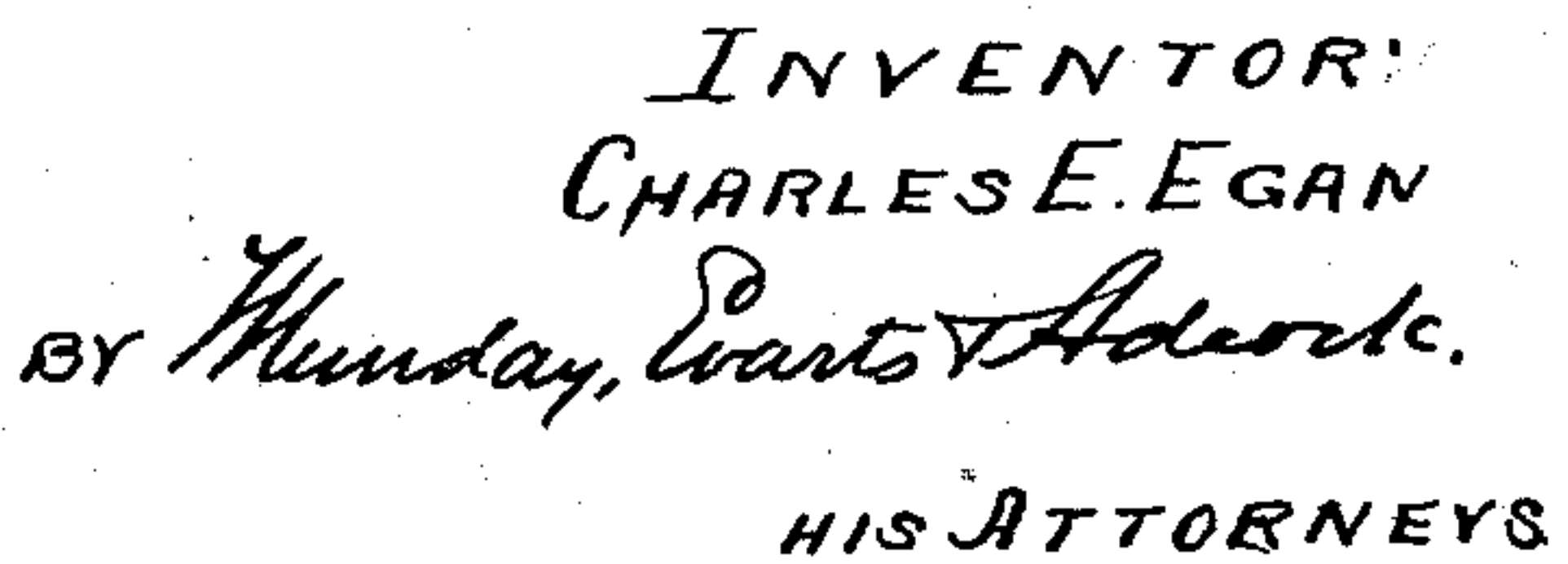


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UNITED STATES PATENT OFFICE.

CHARLES E. EGAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO STERLING L. BAILEY, OF SAME PLACE.

TELEPHONE-SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 580,853, dated April 20, 1897.

Application filed December 5, 1896. Serial No. 614,530. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. EGAN, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Telephone-Switchboards, of which the following is a specification.

The object of this invention is to simplify and speed the operation of receiving and answering calls at the central telephone-station and connecting the subscribers' telephones together; and I accomplish this object by the construction hereinbelow fully set forth, which much reduces the manipulation required of the switchboard attendant from that necessary with the boards now in use.

The nature of the invention is fully set forth in the description given below, and the points of novelty therein are pointed out in the claims appended to the description.

The accompanying drawings, forming a part of said description, show, at Figure 1, a diagram of the apparatus and circuits, partly in section; and Fig. 2 is a section on the line 2 2 of Fig. 1.

In said drawings, A A represent a series of metal sockets or jacks secured in the front A' of the switchboard. They are held stationarily in place by screws A², and each is adapted to receive one of the plugs B, attached to wire B' and serving to connect the subscribers in the usual manner. At one side of each jack, and preferably in such proximity thereto as to enable the attendant to operate it with the same hand whereby she inserts the plug into the jack, is a movable arm C, the normal or non-acting position of which is shown at the section given in Fig. 1. It is preferably made of spring metal, so it will automatically return to its normal position after being used as hereinafter stated. It may, however, be rigid and pivoted or loosely held, so as to permit the necessary movement, and it may be provided with a spring which shall keep it in its said position, or it may be moved thereto by hand. The only movement necessary for this arm is a very slight one, which permits it to be brought against the contact-point C', and thus puts it into circuit with the jack. It is supported at its inner end in the rear

upright A³. At the other side of each jack is a second arm D, which may be very similar to the one just described. It is normally in contact with the contact-piece D' and is movable away from piece D' and into contact with the contact-piece D². This arm is also supported in the upright A³.

In Fig. 1 there is shown a switchboard comprising connections for three subscribers' telephones and the circuits for the same. Of course it may be made to include any number desired. The circuits shown are as follows:

F is the primary circuit and includes the battery F', transmitter F², and induction-coil F³.

G is the secondary circuit, including the induction-coil just mentioned and the receiver G', which is kept constantly at the ear of the attendant at the central station, as usual. The secondary circuit G is connected to each of the arms C by branch wires G², and also to the common return-wire H, or in cases of small exchanges to the ground, all the subscribers' telephones being connected to the ground or to this wire H.

J is the call generator circuit, also connected to the return-wire H, and including the electromagnetic generator J'. It is also connected to each contact-point D² by wires J², strip J³, and connection J⁴.

K K are the subscribers' telephones, all of which are connected to return-wire H by branch wires H', and also to the arms D of their corresponding and respective jacks by wires K', K², or K³, as shown. Each jack is also connected to its corresponding telephone-wire K', K², or K³ by a wire L, leading from the jack to the rear end of the arm D. The drops shown at E are connected upon one side to the contact D' by wires E' and upon the other side to the return-wire by wires E².

The operation is as follows: If the subscriber at one of the telephones, for instance, that at the right hand, desires to communicate with the telephone at the left of those shown, he rings his bell and thereby causes a current to pass along wire K³ to the arm D of the jack shown at the left hand, and from thence the current passes through contact D' 100

and wire E' to the drop and back to the sender's telephone by wires E² and H. This energizes the drop-magnet and releases the drop, so that the operator recognizes a call from said subscriber. The operator now moves arm C over against contact C', which brings her receiver G' and transmitter F² into circuit with the telephone sending the call, so that she can talk with the subscriber and ascertain who he wishes to be put into communication with. If he indicates the telephone at the left, the operator releases arm C, so that connection at C' is broken, and inserts the plugs B into the jacks which are to be connected, and thereby completes the circuit between the two subscribers, as follows: from the calling-telephone to wire K³, arm D, wire L, jack A, plug B, wire B', second plug B, the jack receiving said second plug, wire L and arm D of last-mentioned plug, wire K' to the telephone called, and thence by the common return-wire H and its branch H' back to the telephone sending in the call. At the same time she inserts the plug in the jack of the subscriber who is called up she presses arm D toward the plug, thereby breaking the connection with the drop and establishing connection between the telephone-circuit and the call-circuit J and causing the ringing of the call-bell. As soon as this signal has been given she releases arm D, which breaks the connection with circuit J and reestablishes the connection with the drop, and the subscribers are left in communication with each other.

If at any time the operator desires to communicate with either one of the subscribers during their conversation to ascertain if they are through with the line or to find out if they are in communication, she can do so by pressing the arm C of the subscriber against contact C', and this without interfering with the connection between the two subscribers, as in that case she only connects her own telephone into the same circuit with the subscrib-

ers' and may immediately sever such connection by removing the pressure from arm C.

I claim—

1. The combination of a stationary jack, a pair of movable arms with their front ends projecting in front of the board in proximity to the jack or socket, and contact-points in the path of said arms, one contact-point being in the circuit of the signaling apparatus, and the other in the telephone-circuit, substantially as specified.

2. The combination of a stationary jack, a movable arm at one side of said jack with its free end projecting in front of the board, a contact-point in the path of said arm and located in the telephone-circuit, a second movable arm at the other side of the jack and normally in circuit with the drop, a contact-point located in the path of said last-mentioned arm and included in the circuit of the signaling apparatus, both of said arms having their ends projecting in front of the board, substantially as specified.

3. A switchboard for telephone-stations provided with stationary jacks or plug-sockets, and movable arms at opposite sides of the jacks or sockets, and contact-points in the path of said arms, the free ends of said arms projecting at the front of the board to enable the operator to close and open the circuits after the plug has been inserted in the socket, substantially as specified.

4. A switchboard for telephone-stations provided with stationary jacks or plug-sockets, and spring-arms at opposite sides of said jacks having their free ends projecting in front of the board, with contact-points in the path of said arms, whereby the operator is enabled by moving one or the other of said arms to close and open the circuits at will, substantially as specified.

CHARLES E. EGAN.

Witnesses:

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LEW. E. CURTIS.