

(No Model.)

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C. E. BUELL.

TELEPHONE STATION APPARATUS.

No. 251,521.

Patented Dec. 27, 1881.

Fig. 1

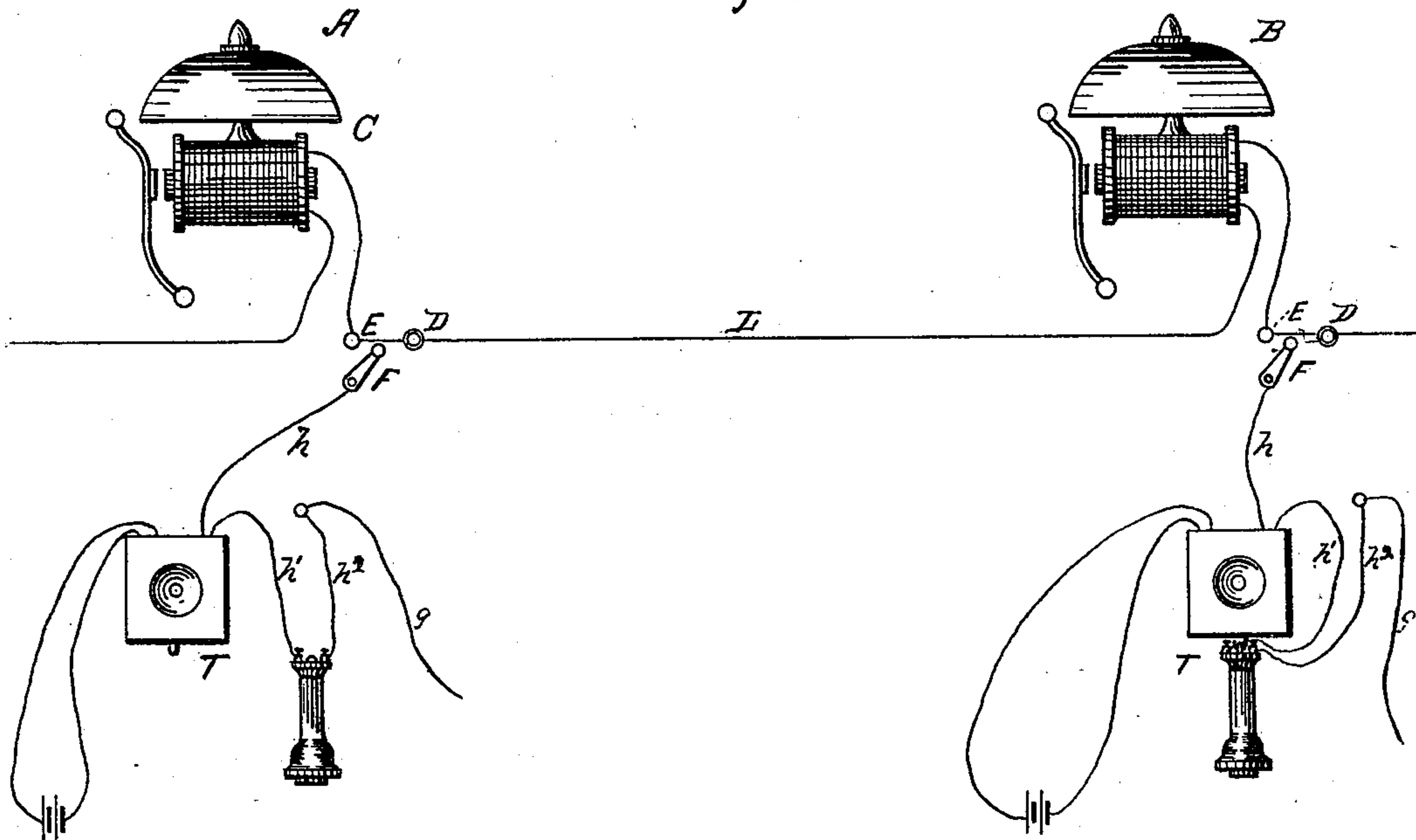
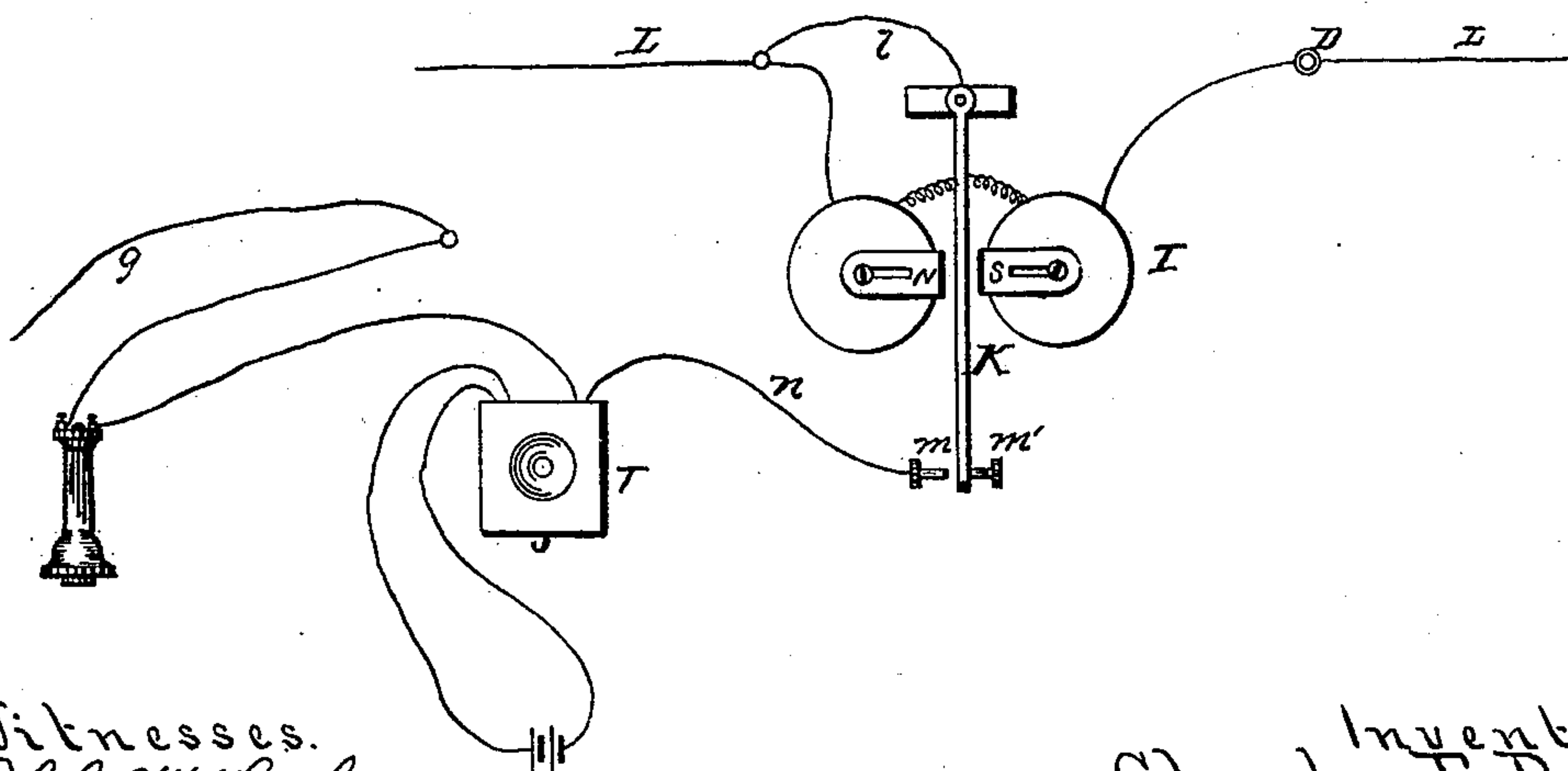


Fig. 2.



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2 Sheets—Sheet 2.

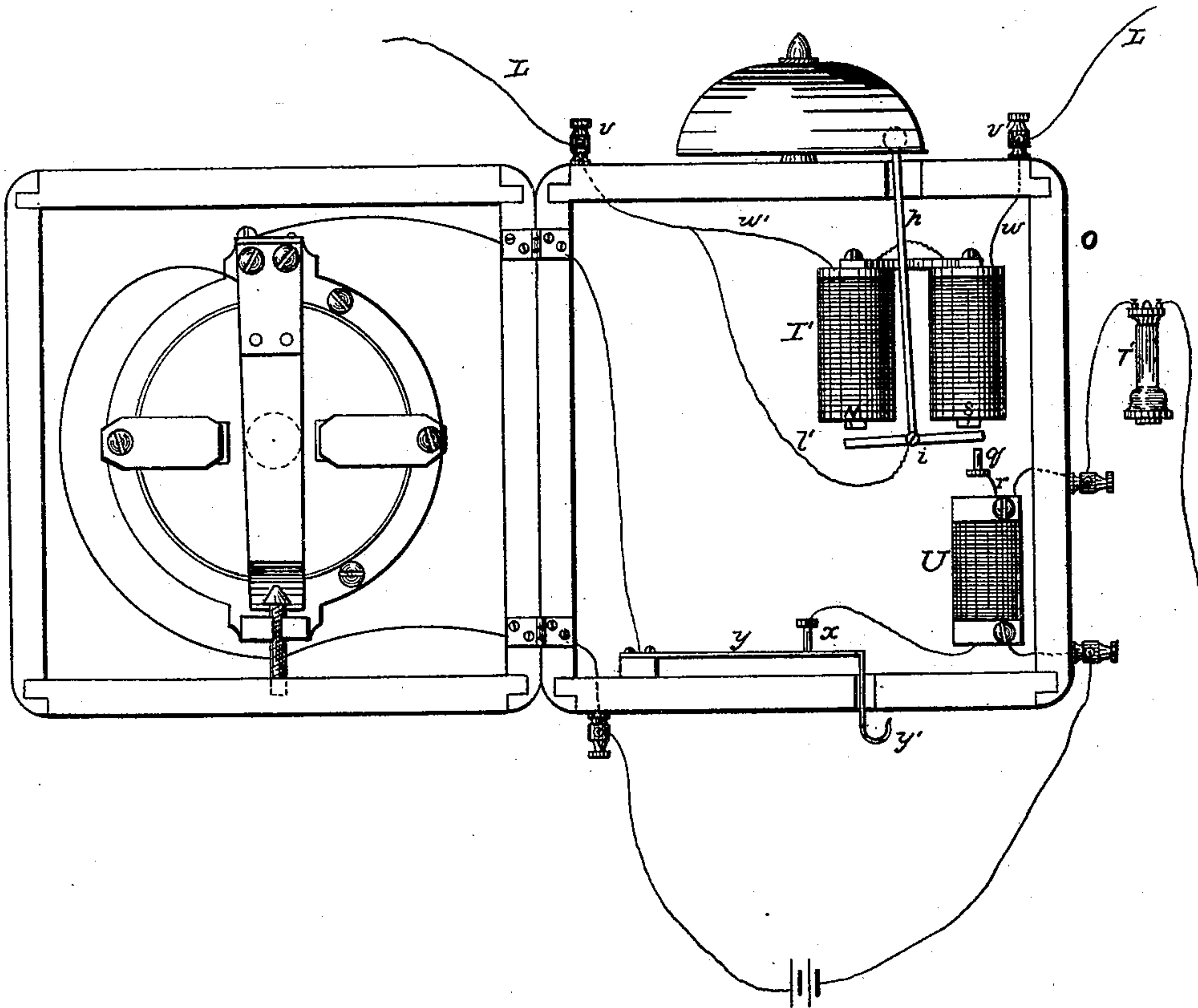
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Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES E. BUELL, OF NEW HAVEN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNITED STATES TELEPHONE MANUFACTURING COMPANY, OF NEW YORK, N. Y.

TELEPHONE-STATION APPARATUS.

SPECIFICATION forming part of Letters Patent No. 251,521, dated December 27, 1881.

Application filed June 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. BUELL, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Telephone-Station Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to means for connecting with a main line a branch circuit, including a telephone or other apparatus, its object being to effect such connection without interrupting the continuity of the main line, and thus to prevent the efficiency of the main line from being impaired by the failure of a subscriber at a station to disconnect his station-telephone circuit from the main line after finishing using his telephone.

In the accompanying drawings, Figure 1 is a diagram illustrating the mode of arranging a branch telephone-circuit for connection with the main line according to my invention. Fig. 2 is a diagram illustrating a modification of the invention. Fig. 3 is a view in elevation, illustrating another modification inclosed in a casing of a transmitter.

Referring to Fig. 1, the letters A and B designate telephone-stations on the main line L. At each of the stations a call-bell, C, is arranged permanently in the main line, and a push-button, D, at each station serves to make and break the main circuit for calling purposes. Between the push-button D and the call-bell at each station a metallic contact-plate, E, is interposed in the main line; and F is a pivoted metallic switch-lever, the free end of which may be brought into contact with or removed from the plate E, as required. To the pivoted end of the switch F is connected a wire, h, which connects at the other end with one terminal of the secondary coil of the transmitter T, the other terminal of said coil being connected by a wire, h', with the receiving-tele-

phone T, from which another wire, h², leads in the usual manner, and is connected with a ground-wire, g. The interior of the transmitter may be arranged in any ordinary manner. When a call is received at a station it is only necessary to swing the free end of the switch-lever into contact with the plate E, when the station-telephone circuit will be connected electrically with the main line, and the telephones may be used in communication over said main line in the usual manner, and at the same time the main-line circuit will be complete from end to end, and may be used for other purposes independent of telephonic communication. The switches are normally off the contact plates at the stations, and it is found in practice that their being placed in or out of contact with the contact-plates E does not injuriously affect the transmission of electrical currents on the main line or interfere with communication between stations on opposite sides of an intermediate station.

In Fig. 2 the letter I indicates a polarized magnet similar in construction to those used in the ordinary polarized relay. The coils of this magnet are included in the main line at a telephone-station, and the polarized armature K has its pivoted end connected with the main line on one side of the magnet by means of a short wire, l. On opposite sides of the armature, near its free end, are arranged stops m m', between which the armature has a limited vibration. From the stop m a wire, n, leads to the secondary coil of the transmitter T, the other devices of the station being as usual, and the telephones connected with a ground-wire, g. At a station provided with apparatus as now described the station-telephone circuit may be automatically connected with the main line by the sending of an electrical current from a central station in the proper direction, or of proper polarity to cause the armature K to move toward the pole N of the magnet, this movement bringing the armature into contact with the metallic stop m, closing a circuit from the main line over the wire l, armature K, stop m, wire n, the station-telephones, and wire g to the ground. At the same time the main-line circuit continues unbroken through the coils of

magnet I. By simple reversal of current the polarized magnet may be operated in the usual manner to cause its armature to swing toward the poles S and break contact with the stop *m*, thus automatically disconnecting the station-telephone circuit from the main line, which still, as before described, continues unbroken through the coils of magnet I.

In Fig. 3 the letter O represents the case of the transmitter, in which is arranged a polarized magnet, I', the polarized armature of which is pivoted at *i* to vibrate toward and from the poles of the magnet. From the middle of the armature an arm, *p*, extends upward and serves as the bell-hammer rod. Immediately below one end of the armature (the S pole in this instance) is arranged a metallic stop, *q*, which is connected by a wire, *r*, with the secondary circuit of the induction-coil U, the other terminal of this circuit being connected with the ground through the station-telephones, as heretofore described. The station-terminals of the line L are connected with the binding-posts *v v'*, respectively, and these posts are connected by wires *w* and *w'* with the coils of the magnet I', so that the main-line circuit is permanently completed through said magnet. From the middle of the armature a wire, *l'*, connects with the line-circuit on one side of the magnet. The normal position of the armature is as shown in the figure, the armature being out of contact with the metallic stop *q*. When, now, a current of proper direction is sent over the main line the N pole of the armature is attracted by the adjacent core of the magnet and the S pole moves downward and comes in contact with the metallic stop *q*. A circuit is thus established from the main line over the wire *l'*, the armature, stop *q*, the secondary circuit of the induction-coil and thence through the receiving-telephone T' to the ground, the station-telephone circuit being thus connected to the main line without in any manner interrupting the continuity of said main line. The primary circuit of the induction-coil is completed by the

rising of the telephone supporting arm *y* when the receiving-telephone is taken off the hook *y'*, said arm being formed of metal and making contact when it rises with the metallic stop *x*, which is electrically connected with one terminal of said primary circuit, the other terminal being connected to a local battery in the usual manner. The arm *y* is connected in a suitable manner, also, with the local battery through the tension-changing devices of the transmitter.

Having now described my invention and explained the operation thereof, what I claim is—

1. In a telephone-station apparatus, the combination, with a main line, of a branch ground-line which includes a station-telephone, and a switch arranged to connect said ground-line to the main line without interrupting the continuity of the said main line, essentially as set forth.

2. In a telephone-station apparatus, the combination, with a main line and a branch ground-line which includes a station-telephone, of an automatic switch arranged to be operated by the sending of an electrical current over the main line, and to connect the branch ground-line with the main line or disconnect it therefrom without interrupting the continuity of said main line.

3. In a telephone-station apparatus, the combination, with a main line and a branch ground-line which includes a station-telephone, of an automatic switch arranged to be operated by the sending of alternately-reversed currents over the main line, and to connect and disconnect the branch ground-line with the main line without interrupting the continuity of the said main line.

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

CHARLES E. BUELL.

Witnesses:

W. B. HALE,
GEO. W. COY.