

G. L. ANDERS & T. A. WATSON.
Switches for Telephone Circuits.
No. 229,299. Patented June 29, 1880.

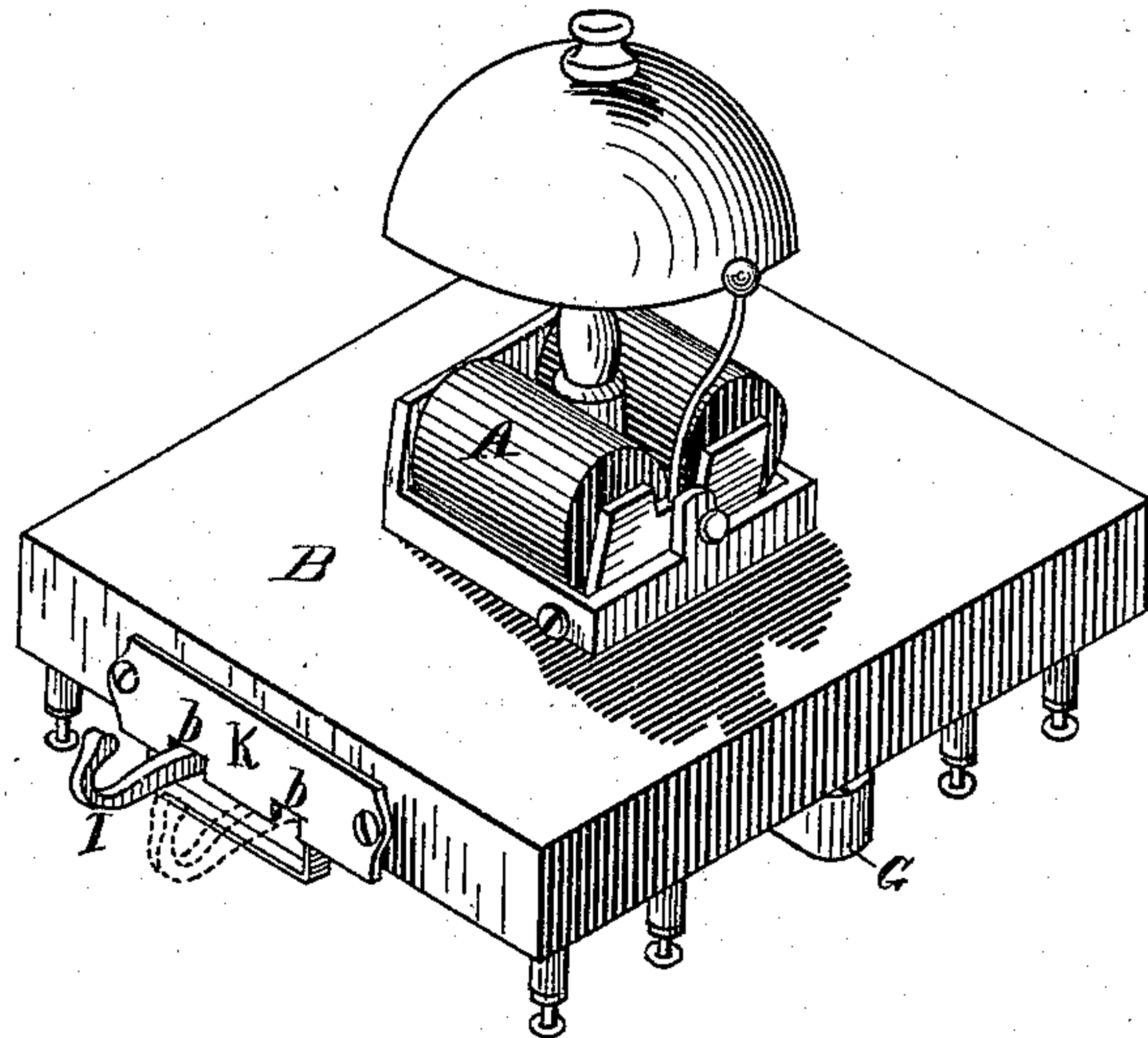


FIG. 1.

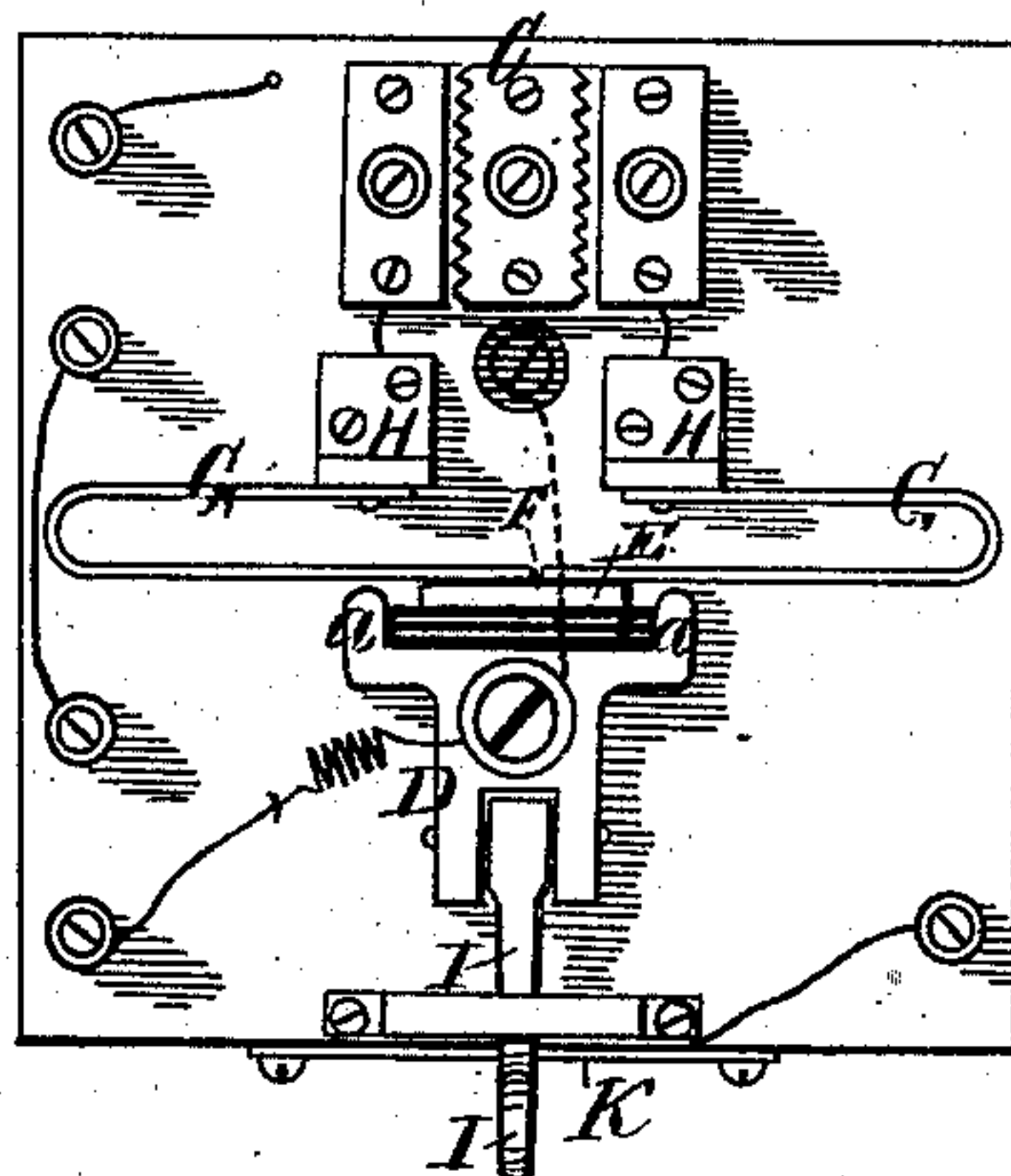


FIG. 2.

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Inventors:
George L. Anders.
Thomas A. Watson.
By their Atty.
Alex. L. Hayes

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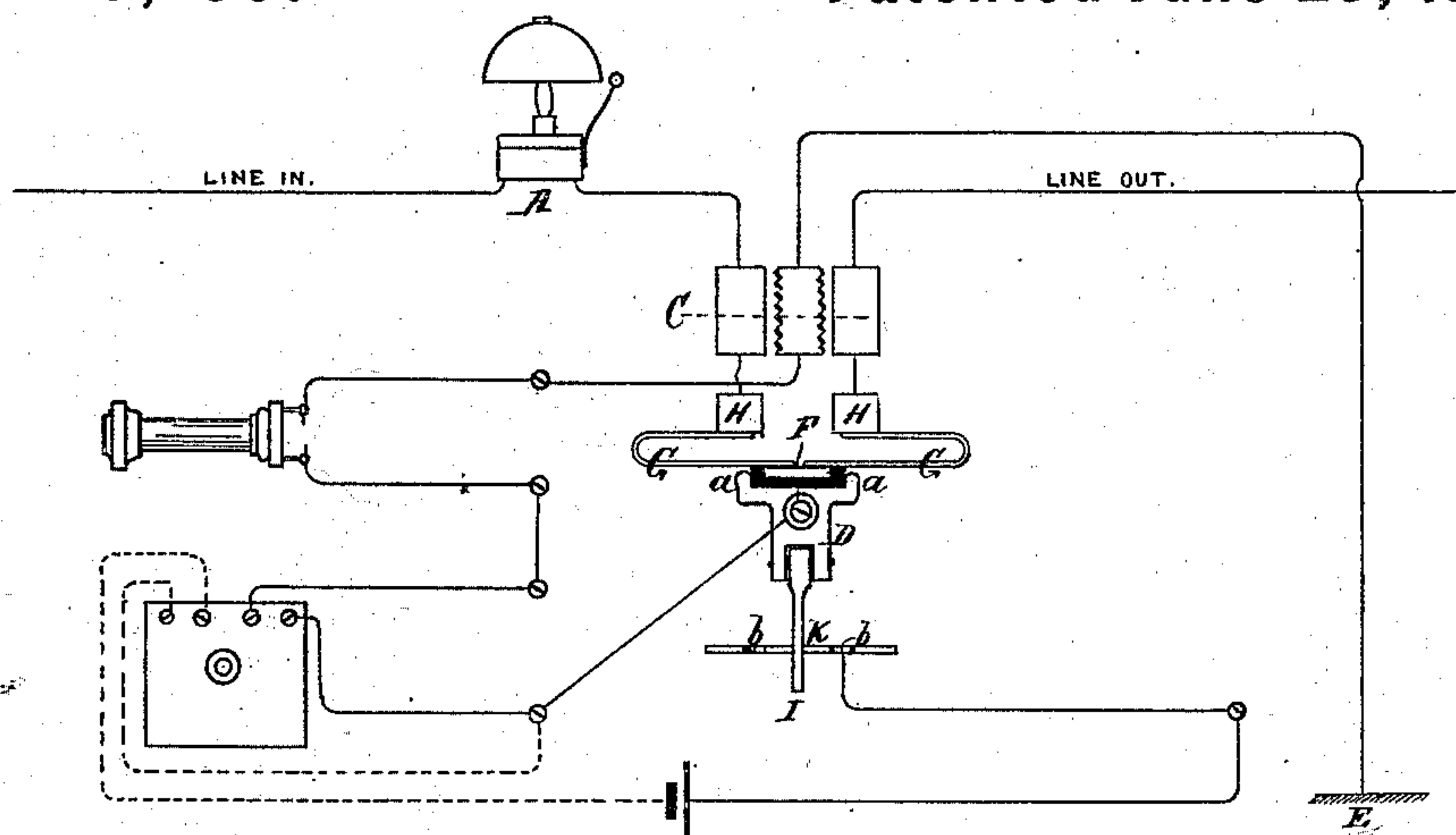


FIG. 3.

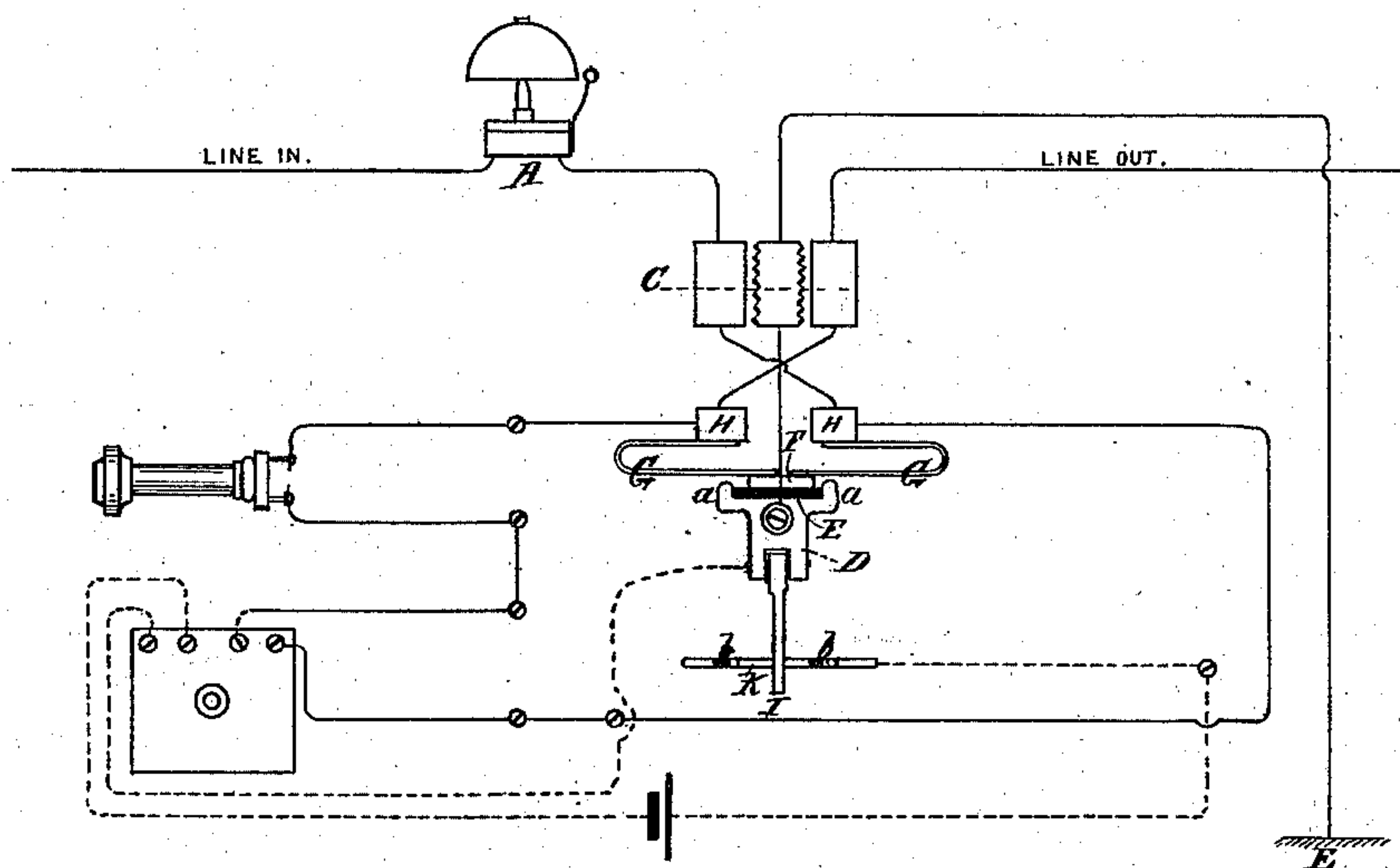


FIG. 4.

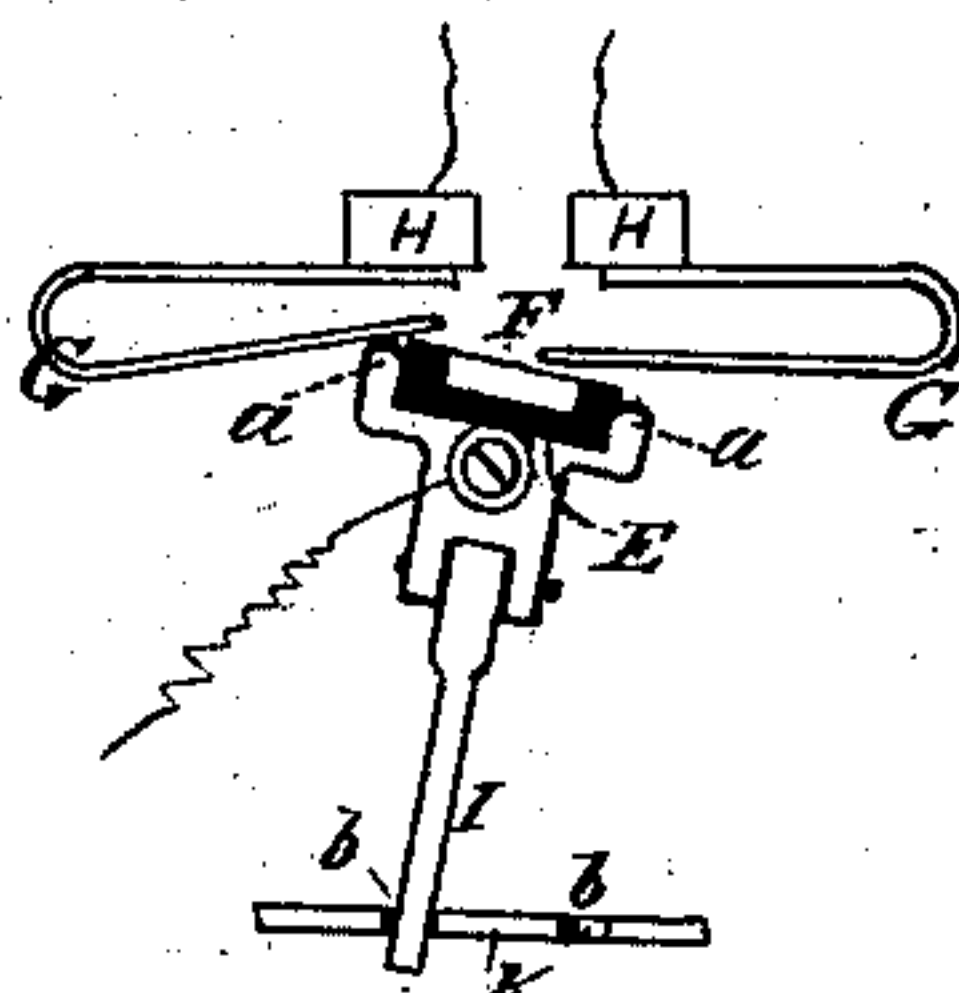


FIG. 5.

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UNITED STATES PATENT OFFICE.

GEORGE L. ANDERS, OF BOSTON, AND THOMAS A. WATSON, OF EVERETT,
MASSACHUSETTS.

SWITCH FOR TELEPHONE-CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 229,299, dated June 29, 1880.

Application filed December 12, 1879.

To all whom it may concern:

Be it known that we, GEORGE L. ANDERS, of Boston, in the county of Suffolk and State of Massachusetts, and THOMAS A. WATSON, of Everett, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Switches for Telephone-Circuits, of which the following is a specification.

10 This invention relates to that class of telephone-switches which form a support for the telephone, and which, when the telephone is removed from its support for use, are moved to one side or the other for the purpose of establishing an earth-connection through the
15 telephone with "line in" or "line out," and which are automatically restored to their normal position by the weight of the telephone when the latter is replaced upon its support.
20 In telephone-switches of this class, as heretofore constructed, the electrical contacts at the switch when the telephone is not in use are effected by the weight of the telephone, and when the telephone is in use the electrical
25 contacts are effected by the force of the spring, which is overcome when the telephone is replaced upon its support, and which, consequently, must act with less force than the weight of the telephone.

30 This improvement consists in effecting all the electrical contacts by the action of springs or their equivalent, which act on opposite sides of the switch-lever to return the latter to its normal position, in which "line in" and
35 "line out" are connected, in holding said lever in position by means of a latch when the lever has been moved by hand to one side or the other to establish an earth-connection, and in causing the replacement of the telephone
40 upon its support to automatically effect the release of the switch from the latch and the return of the switch to its normal position.

In the accompanying drawings a switch is shown which embodies this improvement, and
45 in these drawings—

Figure 1 is a view, in perspective, of the block which supports the switch, and of the telephone hook or support and the latch for the same, and also of the alarm-bell. Fig. 2
50 is plan view of the switch and its connections. Fig. 3 is a diagram showing the manner of arranging the connections when one pole of the telephone is connected to earth; and

Fig. 4 is a diagram showing the manner of arranging the connections when one pole of
55 the telephone is connected to the line on one side and the other pole of the telephone is connected to the line on the other side; and Fig. 5 is a diagram showing the position of the switch when moved to one side.

In these several figures the same letters refer to the same parts.

Referring to the drawings, A is an alarm-bell of the usual construction, which is supported on a block, B, of some suitable non-conducting material, and upon this block are placed the plates of the lightning-arrester C.

D is a metallic lever, which is pivoted upon the under side of this block, and has a projection, *a a*, on each side. Between these projections is fixed to the lever a block, E, of some suitable insulating material, and to this block E is fixed a plate of metal, F, the surface of which rises above the ends of the projections.

G G are two U-shaped metallic springs, and H H are two pieces of metal, one of which is connected to the "line in" and the other to the "line out." Each of the springs G G is secured by one end to one of these blocks, respectively, and the other and free ends of these springs bear upon the face of the metal plate F, and consequently, when the lever is in its normal position, as shown in Fig. 2, the circuit is completed through the springs and the
85 plate F; but when the lever is turned to one side or the other, one of the projections *a* makes contact with one of the springs and lifts its end from the plate F, as shown in Fig. 5, thereby breaking the electrical connection with the
90 other spring and establishing an electrical connection with the lever D. By the pressure of the springs on each side of the lever all the electrical contacts are firmly made and with a rubbing contact. This lever is either connected
95 to one pole of the telephone, as shown in the diagram Fig. 3, or to earth, as shown in the diagram Fig. 4, in which diagrams a transmitter and local battery are represented as used with the telephone, and, for the purposes of
100 simplicity, the lightning-arrester is represented as placed between the alarm-bell and the switch.

When the connections are arranged as shown in Fig. 3 the upper surface of the insulating-block E must rise above the upper surface of
105 the projections *a a*, so that when the lever D

is moved either to one side or the other the connection between the springs G G will be broken before either of the projections *a a* strike the corresponding spring. The object of this is to prevent the switch from being held in a position where a branch circuit will be made through the telephone to earth without breaking the main line, or, in other words, without breaking the connection between the springs G G.

When the connections are arranged as shown in Fig. 4 it is essential that when the lever D is moved to either one side or the other the projection *a* on that side should come into firm contact with the corresponding spring G before the connection between these two springs is broken. This result will be accomplished if the upper surface of the insulating-block E is lower than the upper surfaces of the projections *a a*, and therefore when the switch is connected as shown in Fig. 4 it is so constructed.

I is the hook or support for the telephone, which, in this instrument, is pivoted to the lever D, and K is a plate of metal fixed to the block B, and provided with two notches, *b b*, into one of which this hook is placed when the telephone is removed, according to the side to which the lever is moved, as shown in full lines on Fig. 1. This hook is kept in place in this notch by the pressure caused by the action on the lever D of that one of the springs G which bears upon the corresponding projection of said lever when the lever is moved to one side or the other; but when the telephone is replaced on the support its weight disengages it from the notch, and the force of the spring restores the lever to its normal position.

In carrying this invention into effect the telephone hook or support need not necessarily be attached to the lever D, but may be detached from the same; and the notched plate K may be dispensed with, and the telephone hook or support be so constructed as to form a latch for the switch when it is moved either to one side or the other; or, in fact, any form of latch may be used which will hold the switch in position when it is moved to one side or the other from its normal position and from which it will be automatically released when the telephone is replaced upon its support.

In carrying this invention into effect we do not confine ourselves to springs of the particular form shown or to a switch-lever constructed in the manner described, as the object of our invention may be accomplished by other forms or arrangements of springs, or even by weighted levers, and by a lever of another construction adapted to these springs.

When this switch is used with a transmitting-telephone which is connected with a local battery, the plate K may be used to close the circuit from this battery through the transmitter when the lever D is latched on either side. This is accomplished by connecting one terminal of the local-battery circuit to the lever D and the other terminal to the plate

K, as shown in dotted lines in the diagram, Fig. 4.

We do not in this application claim a switch which forms part of the main line, and which when moved serves to break the main line and connect either "line in" or "line out" to an earth-branch; but

What we claim as our invention, and desire to secure by Letters Patent of the United States, is—

1. A telephone-switch which, in its normal position, forms part of the main-line circuit, and is capable of being forced into a position to connect the telephone to either "line in" or "line out," as may be desired, where it is held by means of a latch or its equivalent against a force tending to throw the switch back to its normal position and resisted by the latch when the telephone is off from its hook or support and in circuit, and from which latch the said switch is automatically released and returned to its normal position by replacing the telephone on its support, substantially as and for the purpose set forth.

2. The combination, with a telephone-switch, of a latching device for holding the switch in position when the latter is moved to either one side or the other to establish a connection of the telephone of "line in" or "line out," which latching device resists a force tending to throw the switch back to its normal position, and is released by the weight of the telephone when the latter is replaced on its support, substantially as and for the purpose set forth.

3. In combination with the pivoted lever D, the springs G G, or their equivalents, connected, respectively, to "line in" and "line out," which springs, when the lever D is in the position which it has when the telephone is on its support, are electrically connected, and, according as the lever is moved to one side or the other, respectively bear upon said lever, so as to connect the same to either "line in" or "line out," substantially as and for the purpose set forth.

4. The combination of the springs G G, the lever D, the insulating-block E, the conducting-plate F, and the projections *a a* on said lever, the telephone-support I, pivoted to said lever, and the plate K, provided with the notches *b b*, substantially as and for the purpose set forth.

5. The combination, with the telephone-support I, forming one terminal of the local-battery circuit of a transmitter, of the plate K, forming a latch for the telephone-support and the other terminal of the local-battery circuit, substantially as and for the purpose set forth.

In witness whereof we have hereunto set our hands in presence of the subscribing witnesses.

GEORGE L. ANDERS.
THOMAS A. WATSON.

Witnesses:

ALEX. L. HAYES,
ARTHUR E. ANDREW.