

# ***KELLOGG***



## ***THE KELLOGG TYPE 1000 MASTERPHONE***

By Roger Conklin

Photographs by Paul McFadden

An article on the history of the type 1000 Masterphone, the “Redbar”, originally published in the June 2004 edition of *Singing Wires* the newsletter of the Telephone Collectors International Inc., a historical society.



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*by Roger Conklin*

Kellogg Switchboard & Supply Company was founded by Milo G. Kellogg in 1897. He started in telephony in 1872 as an engineer with Gray & Barton, a company that soon changed its name to Western Electric, where he had been promoted to manufacturing superintendent by the time he left to start his own company. A prolific inventor, he already had some 150 patents to his name when he established Kellogg.

The Type 1000 Masterphone, known by telephone collectors today as the Kellogg Redbar, went into production in 1947, the 50<sup>th</sup> anniversary year of this family-owned company, while Jim Kellogg, Milo's grandson, was president. Four years later, Kellogg's controlling interest was purchased by International Telephone & Telegraph (ITT). A series of name changes – ITT Kellogg and then ITT Telecommunications, followed.

The Redbar is easily recognized by its bright red hook switch actuator plunger. It is similar in size, weight and general shape to Western Electric's 302, Stromberg Carlson's 1243 and Automatic Electric's 40 type telephones, all of which were introduced earlier and were Redbar contemporaries. Its molded black bakelite housing has smooth contours and a slightly puffed-up appearance. But inside, the Type 1000 is very different from the others. Rather than the mass of tangled wires connecting the various components together in other telephones, there is instead a one-piece molded interconnecting block that includes the hook switch. The condenser and induction coil are fully encapsulated and equipped with plugs that are inserted into sockets just like tubes in the radios of that era. The sockets and screw terminals are interconnected by a grid of tinned brass bars soldered in place on the underside of the block. The 3 conductor spade-tipped handset cord connects to screw terminals on the left side of the connecting block and the 3-conductor line cord to terminals on the right side. Screw terminals are clearly marked with their function. There is no confusion, such as exists with other kinds of phones from that era, about which wire



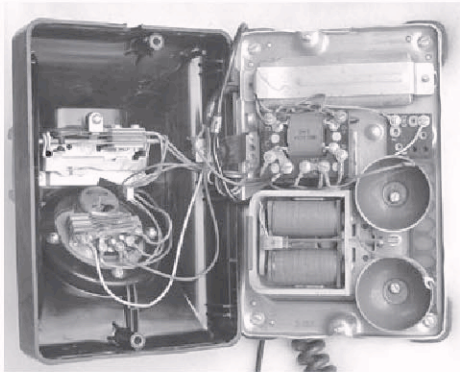
*Kellogg Type 1000  
Masterphone "Redbar"*

*Photos by  
Paul McFadden*

goes where if cords or internal components are disconnected and replaced. Installation and repair was a cinch.

The Type 1000 Masterphone was supplied either with a dial for automatic service or with a dial blank for manual service. Conversion from manual to dial was accomplished by simply removing the dial blank, replacing it with a dial and connecting it to the interconnecting base by means of a 4-pin plug on one end of a dial cord attached to the dial terminals.

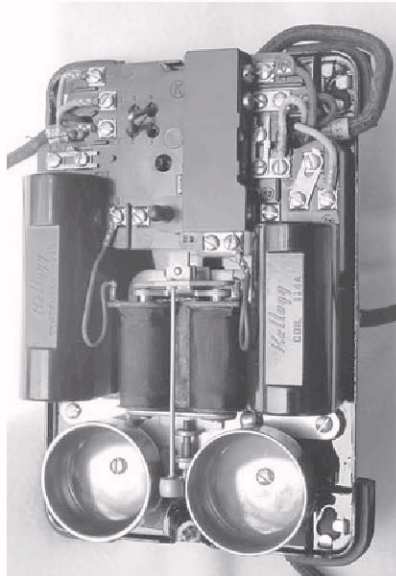
According to Ralph Meyer's "Old Time Telephones" <sup>(1)</sup> the anti-side tone transmission characteristics of the 1000 Masterphone are very similar to Western Electric's 302. Side tone is the sound that is produced in his own receiver when a person talks into his transmitter. Anti-side tone circuits make more efficient use of sound energy by minimizing the sound in the talking-person's receiver and maximizing the sound transmitted to and heard by the person on the other end of the line. "Side tone" results from other persons in the same room talking, or other background noise being transmitted through the transmitter and back into the talker's ear, making it difficult to hear the person on the other end of the line. Especially with earlier non-anti side tone phones, it is often necessary to cover your telephone transmitter with your hand while listening, to suppress the background noise in order to be able to hear the person on the other end of the line. (Covering your other ear with your hand doesn't help at all.) Background noise is much more tolerable with anti-side tone telephones. With the 1000 Masterphone, Kellogg was the first to introduce a manual screw driver adjustment which the telephone installer can use to fine tune the transmitter current to more closely match the line to which



*Compare the neatness of the Redbar interior on the right with the wire mess inside the WE 302.*

it is connected, so as to further minimize side tone. This was a predecessor to the circuit later developed by Bell Labs and first utilized in Western Electric's 500 set which, calibrated by the current level from the central office -48 volt power, performed a similar adjustment automatically.

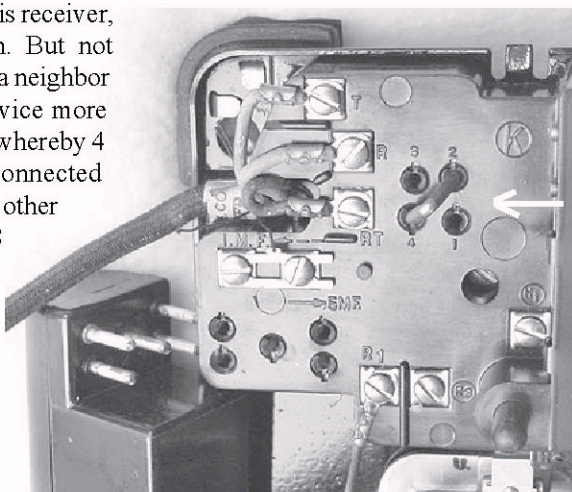
Independent Telephone companies, Kellogg's primary customers, generally provided telephone service in smaller cities and lower density rural areas where party lines predominated. Back in the days when rural telephone lines were open-wire on crossarms and poles, party lines made telephone service economically viable where single party service would have been otherwise totally unaffordable. Today's telephone systems in North America generally use 90 volt 20 cycle (20Hz) AC voltage to ring telephones. (In some foreign countries where the standard commercial power line voltage is 50 Hz, rather than 60 Hz, 25 Hz voltage is more common.) Early in the history of telephony the harmonic ringing system, invented in New England T&T, and later perfected by Kellogg, used 4 different ringing frequencies: 16 2/3, 33 1/3, 50 and 66 2/3 cycles (Hz), with telephone ringers mechanically and electrically tuned to ring on only 1 of these frequencies. This greatly improved party line service by allowing subscribers on lines with up to 4 parties to be rung individually and selectively, without disturbing the other parties on the same line. Of course if a different party took down his receiver, he could still hear the conversation. But not having to hear one's phone ring when a neighbor was being called made party line service more tolerable. By using grounded ringing whereby 4 different-frequency ringers were connected between line 1 (tip) and ground and the other 4 between line 2 (ring) and ground, 8 party full-selective ringing was available. Soon a 5<sup>th</sup> frequency, 25 Hz, was added permitting 10 party full-selective ringing. And by using 1 and two ring codes, 20 party semi-selective ringing could be provided economically in sparsely-populated rural areas.



Within a few years all manufacturers of telephones were offering harmonic ringers. Two additional sets of ringing frequencies were subsequently made available. These were Synchronomic (30, 42, 54, 66 & 16 Hz) and Decimonic (20, 60, 30, 40 & 50 Hz). The Synchronomic frequencies eliminated the tendency for higher frequency ringers that were multiples of a lower frequency to ring slightly when they weren't supposed to, and the Decimonic frequencies allowed for the generation of ringing frequencies with more stable and less expensive static ringing machines that converted 60 Hz commercial power to the desired Decimonic frequencies. The Decimonic series was introduced to the industry by Kellogg with the 1000 Masterphone. It was a joint development with Lorain Products Corporation of its K-5 Decimonic Sub-Cycle ringing converter as a replacement for the earlier high maintenance pole

changer vibrator-type ringing machines that converted -24 and -48 volts DC to AC for ringing, formerly used in all but the very largest exchanges that could justify much higher cost motor generator Harmonic and Synchronomic ringing generators. Decimonic rapidly became the new standard of the Independents when their remaining magneto exchanges were converted to dial.

The 1000 Masterphone was available with biased (straight line) ringers as well as Harmonic, Synchronomic and Decimonic ringers. Kellogg's designations were HA 1-5 for Harmonic ringers, HB1-5 for Synchronomic ringers and HC 1-5 for Decimonic ringers. Many of the surviving Redbars were factory-equipped with frequency selective ringers which simply will not ring on today's telephone systems, unless it happens to be a 20 Hz ringer from the Decimonic series. Kellogg biased ringers are designated BA, BB or BC, depending on whether they are high, medium or low impedance. Biased ringers will ring satisfactorily over a wide frequency range as well as on today's 20 Hz ringing voltage. (Kellogg also manufactured 1000 Masterphone type frequency selective ringers arranged to mount in Western Electric type 300 sets for Bell companies that had purchased Independent exchanges equipped with frequency-selective ringing.)



The 1000 Masterphone is equipped with its type 46-C handset which employs

*Neat and Orderly Redbar interior. For Manual to Dial Conversion: Remove the metal clip between #2 & #4 (arrow) and plug in the 4-prong dial plug. Condenser (left) and Induction coil are also plugged in. The button in the lower right hand corner is in contact with the "Redbar" plunger and activates the switch.*

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snap-in non-positional transmitter and receiver capsules. In 1932 George R. Eaton, a Kellogg engineer, applied for and was subsequently issued patent 2,014,427 for the non-positional transmitter. The non-positional transmitter will transmit efficiently when held in any position. Prior to that, earlier transmitters had to be rigidly attached to a wall or candlestick telephone and maintained in a close-to-vertical position. If not, with fewer carbon granules in contact with the transmitter electrodes the transmitted voice level could drop substantially if the transmitter was held in other than a vertical position. It was this patent that made the handset type of telephone, which is likely to be held in many different positions, practical in the U.S. Handset telephone using earlier type transmitters were widely made and used in Europe, but were rarely found in the U. S. Prior to Eaton's invention, the Bell System opposed handset telephones because its extensive long distance network with many very long lines in the United States required much better quality transmitters than were necessary in the much smaller countries of Europe where toll lines tended to be much shorter. Almost all of the U S manufacturers soon executed patent royalty agreements with Kellogg to manufacture their own non-positional transmitters. This led to a rapid migration to handsets by all U. S. manufacturers and most telephone companies.

The Kellogg type 1000 telephone was normally equipped with its own unique type 10-D (numerals only), 10-G (numerals and letters) or 10-DO (numerals plus "operator" with digit zero) dials. Kellogg would, on request, also supply other makes of dials, so occasionally collectors may find Redbars with AE or WE dials. In 1952 Kellogg discontinued the 10-series dial and changed to its new 15 series dial, which was identical to the Automatic Electric 24A36 dial, to satisfy those customers who preferred an AE-type dial. A Type 11 dial, similar in appearance to the Type 10 dial but sending pulses by closing contacts, rather than opening them, was used on 1000 Masterphones for the Kellogg Select-O-Phone private dial intercom system. The look-alike type 11 dial is not compatible with nor will it function with a normal telephone system. The Select-O-Phone Redbars were usually brown, rather than black, and had a pushbutton for ringing the called station after dialing.

It is easy to determine by looking at the code number stamped on the bottom of the 1000 Masterphone exactly how it was configured when it left the factory. For example a D1000HC4 was equipped with a 10-D dial, and a 40-cycle Decimonic ringer. A 1000BAK had a dial blank, a high impedance biased ringer and a Kellogg "Koiled Kord" retractile neoprene jacketed cord. A 1000LR was a manual set supplied less ringer for the telephone company to configure it with the specific type of ringer required at the time of installation. Telephone sets with a manually-operated "press to talk" switch were also available so party line subscribers could listen to confirm that the line was not busy before pressing the switch to close the transmitter circuit to obtain dial tone and be able to talk. Models were also available for manual magneto local-battery service. An aluminum-housing model was also made in small quantities for specific companies that preferred a telephone which would withstand more abusive treatment than bakelite. The 1100 series wall telephones employed the same identical base. Only the bakelite housing was different.

In 1954, just 7 years after the introduction of the 1000 Masterphone, Kellogg introduced its K-500 equivalent to the Western Electric 500 telephone. During this brief period several million 1000 Masterphones were sold to both large and small Independent Telephone Companies.

**(Footnotes)**

<sup>(1)</sup>*Old Time Telephones, Ralph O. Meyer, Tab Books, New York 1995, p 176*