar

Chicago, Ill.
Priest River, Idaho
Sandpoint, Idaho
Minneapolis, Minn.
Minnesota Transfer, Minn.
Gladstone, Mich.

Pine

Because of the very perishable nature of pine, a pine pole must be treated its entire length under pressure to insure the fullest possible penetration of the sapwood by the preservative. Framing must be done before treatment to avoid subsequent exposure of untreated sapwood or heartwood. In standard sizes the average Yellow Pine pole consists of about 80 per cent sapwood. There is no appreciable difference in strength between sapwood and heartwood. This applies to all species of wood poles. Heartwood, in all species, while very resistant to penetration of the preservative is, at the same time, relatively more durable and resistant to decay and termite attack, than is the sapwood of the same species.

Complete specifications of Pine Poles are on pages No. 143 to 148.

Dimension Specifications

There are three distinct specifications under each species of pole:

1. **A.S.A. (American Standards Association).** Covers numerical classes 1 to 10; each class (from 1 to 7) signifying the same breaking load for all species. This specification is the most popular of the three now in use.

2. **Woods Run or Top Size.** Guarantees no minimum groundline circumference. Poles under this specification are furnished with minimum tops and natural or "woods run" taper.

3. **N.E.L.A. (National Electric Light Association, A.T.&T.)** Covers alphabetical classes.

Summary of Information Necessary To Quote on or Fill Pole Orders

1. Quantities (Minimum Car?).
2. Sizes.
3. Species (S.Y.P., N.W.C., W.R.C.).
4. Specification (A.S.A., Woods Run, N.E.L.A.).
5. Treatment: Cedars, AA, B, ½; Pine, 8 lb., 10 lb., 12 lb.
6. Framing Instructions, essential for all Pine orders. See Page No. 146.

PINE POLES

The life expectancy of Creosoted Southern Yellow Pine Poles averages from 30 to 35 years. This life is dependent upon the following factors:

1. Sound timber — to insure soundness in poles furnished by Kellogg rigid inspections are made.
2. Preservative — American Wood Preservers' Association No. 1 creosote, the recognized standard is used.
3. Retention of creosote — 8-lb. treatment is the recognized standard. Poles furnished by Kellogg retain an average of 8.55 lbs. of creosote per cubic foot.
4. Penetration — American Wood Preservers' Association Specification 36-C requires $2\frac{1}{2}$ inches radial penetration or a minimum of 85 per cent sapwood with final retention of 8 lbs. creosote per cubic foot. Poles furnished by Kellogg have an average penetration of 3.102 inches, exceeding minimum specifications by .602 inches.

The rate of decay of pine poles is directly dependent upon these factors. This is borne out by a report made by the American Wood Preservers' Association Committee (5-5-1, 1936) which said in part, ". . . the incidence of decay in creosoted Southern Pine poles in service is not correlated definitely with the particular species of pine poles, with the type of creosote used or with the climatic conditions of the region in which the poles were placed in service. . . . The incidence of decay is correlated only with depth of radial penetration and per cent of sapwood penetrated."

Pressure Treatment of Pine Poles

By any one of three standard processes: (See pages 147 and 148 for complete A.W.P.A. specification 36C.)

Rueping (empty-cell)

Involves the use of initial air pressure (before the introduction of the creosote into the cylinder) and a final vacuum after removing the creosote. This is the chief process now employed and is favored because of its success in eliminating bleeding.

Lowry

Uses no initial air, but only a final vacuum.

Bethel (full-cell)

Leaves all free oil in the pole, using neither initial air nor a final vacuum.

Treatment is measured by the final retention of oil in pounds of oil per cubic foot of the total volume of the pole. For example, a pole of 20 cubic feet volume, into which 160 pounds of oil (approximately 9 pounds per gallon) have been injected, is said to have received an 8-pound treatment, i.e., 8 pounds of oil for every cubic foot of the entire volume of the pole. Standard treatments are 8 pounds, 10 pounds and 12 pounds.

A. S. A. Specifications For Yellow Pine Poles

O. Introduction

These specifications cover southern pine poles which are to be given a preservative treatment. The poles are to be classified in accordance with the American Standard Dimensions of Creosoted Southern Pine Poles (05c2—1931), which is a part of these specifications.

The length and class of poles wanted and full details of the framing desired shall be stated in the orders.

The details of any marking, including length and class marks, to be placed on the poles shall be in accordance with instructions from the purchaser.



Only straight trees in forests such as this are used for Kellogg Poles

Complete detailed instructions shall be given the supplier in all cases where modifications are to be made in these specifications to meet special requirements.

1. Material Requirements

1.1 Species

All poles shall be cut from live southern pine timber: Longleaf Pine (*Pinus palustris*), Shortleaf Pine (*Pinus echinata*), Loblolly Pine (*Pinus taeda*), Slash Pine (*Pinus caribaea*), and Pond Pine (*Pinus rigida serotina*).

1.2 Prohibited Defects

All poles shall be free from decay, red heart, cracks, plugged holes, and bird holes. Nails, spikes, and other metal shall not be present in the poles unless specifically authorized by the purchaser.

1.3 Permitted Defects

1.31 BLUE SAP STAIN.—Blue sap stain that is not accompanied by softening or other disintegration of the wood (decay) is permitted under these specifications.

1.32 HOLLOW PITH CENTERS.—Hollow pith centers in the tops or butts of poles and in knots are permitted.

1.4 Limited Defects

1.41 CHECKS.—The top and side surfaces of poles shall be free from injurious checks.

PINE POLES

A. S. A. Specifications for Yellow Pine Poles



Hauling from Stumps to Woods Landing

1. Material Requirements — Continued

1.42 SHAKES.—Shakes in the butt surface extending over not more than one-quarter ($\frac{1}{4}$) of the circumference are permitted provided they are at least one (1) inch distant from the edge of the butt. Shakes extending over more than one-quarter ($\frac{1}{4}$) of the circumference are permitted when they are inside of a circle whose center corresponds to the center of the butt surface and whose diameter equals one-half ($\frac{1}{2}$) of the average butt diameter.

Shakes in the top surface whose width does not exceed one-sixteenth ($\frac{1}{16}$) of an inch are permitted provided they do not extend over more than one-half ($\frac{1}{2}$) of the top circumference.

1.43 SPLITS.—Splits are prohibited in the top surfaces of poles. Splits in butt surfaces are permitted provided that their height from the butt along the side surfaces does not exceed two (2) feet.

1.44 GRAIN.—No pole shall have more than one (1) complete twist of grain in any twenty (20) feet of length.

1.45 INSECT DAMAGE.—Insect damage consisting of holes less than one-sixteenth ($\frac{1}{16}$) of an inch in diameter is permitted.

1.46 KNOTS.—The diameter of any single knot or knot cavity, or the sum of the diameters of all knots and knot cavities in any one (1) foot section shall not exceed the limits set up in the following table. Knots and knot cavities one-half ($\frac{1}{2}$) of an inch or under in diameter shall be ignored in applying the limitations for sum of diameters.

Limitations of Knot Size

Length of Pole	Maximum Sizes Permitted, Inches		
	Diameter of Any Single Knot or Knot Cavity		Sum of Diameters of All Knots and Knot Cavities in any One (1) Foot Section, All Classes
	Classes 1—3	Classes 4—10	
45' and Under	4	3	8
50' and Over	5	5	10

Knots one (1) inch or over in diameter, showing discoloration or softness of fibre, indicating possible decay, shall be neatly gouged to a depth of not more than one-fifth ($\frac{1}{5}$) of the diameter of the pole at the point where the knot is located, to permit determination of the character and extent of decay. The gouging shall be done without unnecessary removal of sound wood, and in such a manner as to insure drainage of water from the hole

when the pole is set. Where such gouging does not completely remove the decay (heart rot), the pole shall be rejected.

Knots under one (1) inch in diameter need not be gouged unless after trimming the presence of decay is revealed and upon further examination the decay is found to extend to a depth of more than two (2) inches.

When more than one (1) cavity is present in a pole, the sum of the depths of all cavities in the same six (6) inch longitudinal section of the pole shall not exceed one-third ($\frac{1}{3}$) of the mean diameter of that section.

1.47 SCARS.—No pole shall have a turpentine face or other scar located within two (2) feet of the ground line.

In other sections of the pole, scars which have been smoothly trimmed so as to remove all bark and all surrounding or overhanging wood that is not completely intergrown with the wood of the body of the pole are permitted, provided

(a) that such trimming does not result in abrupt changes in the contour of the pole surface and that the trimmed scar does not have a depth of more than one (1) inch, except that where the diameter of the pole at the location of the scar is more than ten (10) inches the depth may be one-tenth ($\frac{1}{10}$) of the diameter; and

(b) that the circumference of the pole at any point on trimmed surfaces located between the butt and a point two (2) feet below the ground line is not less than the circumference of the pole at the ground line.

1.48 SHAPE.—Poles shall be free from short crooks. A pole may have sweep subject to the following limitations:

(a) Where sweep is in one (1) plane and one (1) direction only, a straight line joining the surface of the pole at the ground line and the edge of the pole at the top shall not be distant from the surface of the pole at any point by an amount greater than one (1) inch for each six (6) feet of length between these points.

(b) Where sweep is in two (2) planes (double sweep) or in two (2) directions in one (1) plane (reverse sweep), a straight line connecting the mid-point at the ground line with the mid-point at the top shall not at any intermediate point pass through the external surface of the pole.

2. Dimensions

2.1 Length

Poles under fifty (50) feet in length shall not be over three (3) inches shorter or six (6) inches longer than nominal length. Poles fifty (50) feet or over in length shall not be over six (6) inches shorter or twelve (12) inches longer than nominal length.

Length shall be measured between the extreme ends of the pole.

2.2 Circumference

Poles shall be classified in accordance with the American Standard Dimensions of Creosoted Southern Pine Poles. Minimum allowable circumferences at six (6) feet from the butt (except for Classes 8, 9, and 10), and at the top, for each length and class of pole listed, are shown in this standard. Poles having circumferences which are greater, at the same points of measurement, than those shown for the length and class desired, shall be acceptable, provided that the six (6) foot from butt circumference is less than the minimum given for the second larger class pole of the same length. The top dimensional requirement shall apply at a point corresponding to the minimum length permitted for the pole.

PINE POLES

A. S. A. Specifications for Yellow Pine Poles

3. Manufacturing Requirements

3.1 Bark Removal

Outer bark shall be completely removed from all poles.

No patch of inner bark left on the pole surface shall be more than one-quarter ($\frac{1}{4}$) of an inch in width or more than four (4) inches long.

3.2 Sawing

All poles shall be neatly sawed at the butt along a plane which shall not be out of square with the axis of the pole by more than two (2) inches per foot of diameter of the sawed surface. Beveling at the edge of the sawed butt surface not more than one-twelfth ($\frac{1}{12}$) of the butt diameter in width, or an equivalent area unsymmetrically located, is permitted.

3.3 Trimming

Branch stubs, partially overgrown knots, and completely overgrown knots rising more than one (1) inch above the pole surface shall be trimmed close. Completely overgrown knots less than one (1) inch high need not be trimmed.

3.4 Framing

All poles shall be framed in accordance with the terms of the order before they are subjected to the preservative treatment.

Gains on poles showing sweep or curvature shall be located on the concave side in the plane of the greatest curvature.

All gains on the same pole shall be cut so that their flat surfaces are approximately parallel. Conformance to this requirement may be tested by placing straight edges thirty (30) inches long on the faces of the finished gains so that the ends of the straight edges extend fifteen (15) inches on either side of the center line of the pole. The straight edges in any two (2) gains, when sighted in the direction of the longitudinal axis of the pole, shall not be out of parallel at their ends by more than one-sixteenth ($\frac{1}{16}$) of an inch. Bolt holes shall be bored perpendicular to the faces of the gains.

4. Storage and Handling

4.1 Storage

When it is necessary for any reason to hold in storage poles offered under these specifications, they shall be stacked on creosoted or non-decaying skids of such dimensions and so arranged as to support the poles without producing noticeable distortion of any of them. Poles shall be piled in such a manner as to permit free circulation of air and they shall be supported at all points at least one (1) foot above the general ground level, or any vegetation growing thereon. No decayed or decaying wood shall be permitted to remain underneath stored poles.

4.2 Handling

Pole tongs, cant hooks, and other pointed tools capable of producing indentations of more than one (1) inch in depth shall not be used on poles furnished under these specifications.

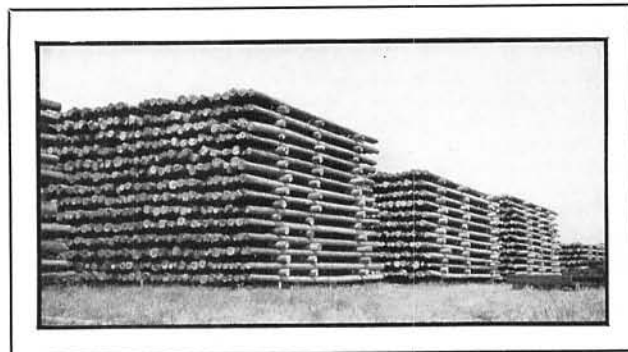
5. Definitions of Terms

The following definitions shall apply in these specifications:

5.1 Fungous Defects

5.11 BLUE SAP STAIN.—Blue sap stain is a bluish coloration in the sapwood caused by the action of certain molds and fungi, that is not accompanied by softening or other disintegration of the wood.

5.12 DECAY.—Decay is disintegration of wood substance due to the action of wood-destroying fungi. *Rot* and *Dote* mean the same as *Decay*.



Poles Stacked for Air Seasoning in Pole Yard

5.13 RED HEART.—Red heart is the incipient stage of a destructive heart rot caused by *Trametes pini* that occurs in the living tree. It is characterized by a reddish or brownish color in the heartwood.

5.2 Insect Defects

5.21 INSECT DAMAGE.—Insect damage is the result of boring in the pole by insects or their larvae. Scoring or channeling of the pole surface is not classed as insect damage.

5.3 Timber Defects

5.31 CHECKS.—Checks are lengthwise separations of the wood in a generally radial direction.

Heart checks are checks which extend from the pith center of the pole toward but not to the periphery of the pole.

5.32 CRACKS.—Cracks are breaks or fractures across the grain of the wood.

5.33 SCARS.—Scars or cat faces are depressions in the surface of the pole, generally elliptical in shape, resulting from wounds where healing has not re-established the normal cross section of the pole.

5.34 SHAKES.—Shakes are separations of the wood, generally parallel with the annual rings.

5.35 SPLITS.—Splits are separations between the fibres of the wood extending from surface to surface through the pole.

5.4 Shape

5.41 SHORT CROOK.—A short crook is a localized deviation from straightness which, within any section of five (5) feet or less in length, is more than one-half ($\frac{1}{2}$) the mean diameter of the crooked section. (See Diagram 3 of the drawing on page No. 149.)

5.42 SWEEP.—Sweep is the deviation of a pole from straightness. (See diagrams 1 and 2 of the drawing on page No. 149.)

5.5 Miscellaneous

5.51 KNOT DIAMETER.—The diameter of a knot is its diameter on the surface of the pole measured in a direction at right angles to the lengthwise axis of the pole.

5.52 LIVE TIMBER.—Live timber is that cut from a tree which was standing and living at the time of cutting.

6. Subsidiary Drawing

The drawings on page 149 are subsidiary to the text of these specifications:

“Measurement of Sweep and Short Crook in Poles.”

7. Subsidiary Standard

The following standard is subsidiary to the text of these specifications:

American Standard Dimensions of Creosoted Southern Pine Poles (05e2-1931).

Line Supplies Section

PINE POLES

Framing Specifications

These are indispensable for prompt handling of Pine orders, as all Pine poles must be completely framed before treatment. Information needed is as follows:

1. Number of gains (all same size?).
2. Dimensions of gains, width and depth.
3. Distance from apex of roof to center of first gain.
4. Spacing of gains, center to center.
5. Diameter of through-bolt hole.
6. Angle and type of roof.
7. Special pole step holes, etc.

Convenient sheets "Instructions for Framing Poles" will be furnished on request.

Requirements for Carload

Origins West of Mississippi River:

- Single Load — 30,000 lbs. (if 36 ft. car).
- Single Load — 34,000 lbs. (if over 36 ft. car).
- Double Load — 48,000 lbs.

Origins East of Mississippi River:

- (Weights depend on destination).
- Single Load — 34,000 to 36,000 lbs.
- Double Load — 58,000 to 60,000 lbs.

Shipping Weight Woods Run Poles (Top Measurement—Natural Taper)

Length Feet	Weight Per Pole in Pounds					
	Top Diam. 4 in.	Top Diam. 5 in.	Top Diam. 6 in.	Top Diam. 7 in.	Top Diam. 8 in.	Top Diam. 8 in.
16	130	150	....	....	....	....
18	150	200	280	....	....	....
20	170	220	310	....	....	....
22	210	290	350	....	....	....
25	220	310	390	500	580	580
30	....	400	540	670	780	780
35	....	....	670	870	1010	1010
40	....	....	820	1060	1260	1260
45	....	....	1010	1260	1500	1500
50	....	....	....	1470	1740	1740
55	....	....	....	1700	2010	2010
60	....	....	....	1900	2260	2260

These poles have no size requirement other than top measurement as indicated above.

- 4-inch top poles are same as ASA Class 10.
- 5-inch top poles are same as ASA Class 9.
- 6-inch top poles are same as ASA Class 8.
- 7-inch top poles approximate ASA Class 5.
- 8-inch top poles approximate ASA Class 4.

Shipping Weight — A.S.A. Poles 8-lb. Treatment — Weight Per Pole in Pounds

Length	Class 10	Class 9	Class 8	Class 7	Class 6	Class 5	Class 4	Class 3	Class 2
16 ft.	130	150	....	....	....	....	....	....	....
18 ft.	150	200	280	....	....	....	....	....	....
20 ft.	170	220	310	....	....	....	....	....	....
22 ft.	210	290	350	....	....	....	....	....	....
25 ft.	220	310	390	350	410	500	580	....	....
30 ft.	....	400	540	480	570	670	780	....	....
35 ft.	....	....	670	590	710	870	1010	1140	....
40 ft.	....	....	820	730	870	1060	1260	1460	....
45 ft.	....	....	1010	900	1060	1260	1500	1740	1990
50 ft.	....	....	....	1042	1254	1470	1740	2020	2340
55 ft.	....	....	....	....	1480	1700	2010	2300	2700
60 ft.	....	....	....	....	1630	1900	2260	2680	3080

A.S.A. Dimensions of Creosoted Southern Pine Poles

Class		1	2	3	4	5	6	7	8	9	10
Minimum Top Circumference (Inches)		27	25	23	21	19	17	15	18	15	12
Length of Pole (Feet)	Ground Line Dist. from Butt (Feet) *	Minimum Circumference at Six Feet from Butt (Inches)									
16	3½	...	...	...	...	21.5	19.5	18.0	No Butt Requirement	No Butt Requirement	No Butt Requirement
18	3½	...	...	26.5	24.5	22.5	21.0	19.0	...	...	...
20	4	31.5	29.5	27.5	25.5	23.5	22.0	20.0	...	...	...
22	4	33.0	31.0	29.0	26.5	24.5	23.0	21.0	...	...	...
25	5	34.5	32.5	30.0	28.0	26.0	24.0	22.0	...	...	...
30	5½	37.5	35.0	32.5	30.0	28.0	26.0	24.0	...	...	...
35	6	40.0	37.5	35.0	32.0	30.0	27.5	25.5	...	...	...
40	6	42.0	39.5	37.0	34.0	31.5	29.0	27.0	...	...	...
45	6½	44.0	41.5	38.5	36.0	33.0	30.5	28.5	...	...	...
50	7	46.0	43.0	40.0	37.5	34.5	32.0	29.5	...	...	...
55	7½	47.5	44.5	41.5	39.0	36.0	33.5	...	...	...	...
60	8	49.5	46.0	43.0	40.0	37.0	34.5	...	...	...	...
65	8½	51.0	47.5	44.5	41.5	38.5	...	...	...	...	...
70	9	52.5	49.0	46.0	42.5	39.5	...	...	...	...	...
75	9½	54.0	50.5	47.0	44.0	...	...	...	...	...	...

* The figures in this column are intended solely for use whenever a definition of ground line is necessary in order to apply specification requirements relating to scars, straightness, etc.

PINE POLES**Standard Specifications for the Preservative Treatment of Southern Pine Poles by Pressure Processes**

A.W.P.A. 36c

1. General Requirements

1.1 The following requirements (1.2 to 1.5 and 3. to 6.4 inclusive) apply to each of the treatment processes. If these requirements are to be modified to meet special conditions, complete detailed instructions shall be given.

1.2 PLANT EQUIPMENT.—Treating plants shall be equipped with the thermometers and gauges necessary to indicate and record accurately the conditions at all stages of treatment, and all equipment shall be maintained in acceptable, proper working condition. The apparatus and chemicals necessary for making the analyses and tests required by the purchaser shall also be provided by plant operators, and kept in condition for use at all times.

1.3 CONDITIONING.—Poles shall be conditioned by air-seasoning or by steaming or by a combination of both as agreed upon, in such a manner as will not cause injurious checking, splitting or warping.

1.31 When air-seasoning is used the poles shall be treated before they begin to decay.

1.32 When steam conditioning is used poles shall be steamed in the cylinder at temperatures between 254 deg., F., and 259 deg., F. (approximately 20 lbs. pressure per sq. in.) for not less than 6 hr. and not more than 15 hr., which temperature maximum shall not be reached in less than 1 hr. The cylinder shall be provided with vents to relieve it of air and insure proper distribution of steam. After steaming is completed, a minimum vacuum of 24 in. at sea level shall be maintained for not less than 1 hr. The cylinder shall be relieved continuously or frequently enough to prevent condensate from accumulating in sufficient quantity to reach the wood. Before the preservative is introduced the cylinder shall be drained of condensate.

1.4 SORTING.—Whenever it is practicable, poles should be sorted into size and seasoning groups, and the treatment of large and small pieces or green and seasoned pieces in the same charge should be avoided.

1.5 FRAMING.—So far as practicable all surfacing, framing, and boring shall be done prior to treatment; but gaining and boring bolt holes and step holes shall be permitted after treatment on poles with 100 per cent sapwood penetration, provided the surfaces of such gains and holes are painted or swabbed with hot preservative.

2. Treatment**2.1 Oil Treatment**

2.11 MANNER OF TREATMENT.—Following the conditioning period, the poles shall be treated by an empty-cell process whenever practicable, in order to obtain as deep and uniform penetration as possible with the retention of preservative stipulated. Poles shall be treated by the full-cell process only when the maximum net retention is desired and where pressure is held to refusal, or when the stipulated retention is greater than can be obtained by the use of an empty-cell process. The ranges of pressure, temperature and time duration shall be controlled so as to get the maximum penetration by the quantity of preservative injected.

Standard Processes**Empty-Cell Rueping**

2.11111 Poles shall be subjected to initial air pressure of the necessary intensity and duration. The preservative shall be introduced until the cylinder is filled, the

air pressure being maintained constant during the filling operation. The pressure shall be raised to not more than 200 lbs. per sq. in. Poles shall be held under pressure until there is obtained the largest practicable volumetric injection that can be reduced to the stipulated retention by ejection of surplus preservative from expansion of the air initially introduced and by a quick high vacuum.

2.11112 The temperature of the preservative immediately after the cylinder is filled and during the entire pressure period shall be not more than 210 deg., F., and shall average at least 180 deg., F.

2.11113 After pressure is completed the cylinder shall be emptied speedily of preservative, and a vacuum of not less than 22 in. at sea level created promptly and maintained until the wood can be removed from the cylinder free of dripping preservative.

Lowry

2.11121 The preservative shall be introduced until the cylinder is filled, the atmospheric pressure being maintained during the filling operation. The pressure shall be raised to not more than 200 lbs. per sq. in. Poles shall be held under pressure until there is obtained the largest practicable volumetric injection that can be reduced to the stipulated retention by ejection of surplus preservative from expansion of the air and by a quick high vacuum.

2.11122 The temperature of the preservative immediately after the cylinder is filled and during the entire pressure period shall be not more than 210 deg., F., and shall average at least 180 deg., F.

2.11123 After pressure is completed, the cylinder shall be emptied speedily of preservative, and a vacuum of not less than 22 in. at sea level created promptly and maintained until the wood can be removed from the cylinder free of dripping preservative.

Full-Cell Bethel

2.11211 Poles shall be subjected to a vacuum of not less than 22 in. at sea level for not less than 30 min. The preservative shall be introduced until the cylinder is filled without first breaking the vacuum. The pressure shall be raised to not more than 200 lbs. per sq. in. Poles shall be held under pressure until there is obtained the volumetric injection that will insure the stipulated retention, or until the wood is treated to refusal.

2.11212 The temperature of the preservative immediately after the cylinder is filled and during the entire pressure period shall be not more than 210 deg., F., and shall average at least 180 deg., F.

2.11213 After pressure is completed the cylinder shall be emptied speedily of preservative, and a vacuum of not less than 22 in. at sea level created promptly and maintained until the wood can be removed from the cylinder free of dripping preservative.

3. Results of Treatment

3.1 RETENTION OF PRESERVATIVE.—The net retention in any charge shall be not less than 95 per cent of the quantity of preservative that may be specified; but the average retention by the poles treated under any contract or order and the average retention of any five consecutive charges shall be at least 100 per cent of the

Line Supplies Section

PINE POLES

Standard Specifications for the Preservative Treatment of Southern Pine Poles by Pressure Processes — Continued

quantity specified. The amount of preservative retained shall be calculated from readings of working tank gauges, or scales, or from weights before and after treatment of loaded trams on suitable track scales.

3.11 The volume of preservative shall be calculated on the basis of 100 deg., F. Calculations of volume or weight shall be made by the use of temperature or specific gravity factors contained in the Volume and Specific Gravity Correction tables of the American Wood-Preservers' Association.

3.2 The amount of preservative retained shall be as follows, depending on use requirements, and as stipulated in purchaser's order and in accordance with Section 3.1:

- 3.21 8 lbs. of creosote per cu. ft. of wood in charge, or
- 3.22 10 lbs. of creosote per cu. ft. of wood in charge, or
- 3.23 12 lbs. of creosote per cu. ft. of wood in charge.

3.3 PENETRATION.—The penetration desired shall be specified by the purchaser in accordance with use requirements. Not less than the following penetrations should be specified for 8-lb., 10-lb. and 12-lb. retentions.

3.31 The penetration in any pole treated to an 8-lb. retention shall be not less than 2.5 in. unless 85 per cent of the sapwood is penetrated.

3.32 The penetration in any pole treated to a 10-lb. retention shall be not less than 3 in. unless 90 per cent of the sapwood is penetrated.

3.33 The penetration in any pole treated to a 12-lb. retention shall be not less than 3.5 in. unless 90 per cent of the sapwood is penetrated.

3.4 DETERMINATION OF PENETRATION. — The number of poles to be bored in each charge and the tolerance to be allowed in accepting poles treated under this specification shall be in accordance with paragraphs 3.42, 3.421, and 3.422, unless otherwise specified by the purchaser.

To facilitate inspection for conformance to the penetration requirements poles may be divided into the classes and lengths shown in the table on page 146.

3.41 GROUPING POLES FOR PENETRATION INSPECTION.—Poles may be divided for inspection for the penetration requirements into two groups, viz:

Group A.—Small poles, of the following classes and lengths:

- Class 1, 25 ft. and shorter
- Class 2, 30 ft. and shorter
- Class 3, 35 ft. and shorter
- Class 4, 45 ft. and shorter
- Class 5, 55 ft. and shorter
- Classes 6 to 10, all lengths

This group includes all guy stubs, reinforcing stubs and push braces.

Group B.—Large poles, including all classes and lengths not in Group A.

3.42 METHODS OF INSPECTION FOR PENETRATION.—The following methods of inspection shall be considered as minimum routine for determining conformity to the penetration requirements:

3.421 POLES IN GROUP A.—An increment borer core shall be taken approximately midway between the butt and top of each of 20 poles in each charge.

3.4211 If 18 of the 20 borings meet the penetration requirements, the charge as a whole shall be considered as conforming.

3.4212 If 16 or 17 of the 20 borings meet the penetration requirements each pole in the charge shall be bored as previously indicated and only those poles that meet the penetration requirements shall be considered as conforming.

3.4213 If less than 16 of the 20 borings meet the penetration requirements the charge as a whole shall be considered as nonconforming.

3.422 POLES IN GROUP B.—An increment borer core shall be taken approximately midway between the butt and top of all poles in Group B, and only those poles that meet the penetration requirements shall be considered as conforming.

Note: If the poles are not handled on the class and length basis shown in the table, an approximately comparable division may be made by listing all poles with circumferences at 6 ft. from the butt less than 37.5 inches as Group A poles, and all poles with circumferences at 6 ft. from the butt of 37.5 inches or more as Group B poles.

3.423 PLUGGING PENETRANCE TEST HOLES.—All holes for determining penetration shall be plugged tightly with creosoted plugs or with untreated plugs of durable heartwood approved by the purchaser.

4. Preservatives

The preservative used shall conform to the American Wood-Preservers' Association Standard 4—Standard Specification for Creosote.

5. Inspection

Inspection of poles for conformity to the requirements of this specification shall be in accordance with American Wood-Preservers' Association Standard 33, amplified by Section 3.4 above.

6. Retreatment

Poles not conforming to the stipulated minimum requirements may be retreated and may be reoffered for acceptance but retreatment should be avoided so far as practicable. If retreatment is necessary it shall be under the following conditions:

6.1 The maximum limits for temperature of steam or preservative and the maximum limit for preservative pressure, that apply to original treatments, shall not be exceeded during retreatment.

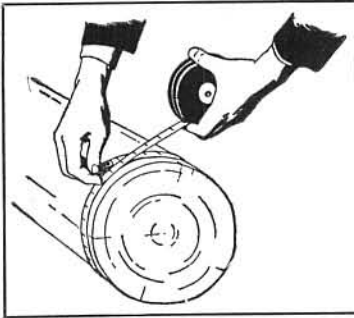
6.2 When a charge to be retreated is made up entirely of black non-conforming or rejected poles, the amount of preservative retained in the retreatment shall be at the discretion of the creosoter, provided the total net retention does not fall below the minimum requirements.

6.3 When it is necessary to retreat black poles in the same charge with white untreated poles, the number of black poles in the charge shall not exceed 5 per cent of the total poles in the charge.

6.4 In the computation of the required minimum net retention in any charge containing both black and white poles, all poles in the charge shall be considered as untreated.

MEASURING POLES

Measuring Diameter of Poles



The terms "5-inch top — 20 foot," "7-inch top — 30 foot" are used to designate the top diameter and length of poles respectively. Because the tops and butts of poles are not perfect circles the diameter cannot be measured direct. To get the diameter it is necessary to measure the circumference and divide it by 3.1416. The sketch at the left illustrates how poles should be measured and the table at the right shows the top size of the pole when the circumference is known.

Designated Top Size	Circumference Necessary
4 inches	12 inches
5 inches	15 inches
5½ inches	17 inches
6 inches	18½ inches
6½ inches	20 inches
7 inches	22 inches
8 inches	25 inches
9 inches	28 inches
10 inches	31 inches

Measurement of Sweep and Short Crook in Poles

The correct way to measure the sweep of a pole is to stretch a tape tightly from the top to a point six feet from the butt end. A rule can then be used to deter-

mine the amount of sweep at the greatest distance between the pole and the tape. See the illustration below.

DIAGRAM 1.—Measurement of Sweep in One Plane and One Direction

Stretch a tape measure from the top to a point 6 feet from the butt end. Use a rule to determine the maximum sweep between the pole and tape.

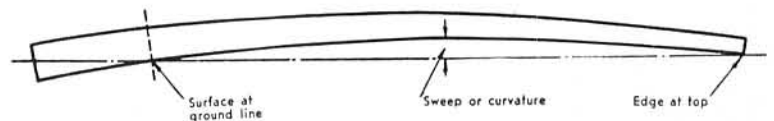


DIAGRAM 2.—Measurement of Sweep in Two Planes (Double Sweep) or in Two Directions in One Plane (Reverse Sweep)

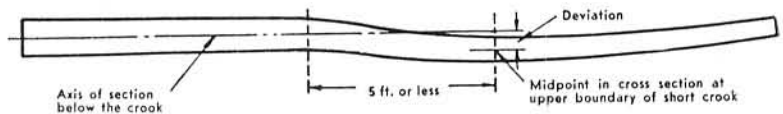
Stretch a tape measure from the midpoint of the top to the midpoint at the ground line. Use a rule to determine the maximum sweep of each side between the pole and tape.



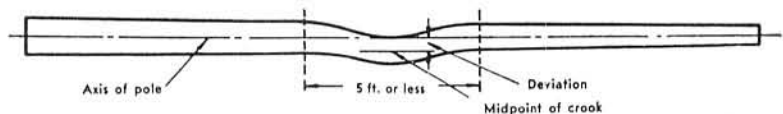
NOTE: This diagram applies to the measurement of double sweep in Western Red Cedar and Southern Pine poles. For measurement of double sweep in Northern White Cedar and Chestnut poles, see text.

DIAGRAM 3.—Measurement of Short Crook (Three Cases Shown)

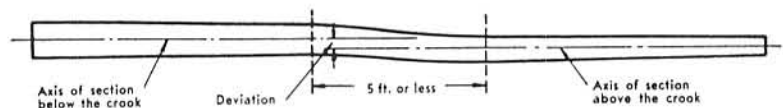
When the reference axes are approximately parallel.



When the axes of sections above and below the crook coincide or are practically coincident.



When the axis of section above the short crook is not parallel or coincident with axis below the crook.



NOTE: The three cases shown under Diagram 3 are typical and are intended to establish the principle of measuring short crooks. There may be other cases not exactly like those illustrated.

CEDAR POLES**Northern White — Western Red**

Kellogg facilities for furnishing Northern White Cedar and Western Red Cedar Poles are unsurpassed. Well equipped concentrating yards, strategically located for quick delivery permit the stocking of all sizes and lengths of poles. The timber is held for a sufficient length of time to be properly air seasoned. They insure the prompt and efficient handling of all orders, including such work as framing, staining or shaving poles to any specifications.

These yards are located at the following points:

Northern White Cedar	Western Red Cedar
Chicago, Ill.	Chicago, Ill.
Gladstone, Mich.	Priest River, Idaho
Minneapolis, Minn.	Sandpoint, Idaho
Minnesota Transfer, Minn.	Minneapolis, Minn.
Appleton, Wis.	Minnesota Transfer, Minn.
	Gladstone, Mich.

Northern White Cedar Poles are stocky, tapering approximately one inch to every five feet in length, are light in weight and have the necessary strength, durability and neat appearance. The soft texture of the wood insures the limeman's safety when using climbers.

General Specifications

There are numerous specifications by which Cedar Poles are graded. For general telephone construction, poles graded by the Northern White Cedar Association, American Standards Association or the National Electric Light Association (A.T.&T.) are usually supplied.

The A.S.A. specifications are rapidly becoming the standard for class poles, gradually replacing the N.E.L.A. specifications which are practically the same except for slight variations in measurements. N.W.C.A. specification poles are graded only by the top circumference and are referred to by the diameter of the top.

Pole Preservation

The average life of poles will vary considerably for different classes of timber and various soil conditions. In general, service tests have proven the average life of a Northern White or Western Red Cedar Pole, butt treated to be from twenty-five to thirty-five years. Decay or butt-rot, modern science has proven, is a form of decomposition due to lower plant life or fungi. Cedar poles have a natural resistance to the growth of fungi and require preservative butt-treatment only in the section extending a short distance above and below the ground line. For this reason, cedar poles are usually given a preservative treatment by the open tank method to secure extra protection of the butts, particularly in the region of the ground line. The sapwood above the ground line of sound poles has seldom been known to decay prematurely.

Both Northern White and Western Red Cedar timber have a very thin layer of sapwood averaging $\frac{1}{2}$ -inch thick, over the heartwood. The heartwood contains natural, decay resistant oils, which accounts for the very long life of cedar. The sapwood of cedar is readily impregnated with creosote oil, but it is impossible to secure penetration of the heartwood.

Treatment of Cedar Poles**The $\frac{1}{2}$ -inch Guaranteed Penetration Specification**

Under these specifications a half-inch penetration is guaranteed, where the sapwood is $\frac{1}{2}$ -inch thick. This is accomplished in the following manner: All inner bark is removed from the ground line area of the pole. It is then conveyed to an incising machine where incisions $\frac{1}{2}$ -inch deep are made, properly spaced to insure a uniform depth of penetration of the preservative throughout the incised area. This area is one foot above and two feet below the standard ground line — where the preservative is most needed. The pole is then immersed in hot creosote oil to the proper depth for a period of not less than eight hours, or longer if necessary to insure the proper impregnation of the sapwood.

Coal tar creosote is the most efficient wood preservative, and only No. 1 American Wood-Preservers' Association specification creosote is used. This creosote, heated to a temperature 212 degrees to 230 degrees Fahrenheit, by steam pipe coils is kept at the proper temperature by means of accurate instruments which record the temperatures maintained during the period of treatment.

B Specifications

Specify that the poles be immersed in hot oil for a period of not less than four hours. Then, the hot oil is quickly withdrawn and cold oil applied for a period of not less than two hours. While the "B" Treatment is superior to the "AA" specifications, experience has shown that a uniform penetration of the sapwood cannot be consistently secured so as to produce the largest possible absorption of the preservative. To overcome this, the incising process described above has been perfected.

AA Specifications

The "AA" Specification calls for the poles to be immersed in hot creosote oil to the proper depth for a minimum of fifteen minutes. While this treatment will materially prolong the life of the pole it is purely superficial and no appreciable or uniform penetration of the preservative can be secured.

CEDAR POLES

American Standards Association Specifications for Northern White Cedar Poles O5B1—1931

O. Introduction

These specifications cover Northern White Cedar Poles. The poles are to be classified in accordance with the American Standard Dimensions of Northern White Cedar Poles (05b2—1931), which is a part of these specifications.

The length and class of the poles wanted shall be stated in the orders.

Poles furnished under these specifications may be either seasoned or unseasoned. If seasoned poles are specifically called for in an order, the purchaser shall specify the seasoning requirements to be met.

The details of any marking, including length and class marks, to be placed on the poles shall be in accordance with instructions from the purchaser.

Complete detailed instructions shall be given the supplier in all cases where modifications are to be made in these specifications to meet special requirements.

1. Material Requirements

1.1 Species

All poles shall be of northern white cedar (*Thuja occidentalis*) cut from live timber in the territory adjacent to the Great Lakes.

1.2 Prohibited Defects

All poles shall be free from sap rot, cracks, bird holes, plugged holes, injurious checks; and from splits, shakes, hollow and decay in the tops. Nails, spikes, and other metal shall not be present in the poles unless specifically authorized by the purchaser.

1.3 Limited Defects

1.31 DEAD STREAKS.—All poles shall be free from dead streaks that are wider than one-fourth ($\frac{1}{4}$) of the circumference of the pole at the point of measurement.

1.32 DECAY.—Poles shall be free from decay and from visible evidence of the presence of wood-rotting fungi except as permitted under Defective Butts.

1.33 DEFECTIVE BUTTS.—Decay in the butt within two (2) inches of the surface of the pole shall not exceed one (1) square inch in area. The total area of decay, including hollow heart, in the butt shall not exceed ten (10) per cent of the total butt area.

The restriction with respect to decay within two (2) inches of the surface of the pole shall not apply to poles which are to be butt treated.

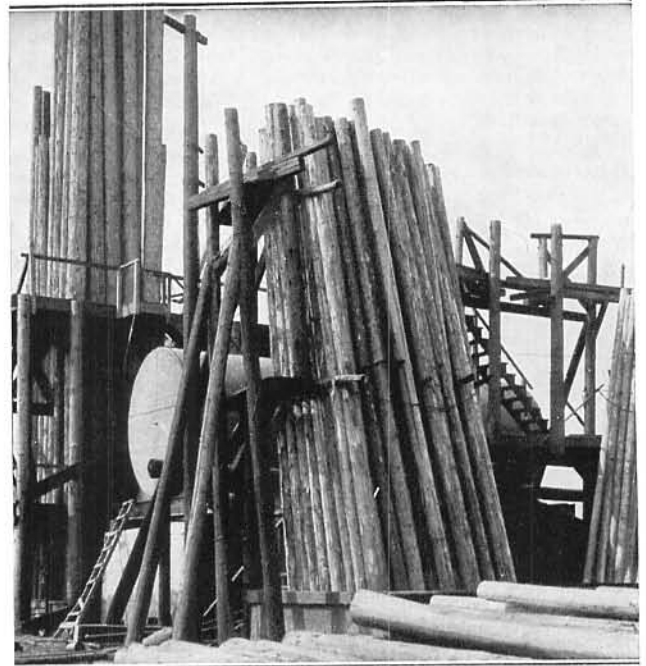
Complete circular shakes in the butt may be present provided the area encircled by the shake does not exceed fifteen (15) per cent of the total butt area.

1.34 GRAIN.—No pole shall have more than one (1) complete twist of grain in any twenty (20) feet of length.

1.35 INSECT DAMAGE.—Insect injury consisting of scoring or channeling in the surface of the pole by insects or their larvae feeding in the cambium and other sapwood and the holes and shallow galleries associated with the metamorphosis of the common flatheaded borer are permitted. All other forms of insect damage are prohibited.

1.36 KNOTS.—All poles shall be free from unsound knots.

The diameter of any single knot or knot cavity, or the sum of the diameters of all knots and knot cavities in any one (1) foot section, between the top and two (2) feet below the ground line, shall not exceed the limits set up in the following table. Knots and knot cavities one-half ($\frac{1}{2}$) of an inch or under in diameter shall be ignored in applying the limitations for sum of diameters.



Butt Treatment by the "Open Tank" Method

Limitations of Knot Size

Length of Pole	Maximum Sizes Permitted, Inches	
	Diameter of any Single Knot or Knot Cavity	Sum of Diameters of All Knots and Knot Cavities in any One (1) Foot Section
35' and under	2.5	9
40' and over	4.5	11

1.37 SCARS.—No part of a scar shall appear on the upper one-fourth ($\frac{1}{4}$) of the length of a pole or within two (2) feet of the ground line.

Sound scars and cat faces are permitted elsewhere provided the width of the scar or cat face at its widest point is not more than one-fifth the circumference of the pole at that point, nor more than five inches.

1.38 SHAPE.—Poles shall be free from short crooks.

A pole may have sweep in the section above the ground line subject to the following limitations: (See diagrams page 149.)

(a) Where sweep is in one (1) plane and one (1) direction only, a straight line joining the surface of the pole at the ground line and the edge of the pole at the top shall not be distant from the surface of the pole at any point by an amount greater than one in. for each four feet of length between these points.

(b) Where sweep is in one (1) plane and two (2) directions (reverse sweep), a line joining the mid-point at the ground line and the mid-point at the top shall not at any intermediate point pass through the external surface of the pole.

(c) Where sweep is in two (2) planes (double

CEDAR POLES

American Standards Association
Specifications for Northern White Cedar Poles

Continued

sweep), the sum of the sweeps in the two (2) planes (each sweep being measured as shown on Diagram 1 of the subsidiary drawing) shall not be greater than the allowance for sweep in one (1) plane and one (1) direction for a pole of the same length. See diagram on page 149.

A pole may have offset in the section below ground line, provided that the projection of a straight line joining the mid-point at the top and the mid-point at the ground line does not fall outside the butt surface.

2. Dimensions

2.1 Length

Poles under fifty (50) feet in length shall not be over three (3) inches shorter or six (6) inches longer than nominal length. Poles fifty (50) feet or over in length shall not be over six (6) inches shorter or twelve (12) inches longer than nominal length.

The length shall be measured between the extreme ends of the pole.

2.2 Circumference

Poles shall be classified in accordance with the American Standard Dimensions of Northern White Cedar Poles. This standard gives the minimum allowable circumference at six (6) feet from the butt (except for Classes 8, 9, and 10), and at the top for each length and class of pole listed, but does not preclude the acceptance of poles having greater circumferences at these points of measurement than those shown. The top dimensional requirement shall apply at a point corresponding to the minimum length permitted for the pole.

3. Manufacturing Requirements

3.1 Bark Removal

Outer bark shall be completely removed from all poles.

3.2 Sawing

All poles shall be neatly sawed at the butt and top along a plane which shall not be out of square with the axis of the pole by more than two (2) inches per foot of diameter of the sawed surface. Beveling at the edge of the sawed butt surface not more than one-twelfth ($\frac{1}{12}$) of the butt diameter in width, or an equivalent area unsymmetrically located, is permitted.

3.3 Shaving

Shaved poles shall not be furnished under these specifications unless specifically called for by the purchaser.

3.4 Trimming

Branch stubs, partially overgrown knots, and completely overgrown knots rising more than one (1) inch above the pole surface shall be trimmed close. Completely overgrown knots less than one (1) inch high need not be trimmed.

4. Definitions of Terms

The following definitions shall apply in these specifications:

4.1 Fungous Defects

4.11 DECAY.*—Decay is disintegration of wood substance due to the action of wood-destroying fungi. *Rot* and *Dote* mean the same as *Decay*.

*NOTE—The terms "sound" and "unsound" are used in these specifications to imply that "sound" fiber is unaffected by decay and that "unsound" fiber is or has been affected by decay.

4.12 HOLLOW HEART.—Hollow heart is a cavity in the heart of the pole resulting from decay.

4.2 Insect Defects

4.21 INSECT DAMAGE.—Insect damage is the result of boring in the poles by insects or their larvae. Scoring or channeling of the pole surface is not classed as insect damage.**

4.3 Timber Defects

4.31 CHECKS.—Checks are lengthwise separations of the wood in a generally radial direction.

4.32 CRACKS.—Cracks are breaks or fractures across the grain of the wood.

4.33 DEAD STREAK.†—A dead streak is any portion of the sapwood in which the life process had ended prior to the cutting of the tree.

4.34 SCARS.—Scars or cat faces are depressions in the surface of the pole, generally elliptical in shape, resulting from wounds where healing has not re-established the normal cross section of the pole.

4.35 SHAKES.—Shakes are separations of the wood, generally parallel with the annual rings.

4.36 SPLITS.—Splits are separations between the fibres of the wood extending from surface to surface through the pole.

4.4 Shape

4.41 SHORT CROOK.—A short crook is a localized deviation from straightness which, within any section of five (5) feet or less in length, is more than one-half ($\frac{1}{2}$) the mean diameter of the crooked section. (See Diagram 3 of the subsidiary drawing entitled "Measurement of Sweep and Short Crook in Poles."). See page No. 149.

4.42 SWEEP.—Sweep is the deviation of a pole from straightness. (See Diagrams 1 and 2 of the subsidiary drawing entitled "Measurement of Sweep and Short Crook in Poles.") See page No. 149.

4.5 Miscellaneous

4.51 KNOT DIAMETER.—The diameter of a knot is its diameter on the surface of the pole measured in a direction at right angle to the lengthwise axis of the pole.

4.52 LIVE TIMBER.—Live timber is that cut from a tree which was standing and living at the time of cutting.

5. Subsidiary Drawing

The following drawing is subsidiary to the text of these specifications:

Measurement of Sweep and Short Crook in Poles. See page No. 149.

6. Subsidiary Standard

The following standard is subsidiary to the text of these specifications:

American Standard Dimensions of Northern White Cedar Poles (05b2—1931).

**NOTE—The flatheaded borers that work occasionally in this species of timber make a short curved gallery about three-quarters ($\frac{3}{4}$) of an inch long in the sapwood where the larva (grub) stage of the insect changes to the adult (beetle) form. The holes connecting these galleries with the outside are elliptical in shape with their long axes at right angles to the long axis of the pole.

†NOTE—A dead streak starts from the butt and differs therein from a wound, such as a cat face or scar, where the growth of new wood shows that life processes are still acting to repair the injured part.

CEDAR POLES

Orders

All orders should clearly specify the size of poles desired and the specifications under which they are to be inspected. In order to keep the shipping cost of each pole at a minimum, it is advisable to order a sufficient quantity of poles to make a carload shipment. If it is impossible to do this, Northern White Cedar cross arms can be included to provide the proper weight for the best rates. Upon arrival of the car at destination, the freight is to be paid by the customer direct to the railroad company. Freight charges may be deducted from gross amount of invoice. Shortage claims should be reported to the Kellogg Company within ten days from

receipt of shipment and supported with original freight bill with agent's notation as to shortage.

Carload Weights

For the purpose of figuring the number of Northern Cedar Poles required for the minimum carload to points west of the Illinois-Indiana State line, a minimum of 36,000 pounds should be used; to points east of the Illinois-Indiana State line 43,000 pounds should be used.

In Western Cedar, the minimum carload weight for poles 40 feet and shorter is 50,000 pounds; for poles from 45 to 50 feet long, 62,500 pounds and for poles 55 feet long and longer, 82,500 pounds.

Shipping Weights — N.W.C.A. Northern White Cedar Poles

Weight Per Pole in Pounds

Length	Top Diam. 4 in.	Top Diam. 4½ in.	Top Diam. 5 in.	Top Diam. 5½ in.	Top Diam. 6 in.	Top Diam. 6½ in.	Top Diam. 7 in.	Top Diam. 8 in.	Top Diam. 9 in.
16 ft.	85	....	105	....	135	....	165	200	300
18 ft.	95	....	125	....	155	....	200	325	425
20 ft.	100	100	130	130	190	....	250	350	450
25 ft.	150	....	200	200	250	250	350	450	....
30 ft.	....	....	275	275	350	350	450	600	....
35 ft.	....	....	375	375	450	450	600	850	....
40 ft.	....	....	....	....	625	625	850	1100	....

Shipping Weights — A.S.A. Northern White Cedar Poles

Weight Per Pole in Pounds

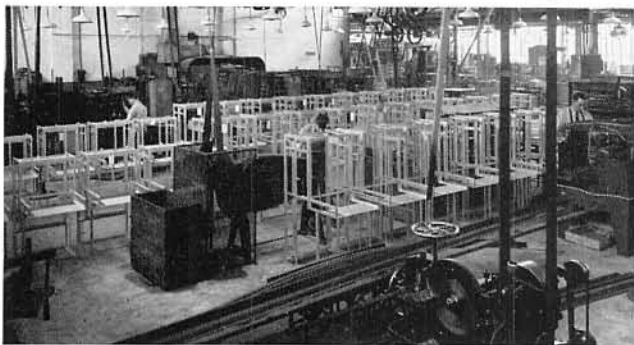
Length	Class 10	Class 9	Class 8	Class 7	Class 6	Class 5	Class 4	Class 3	Class 2	Class 1
16 ft.	85	105	135	135	190	230	...	...	...	...
18 ft.	95	125	155	155	210	300	300	420	...	...
20 ft.	100	130	190	190	230	300	350	540	600	720
22 ft.	150	200	225	225	315	420	500	540	780	1020
25 ft.	150	200	250	250	300	420	515	600	780	1020
30 ft.	...	275	350	350	420	520	630	870	1170	1320
35 ft.	...	...	...	450	510	720	820	1060	1320	1620
40 ft.	...	...	...	...	625	790	1020	1280	1675	2040

A.S.A. Dimensions of Northern White Cedar Poles

Class		1	2	3	4	5	6	7	8	9	10
Minimum Top Circumference (Inches)	Ground Line Dist. from Butt (Feet)	27	25	23	21	19	17	15	18	15	12
		Minimum Circumference at Six Feet from Butt Inches									
16	3½	...	...	...	...	26.0	24.0	22.0	No Butt	...	...
18	3½	...	...	32.5	30.0	28.0	25.5	23.5	...	...	...
20	4	39.5	37.0	34.0	31.5	29.0	27.0	25.0	Require-	...	...
22	4	41.0	38.5	36.0	33.0	30.5	28.0	26.0	ment	...	...
25	5	43.5	41.0	38.0	35.5	32.5	30.0	28.0	...	No Butt	...
30	5½	47.5	44.5	41.5	38.5	35.5	32.0	30.5	...	...	...
35	6	50.5	47.5	44.0	41.0	38.0	35.0	32.5	...	Require-	...
40	6	53.5	50.0	46.5	43.5	40.0	37.0	...	...	ment	...
45	6½	56.0	52.5	49.0	45.5	42.0	...	...	...	...	No
50	7	58.5	55.0	51.5	47.5	44.0	...	...	...	...	Butt
55	7½	61.0	57.5	53.5	49.5	46.0	...	...	...	...	Require-
60	8	63.5	59.5	55.5	51.5	...	...	...	...	...	ment

*The standard height of butt treatment is to a point one foot above the groundline.

KELLOGG PRODUCTS IN THE MAKING



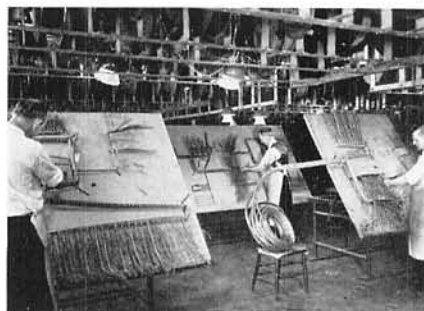
All Kellogg Masterbuilt and Relaymatic Switchboards are built upon rigid steel frame foundations like those being assembled here in the fabricating and welding department.



From the iron framework and cabinet shops, these Masterbuilt Switchboards enter the assembly department. Relay-matics are constructed at the right.



These switchboards are undergoing one of the many stages of routine testing during the process of assembly.



Forming cable for switchboards is an exacting hand job, done on a large scale, by thoroughly experienced workmen.



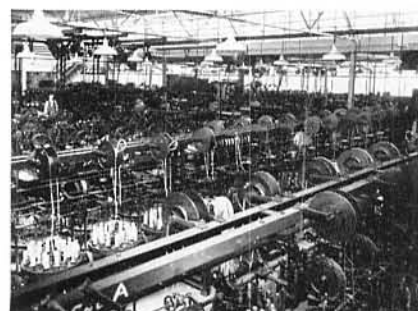
Wiring switchboards, after installing cable and hanging relay gates is a specialty which Kellogg workmen take great pride in doing well.



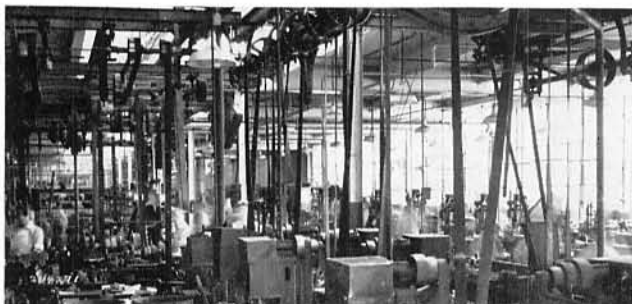
Relay mounting, spring adjusting and relay testing are done in this sub-assembly department. In the background are final finishing operations of switchboard plugs.



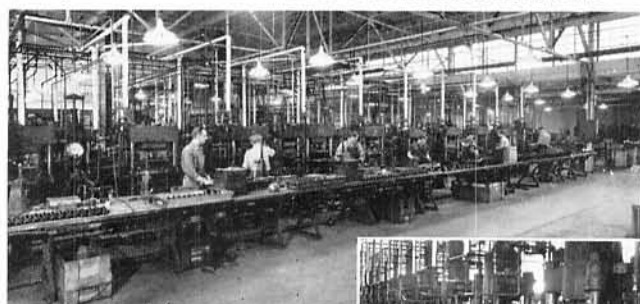
Partial view of Kellogg giant punch-press department where various size presses are lined up in batteries. Behind these machines in the center is the heat treating department.



This view gives some idea of the gigantic size, enormous facilities and modern machines of the Kellogg cord department, all contributing to the most economical production.



Here, in this highly interesting and important tool room, are made the tools, dies and jigs — many intricate and expensive — used in modern telephone manufacture. Many machines are specially constructed; all built for precision work.



Kellogg was first to use Bakelite in the manufacture of telephone equipment. Here are some of Kellogg's many Bakelite presses.

