

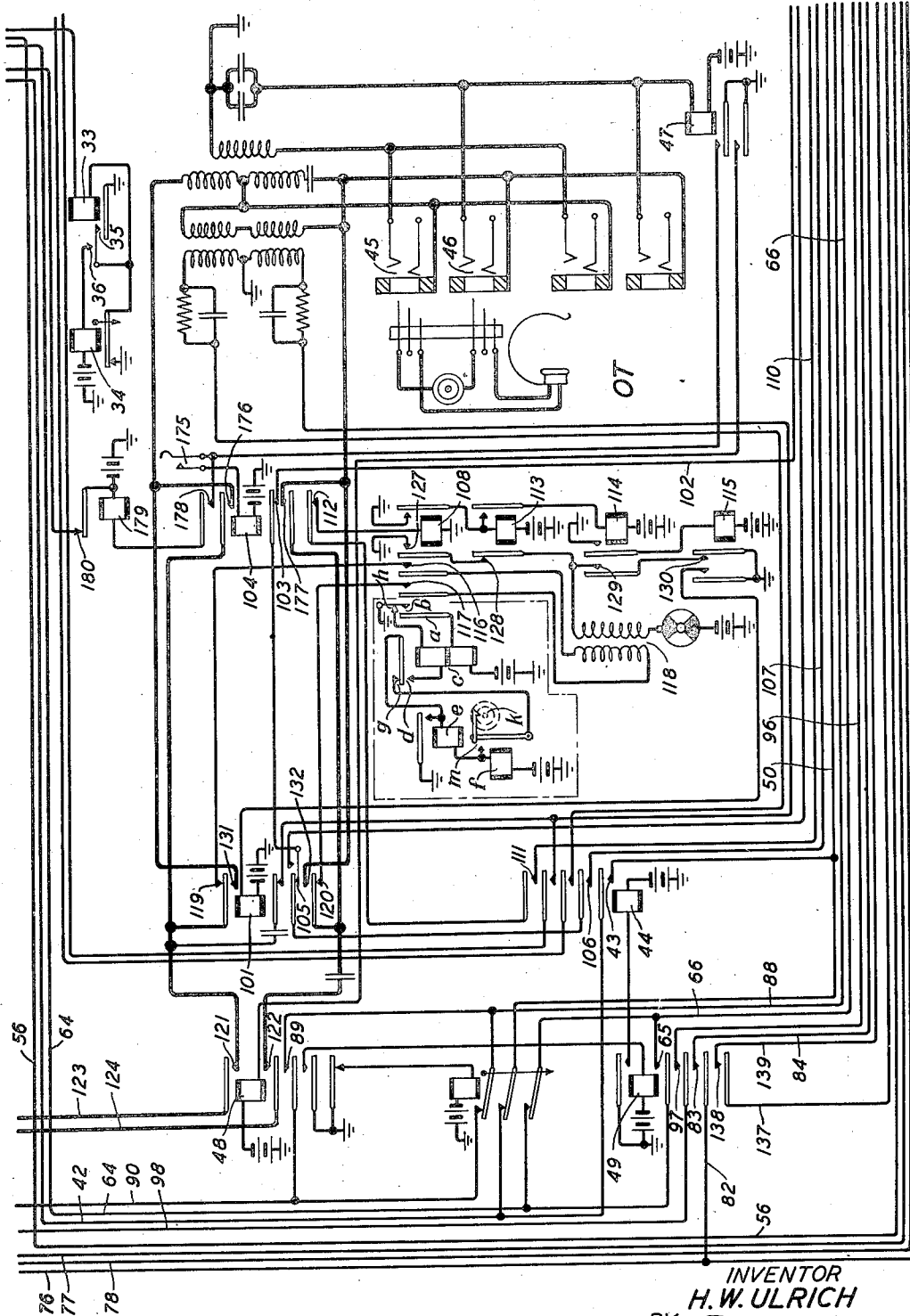
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TELEPHONE SYSTEM

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TELEPHONE SYSTEM

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2 Claims. (Cl. 179—8)

This invention relates to metering systems and more particularly to systems for determining the number of telephone connections handled by a telephone operator.

5 An object of the invention is to count the number of calls handled by a telephone operator in establishing connections between subscribers.

10 A feature of the invention whereby the above stated object is attained resides in a metering circuit including a meter and a locking relay whereby complete operation of the meter is insured.

15 The invention will be understood from the following description when read in connection with the accompanying drawing which is identical with Fig. 3 of the patent to Everett 1,757,708, issued May 6, 1930, with the exception that a peg count arrangement in accordance with this invention has been added thereto as shown within the broken line box in the center of the drawing.

20 The above noted patent describes a straightforward trunk circuit arranged for automatic listening and master or common key ringing in which the master ringing keys are connected to the trunk circuit at substantially the same time as the operator's telephone. No peg count circuit was shown or described therein, however.

25 As the present invention is particularly applicable to circuit arrangements of the character described in the Everett patent it seems expeditious to show it as applied to such a patented arrangement. It should be pointed out, however, that the application of the invention to the Everett drawing in no sense affects or interferes with the operation of the circuit as fully described in the patent mentioned and its only connection to or association with the apparatus shown on the patent drawing is by means of the outermost left-hand armature and contacts of relay 108 which armature and contacts have been added for the purpose of controlling the peg count circuit of the present invention.

30 A description of the invention will now be given. By referring to the patent, line 2, on page 1, to line 15 on page 3, it will be noted that relays 4, 12, 13, 27, 57, 71 and 108, 113, 114, 115 and 101 successively operate in response to seizure of the trunk at the distant office to cause the operator's set OT to be connected to the trunk. Further, in lines 22 to 76 on page 3 is described the successive operation of certain relays caused by actuation of one of the master ringing keys which results in disconnection of the operator's telephone from the trunk and the release of the previously operated relay 108.

35 It will be noted that relay 108 operates just before and causes the connection of the telephone set OT to the link or trunk circuit and that relay 20 in operating in response to the setting of the ringing key releases relay 57 to disconnect the operator's telephone and at the same time causes the release of relays 80, 71 and 108. Therefore, relay 108 which is operated when the telephone set is connected and released when the telephone set is disconnected has been selected to control the peg count circuit of the present invention. To accomplish this it has been merely necessary to add a fifth armature *a* at the extreme left of relay 108 and make the connections shown on the drawing which, as before mentioned, do not interfere in any way with the other functions of the relay or the remainder of the circuit.

40 The specific operation of the peg count circuit of the invention will now be described. When relay 108 operates in its normal sequence in response to insertion by the A operator of the calling end of the cord 2 in jack 3, as described and shown in the above noted patent, it closes its contact (*b*) thereby closing an obvious circuit to energize the lower winding of the double wound relay *c*. Relay *c* in operating closes its alternate contacts (*d*) thereby preparing a circuit to energize relay (*e*) and the meter magnet *f*, but this circuit is opened at the normal contacts *h* of relay *c*. The peg count mechanism is now "cocked" ready for operation when relay 108 releases in response to the operation of master ringing key mechanism.

45 When the operator depresses one of the ringing keys M, J, R or W, as shown on Fig. 4 of the above noted patent, relay 20 eventually operates, as described in lines 22 to 62 on page 3 of the patent. Relay 20 causes the successive release of relays 71 and 108 and also the release of relay 57 which disconnects the operator's telephone from the trunk or link circuit.

50 When relay 108 releases its contacts *h* close thereby completing the previously prepared circuit to operate relay *c*, and the meter magnet *f* which circuit can be traced from ground, contacts *h* of relay 108, upper winding and contacts *d* of relay *c*, winding of relay *e*, and winding of magnet *f* to battery. Release of relay 108 also opens at its contacts *b* the original energizing circuit for relay *c*. Relay *c* is, however, held operated by its upper winding in series with relay *e* and magnet *f*. Magnet *f* in operating attracts its armature and actuates the meter mechanism *k*. Relay *e* in operating closes its contacts thereby completing a short-circuit around the upper

winding of relay *c* which now releases. The operation of relay *e* also closes an obvious holding circuit for itself and magnet *f*. When relay *c* releases it closes its normal contacts *g* thereby completing a short-circuit around relay *e* which thereupon releases. This circuit can be traced from the right-hand terminal of relay *e*, contacts *g* of relay *c*, contacts *m* of the meter magnet to the left-hand terminal of relay *e*. Relay *e* now releases thereby opening its contacts and removes ground from magnet *f* which then releases thus restoring the circuit to normal.

What is claimed is:

1. In a telephone system, a first relay operated and released responsive to the performance of certain circuit operations, a double-wound relay, a meter, said double-wound relay being operated

by the energization of one winding responsive to the operation of said first relay and held operated by the energization of the other winding responsive to the release of said first relay, said meter being operated responsive to the release of said first relay while said double-wound relay is operated.

2. In a peg count circuit, a first relay, means for operating and releasing said first relay, a double-wound relay, a meter, an operating circuit for said double-wound relay closed through one winding responsive to the operation of said first relay, and a holding circuit for said double-wound relay and operating circuit for said meter closed through the other winding responsive to the release of said first relay.

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