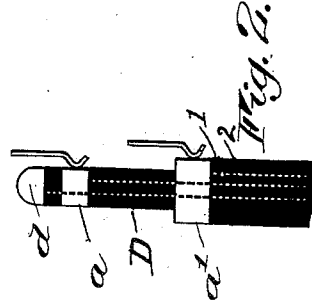
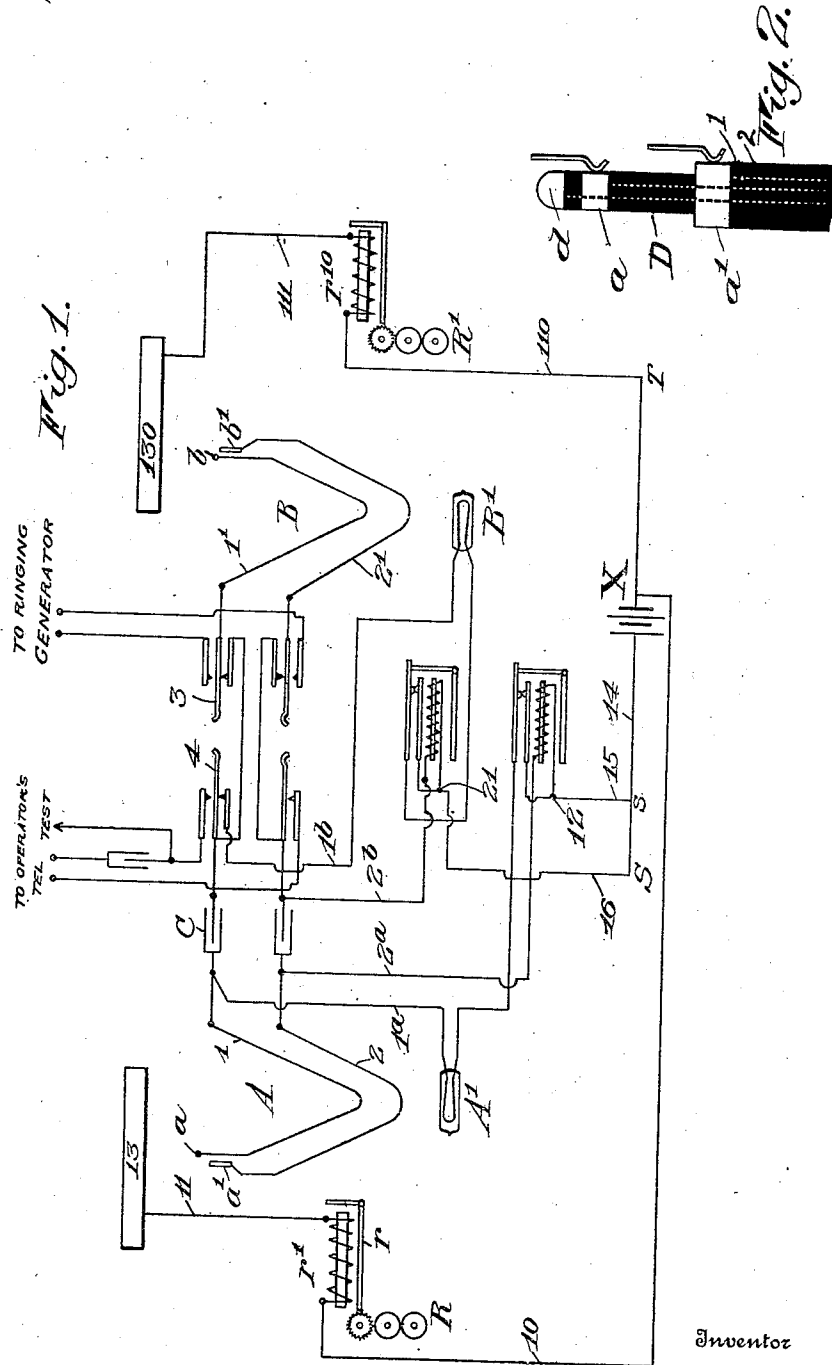


W. J. KIBBE.
 TELEPHONE CALL REGISTERING SYSTEM.
 APPLICATION FILED APR. 22, 1908.

943,081.

Patented Dec. 14, 1909.



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TELEPHONE-CALL-REGISTERING SYSTEM.

943,081.

Specification of Letters Patent. Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that I, WILLARD J. KIBBE, of Canandaigua, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Telephone-Call-Registering Systems; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of the specification, and to the reference characters marked thereon.

My present invention has for its object to provide a novel apparatus adapted to be applied to telephone switch boards to facilitate the operators at the central office or exchange in keeping a record of the number of incoming or outgoing calls or of both classes of such calls.

The invention has for its further object to provide an apparatus which is adapted to be applied to the different positions or sections of switch boards now in use, which comprises generally an electromagnetically operated registering device which is actuated by current in a circuit completed by the operator in transporting the plug of either the answering or calling cord circuit to the jack of the calling line or to the jack of the line with which it is desired to effect a connection.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a diagrammatic illustration of a central office cord circuit illustrating the arrangement in connection therewith of a registering mechanism embodying my invention, and Fig. 2 is a detail view illustrating a modification thereof.

In most telephone exchanges the traffic on the different operators' sections or positions of the switch board is ascertained by counting the number of calls received during different hours of the day. This record is usually made in pencil by the operator as each call is originated, but on account of this somewhat laborious process, many failures to register the calls occur, especially during busy hours. This is especially so if the operator becomes fatigued or confused and the delay which this marking causes, necessarily detracts from the promptness of the service.

My invention consists generally in providing each operator's position or section of the switch board with an electro-mechanically operated registering device arranged in a circuit terminating in a contact which is readily accessible to all of the cords handled by the operator, which can be energized to actuate the register by merely touching the plug at the end of the cord against said contact, as the operator raises the plug to insert it in the proper jack.

In the drawings I have shown the cord circuits of the well known central energy or common battery type of apparatus comprising the answering side A and the calling side B which terminate respectively in the tip contacts *a* and *b* and the sleeve contacts *a'* and *b'*, which it will be understood, are designed to cooperate with the line terminals in the switch board jacks. The tip contacts are connected as shown by the wires 1—1' and the sleeves are connected by the wires 2—2'. In these wires are located the usual ringing keys 3, by means of which the signaling current may be despatched to signal a desired subscriber after a connection has been established with his line over the calling cord. Similarly arranged in the wires 1 and 2 on the side of the answering cord are the keys 4 by means of which the operator may answer a signaling line. The cord circuit conductors are divided in inductively connected sections by the usual condensers C and leading from each section of one of the cord circuit conductors (at opposite sides of the condensers) are the bridges containing the supervisory signals, such as the lamps A'—B', which receive current when the calling and called instrument circuits with which the respective answering and calling jacks are connected are retained closed. The circuit of the lamp A' may be traced over the wires 1^a and 2^a respectively which are united at the point 12. Similarly the circuit of the lamp B' may be traced over the wires 1^b and 2^b leading from the wires 1' and 2' respectively, which are united at the point 21.

The cord circuit shown is one adapted particularly for use in connection with the so-called central energy type of telephone systems and in order to adapt it for use in connection with my system of registering calls, I employ in connection therewith the regular exchange battery or a local battery, one terminal of which is connected with the

electromagnetic device for operating the register, the other terminal being connected to the tip sides of the circuits of the calling and answering cords. The register which
 5 may be constructed in the usual or any preferred manner, is illustrated in the drawings by R and is operated by the armature r actuated by current in the coil of the magnet r' one end of which is joined to the bat-
 10 tery X by the wire 10, the other terminal 11 thereof being connected to a contact member, such as a plate or metallic strip 13. The latter may be mounted at any convenient position on the switch board, but in practice
 15 it is preferably placed below the rows of line jacks and above the tops of the plugs of the cord circuits as they rest in their normal position in the horizontal key board or table, as will be understood. However, the
 20 exact location of the contact member 13 is immaterial, although to carry out the idea of the invention in the best manner, it is desirable that the member should be located in such a position that it will be accessible
 25 to the operator when performing the act of raising the plug, and the position above described is a convenient one, because the operator in picking up the plugs naturally turns it so that the end thereof points to-
 30 ward the face of the switch board, so that without any unnecessary action on the part of the operator, the plugs may be touched against the contact member when being elevated to the proper line jacks. The battery
 35 current for energizing the operating magnet of the register is supplied from the battery X, one side of which is connected by the wire 14 to the branch wires 15 and 16
 40 leading respectively to the wires 1^a and 1^b and connecting therewith at the points 12 and 21 respectively.

The registering device R which is adapted to be actuated by the current transmitted to the magnet r' , when the operator
 45 places the tip a of the answering cord in engagement with the contact member 13 may likewise be actuated by touching said member with the tip b of the calling cord, if it is desired to obtain upon a single register a
 50 record of both the calls received and connections made. However, I deem it preferable to record every connection between lines made by each operator upon a separate register, such as R', and to this end a plate or
 55 member 130 may be arranged similarly to the plate 13. The register R' is operated by a magnet r^{10} connected to the plate 130 by the wire 111 and extended to one side of the battery X by the wire 110.

60 In recording a call in response to a subscriber's signal which is received by the operator when a subscriber closes his instrument circuit, either for the purpose of obtaining a connection with some other line or
 65 to make an inquiry of the operator, the latter

in raising one of the answering cords A places the tip thereof in contact with the strip or member 13 which permits a momentary impulse of current to traverse the following circuit: Battery X, wire 10, magnet
 70 r' , wire 11, plate 13, tip a , wires 1, 1^a, to the point 12 and thence by the wires 15 and 14 to battery. This impulse actuates the register R to a single impulse. If connection is then established between the calling sub-
 75 scriber and the instrument of some other desired party and such connection is to be recorded, the operator in raising the calling cord B places the tip b thereof against the
 80 contact plate or member 130, permitting current to traverse the following circuit: Battery X, wire 110, magnet r^{10} , wire 111, plate 130, tip b , wires 1', 1^b, to the point 21, and thence by the wires 16 and 14 to battery. The impulse of current thus transmitted
 85 actuates the register R' and records the connection which has been established.

It is obvious that if for any reason the use of one side of the cord circuits as a means of
 90 completing the circuit of the register is objectionable, a separate wire D performing this function may be located in the cord (as shown in dotted lines in Fig. 2), which will extend to one side of the battery, as will be
 95 understood, said wire being insulated from the other conductors 1 and 2 therein and extending exteriorly of the cord. In such an arrangement of the parts the plug would be provided with an insulated extension tip
 100 piece d forming the terminal of said wire, as shown in Fig. 2.

A registering device arranged in the manner described provides an automanual system of recording calls and connections in contra-
 105 distinction to automatic devices, which are objectionable in that they are operated by stray ground and cross connections occurring on subscribers' lines and other accidental sources of trouble, and also mechanical devices which
 110 require the operator to perform an additional act in order to manipulate them. The registers may be readily arranged for observance by the supervisor or manager of the exchange, permitting the careful observance
 115 at all times of the traffic load passing over various parts of the switch board so that the operating force may be increased or diminished or the assignment of the operators to different positions changed to improve the
 120 service rendered to the subscribers as the circumstances may require.

I do not wish to be confined to the particular cord circuit shown as the device may be adapted to other and well known circuits
 125 to accomplish similar results.

I claim as my invention:

1. In a mechanism for registering the total number of calls responded to on a telephone
 130 switch board, the combination with the answering and calling switch board cords hav-

ing the conductors therein, of an electromagnetically operated call registering device common to said cords, a normally open circuit for said device one side of which comprises one of each of said cord conductors and their exterior terminals and a contact member forming the terminal of the other side of the circuit which is adapted to be engaged by said exterior terminals of the cord conductors.

2. In a mechanism for registering the number of calls responded to on a telephone switch board, the combination with the answering and calling switch board cords having terminating plugs each provided with separate contact surfaces and with conductors connected to said surfaces, of a single electromagnetically operated call registering device common to all of said cords having a normally open circuit one side of which terminates in a stationary contact member, the other side thereof comprising one conductor of each of the cord conductors and a source of current supply located between the two sides of the circuit.

3. The combination with a telephone switch board, comprising subscribers' line jacks and a plurality of answering and calling cords having conductors therein, of an

electromagnetically operated register for recording any calls responded to which originate on any or all of the subscribers' lines, a normally open circuit for said register one side of which comprises one of the conductors in each of the cords and its exterior terminal and a single contact member forming the other terminal of the other side of the circuit which is arranged separate from the line jacks and adapted to be engaged by the terminals of said cord conductors.

4. The combination with a telephone switchboard, answering and calling cords having the plugs comprising the tip and sleeve contacts, the conductors connecting them and the condensers interposed in the conductors, of two separate registering devices, electromagnets for operating them and two stationary contact members, a source of current, conductors connecting one pole thereof with the electromagnets and terminating in the contact members and other conductors leading from the other pole thereof, to the inductively connected sections of the tip connecting conductor.

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Witnesses:

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