Telephony 101 – Examples of the Booster Circuit February 9, 2013

Hello All,

As always, please send any questions about the reading assignment directly to me at oldtimetelephones@goeaston.net. I will bundle questions if necessary, repeat the questions, and give answers in an e-mail to the TCI List Server before moving on to the next reading assignment. This way everyone will benefit from these questions and answers. By sending questions directly to me, we will avoid unnecessary clutter on the List Server. Previous reading assignments, notes, questions, and answers are available in the TCI Library at http://www.telephonecollectors.info/telephony-101/.

Please start at the bottom of page 116 and read through page 121.

If you noticed it, you have already seen in Fig. 16-4 the big trick with the booster circuit; that is, using a single 1-microfarad condenser for both the voice circuit and the ringing circuit. Rolled foil-and-paper condensers were very large when this circuit was first used (see Fig. 22-1 on page 201) and you didn't want to use two of them.

The simplest application of the booster circuit was in a non-dial candlestick, and this wiring diagram is shown in Fig. 16-8. Notice that the hook switch is functionally the same as that in the magneto wall phones because this candlestick was used for both LB and CB applications.

Changing the wiring to reduce the annoying sidetone, which is inherent in the booster circuit, results in a completely different circuit. This wiring is shown in Fig. 16-9, and its operation is described adequately in the book (IMHO).

The big new feature with common-battery applications was the introduction of the dial. The hook switch arrangement is the same, but addition of the dial's switches is a little complicated – though not difficult. Further, the world was becoming modern when telephone dials were introduced and radios were rather common. Dials made a nice popping sound in these old broad-band AM radios, so a little radio-frequency filter was put in the base of candlesticks and desk stands when needed. The operation and hook-up of these filters is described on page 119.

When handsets were introduced, a design objective was to limit the number of conductors in the handset cord to three. Otherwise, handset cords would be bulky and stiff. Surprisingly, this required a dial that was quite different than the dial on a candlestick, where the transmitter and receiver did not share a common conductor as in the handsets.

Then another problem popped up when handsets were used with the booster circuit. Transmitters would stop working well, and you had to hit them to loosen the carbon granules and get them working again. This "cohering" problem did not occur with candlestick desk stands, and later it would not recur with the anti-sidetone circuits. All of this is explained on page 120.

Kellogg and Automatic Electric used different switches and dials with their booster circuit. The wiring differences are quite straight forward and are described on pages 120-121. By the way, I

found another typographical error: the letter “s” was left off the word “Dials” in the caption on page 121. Please mark this correction in your book. And please let me know if you find any other errors.

If there are any questions about the current reading assignment, we will deal with the questions before moving on to the next reading assignment.

Ralph

Telephony 101 – Examples of the Booster Circuit February 12, 2013

Hello Again,

A reader commented that he had a WE candlestick that was causing him problems when dialing out until he removed the filter from the base. If you look at Fig. 16-11, you will see that a short in the filter's condenser (not unlikely) would result in bypassing the impulse switch thus making the dial inoperative. I imagine that this is the explanation.

This reader also asked why a dial-type AE 21 candlestick can be wired to work ok without a subset. It all depends on your definition of "ok." Any transmitter, receiver, and dial impulse switch can be wired in series (similar to Fig. 16-15 in the next reading assignment) and they will work. But you will get mismatched impedances, low signal strength, and a big popping noise in the receiver when you go off hook or spin the dial. Most of the gurus in TCI frown on this kind of jury-rigging.

Ralph