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AUTOMATIC PEG COUNTER FOR TELEPHONE EXCHANGES.

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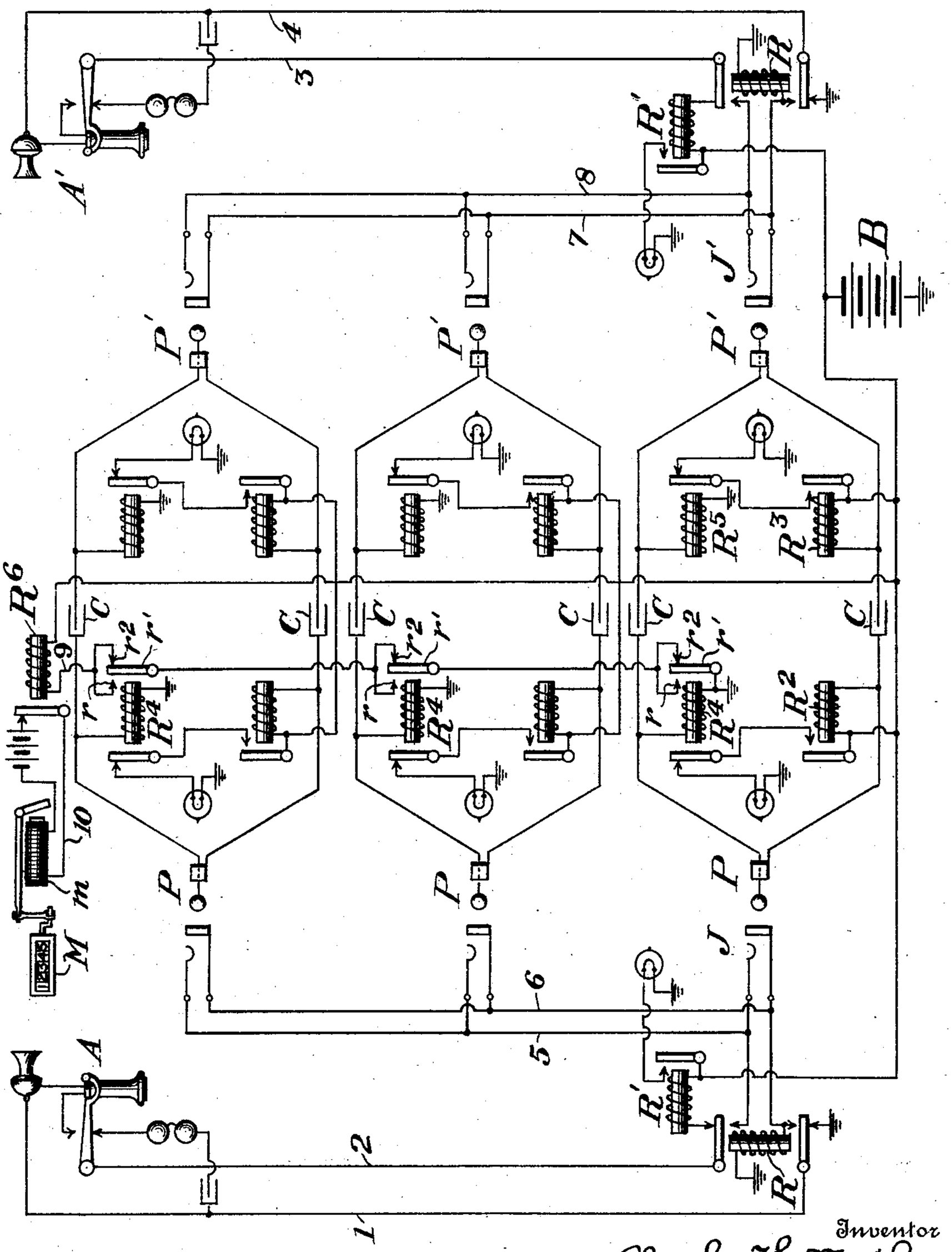

Witnesses

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AUTOMATIC PEG-COUNTER FOR TELEPHONE-EXCHANGES.

965,833. Specification of Letters Patent. **Patented July 26, 1910.**

Application filed August 11, 1909. Serial No. 512,297.

To all whom it may concern:

Be it known that I, CHARLES HOWARD NORTH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Automatic Peg-Counters for Telephone-Exchanges, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to metering devices for telephone exchange systems, and has for its object the provision of a meter common to a number of connective circuits which will register the connections through all of them.

Briefly stated, the invention comprises a set of contacts applied to each of the supervisory relays in the cord circuits of a telephone exchange, the contacts of a number of the relays, as for example those at a given position, being connected in series and to a normally energized relay having its back contact in normally open circuit with an electromagnet controlling a step-by-step Veeder meter. When any supervisory relay pulls up, it momentarily breaks and then makes these contacts, whereby the meter is set forward one step through the action of its controlling relay and magnet.

My invention is illustrated in the accompanying drawings in which the figure is a diagram showing two subscribers' lines of a well known common battery type, with several cord circuits having my invention applied thereto.

Referring to the drawings, A and A′ are the subscribers' stations connected to the central office by line wires 1—2, 3—4, normally connected through the contacts of a cut-off relay R with the line relay R′ and ground respectively. Each line relay controls the usual line lamp signal, and the cut-off relays when energized are adapted to connect the line wires with extensions 5—6, 7—8 leading to the line jacks J and J′. All this is of the usual and ordinary construction and forms no part of the present invention. Of the three cord circuits shown each has an answering and a calling plug P and P′ respectively, condensers C, lamp controlling relays R^2 and R^3, and subscribers' supervisory relays R^4 and R^5. Current supply for the lines is from the source B through the cord relays during connection, and through the line relays at all other times.

Each of the supervisory relays R^4 and R^5 has a make and break set of contacts, marked r, r', r^2, in addition to the ordinary lamp contacts. The outside springs r, r^2 are tied together and each spring r' is connected to the pair r, r^2 of the next relay in its set. I have shown the relays R^4 of the three cords with their contacts thus in series, and connected by a wire 9 to relay R^6, normally energized from the main battery so as to hold up its armature and maintain open the circuit 10 of the electromagnet m controlling the Veeder counter M.

When a subscriber calls, his relay R′ pulls up, closing the lamp circuit and calling the attention of the operator, who inserts a plug P in the jack J thereby supplying current to the cut-off relay R which deënergizes the line relay, and puts the line wires onto the extensions to the jack. Current then flows through the cord relays since the subscriber's line circuit is closed, and the tip relay R^4 becoming energized attracts its armature, which produces a momentary break in the circuit 9, due to the separation of the springs r^2, r'. This break causes the deënergization of the relay R^6, whose armature in falling back closes the local circuit 10 of the magnet m and registers the call. The spring r' in its movement immediately closes the circuit 9 after the break by making contact with the twin spring r.

The purpose of having the make and break contact in series is to permit calls in close succession to be properly registered; and the main purpose of my invention is to enable peg counts to be automatically taken without interfering with the regular operation of an exchange.

It is obvious that with the means thus described, each call answered by an operator will be accurately recorded without any special act on her part and in fact without her knowledge.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In a telephone exchange system, line circuits terminating at a central office, operators' cord circuits for interconnecting the same, and supervisory relays connected to said cord circuits and adapted to be energized by current flowing in the subscribers' lines when connected, in combination with an automatic peg counter comprising a step

by step registering device, an electromagnet controlling the same, and a controlling circuit for said magnet including series contacts on the several relays, whereby the energization of any relay when brought into connection with a calling subscriber's line, will automatically register the call.

2. In a telephone exchange system, a plurality of line circuits terminating in a central office, a plurality of cord circuits for interconnecting the same, a common source of current for supplying energy through said cords to the lines, and a plurality of supervisory relays interposed between the source and the respective cords, in combination with an automatic peg counter comprising a step by step counting device, an electromagnet controlling the same, a normally open circuit for said magnet, a normally energized relay adapted to close said circuit when energized, and a plurality of sets of make and break contacts controlled by the several supervisory relays and all connected in series with the register relay, whereby the energization of any of the supervisory relays will cause the momentary deënergization of the register relay and thereby step up the counting device one point.

3. In a common battery telephone exchange system, line circuits and cord circuits with supervisory relays, in combination with an automatic step by step counting device and series connections therefrom to the several supervisory relays.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES HOWARD NORTH.

Witnesses:

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