

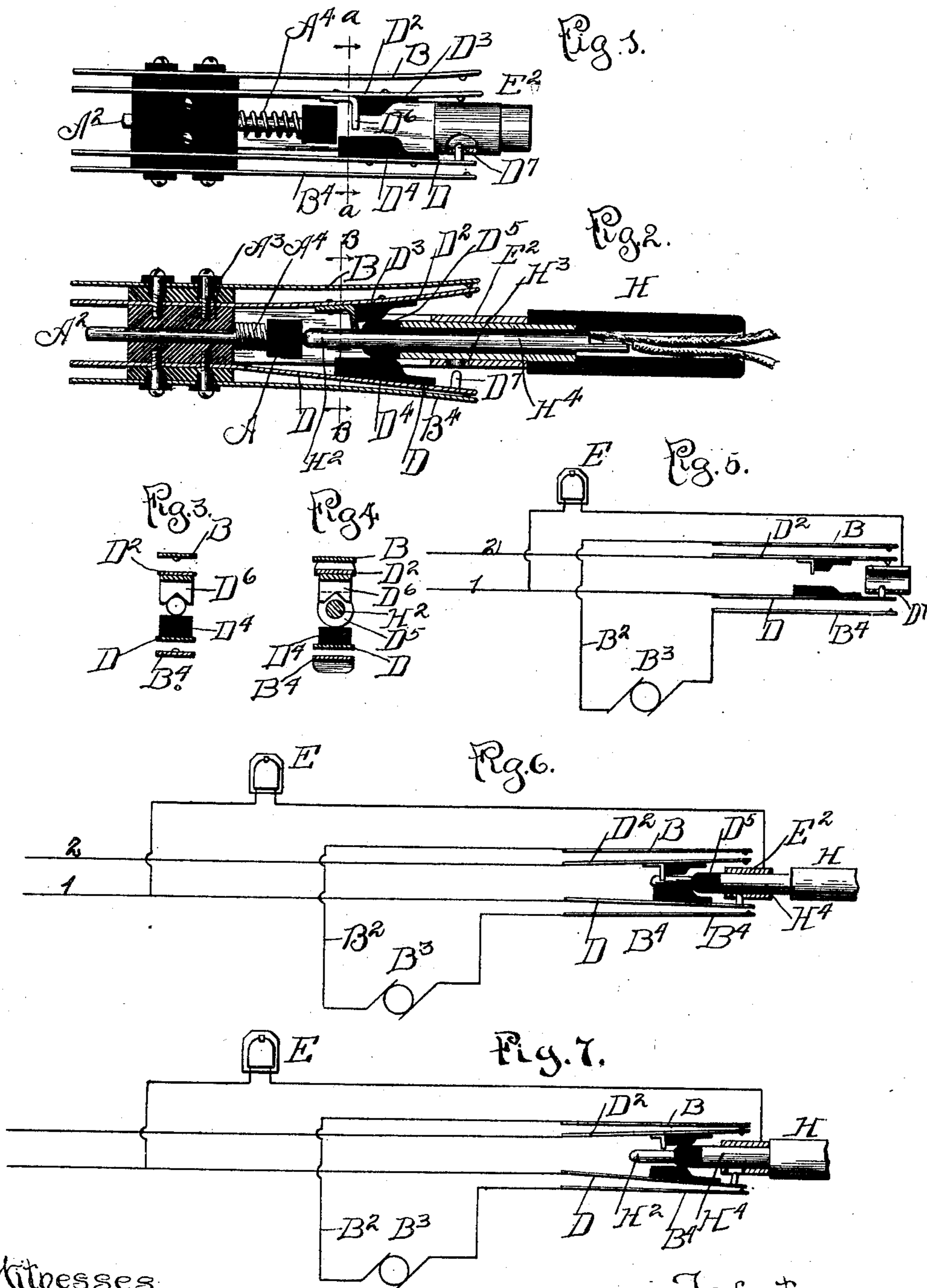
No. 669,094.

Patented Mar. 5, 1901.

W. O. MEISSNER.  
TELEPHONE APPARATUS.

(Application filed May 2, 1898.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM O. MEISSNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE AMERICAN ELECTRIC TELEPHONE COMPANY, OF SAME PLACE.

## TELEPHONE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 669,094, dated March 5, 1901.

Application filed May 2, 1898. Serial No. 679,563. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM O. MEISSNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone Apparatus, of which the following is a specification.

My invention relates to certain improvements in telephone apparatus used at the central or exchange station of a telephone system and in conjunction with the switch-board thereof.

My invention more particularly relates to improvements in spring-jacks and circuit arrangements therefor.

In the operation of extending a signal to a subscriber from the central station by means of a generator thereat I employ the plug to establish a circuit condition whereby the generator-circuit is connected with the line-circuit. This is accomplished by imparting to the plug a movement in the jack secondary or supplemental to that by which the subscriber's line is connected, whereby the generator contact-strip of the jack is connected with the line contact-strip.

My invention has for its object the provision of means whereby to automatically return the plug from its secondary or supplemental position connecting the generator-circuit with the line-circuit to the position by which the cord-circuit is connected with the line-circuit.

My invention also has for its object certain circuit arrangement in connection with the spring-jack whereby to extend a signal to the subscriber by and with the plug.

My invention has certain other objects in view; and it consists in certain other features about to be described, and pointed out in my claims, reference being now had to the accompanying drawings, in which—

Figure 1 is a plan or side view of a jack embodying my improvements. Fig. 2 is a like view showing the plug inserted in the jack and pressed into the position for connecting the generator-circuit with the line-circuit to extend the signal. Fig. 3 is a cross-section on the line *a a* of Fig. 1, and Fig. 4 is a cross-section on the line *B B* of Fig. 2. Fig. 5 is a diagrammatic view of the circuit connections

and the position of the contacts when no plug is in the jack. Fig. 6 is a like view showing the position of the contacts when the plug is inserted to connect the line-circuit and the plug-circuit. Fig. 7 is a like view showing the plug inserted to its fullest extent, with the generator-circuit and line-circuit connected to extend a signal.

Referring to the type of spring-jack shown, I provide an insulating-abutment *A*, having a shank *A*<sup>2</sup>, which extends through the insulating-block *A*<sup>3</sup> of the jack. Interposed between the block *A*<sup>3</sup> and the abutment *A* is a spring *A*<sup>4</sup>, which normally tends to hold said abutment and its shank in the extended position, as shown in Fig. 1.

The contact-strip *B* is connected with one side of the generator-circuit *B*<sup>2</sup>, extended to the generator *B*<sup>3</sup>, and the other contact-strip *B*<sup>4</sup> is also connected to said generator. The line-strip *D* is connected to the lead 1 of the line-circuit and the contact-strip *D*<sup>2</sup> is connected to the other lead 2 of said circuit. The annunciator *E* is connected in a branch circuit between the line 1 and the sleeve *E*<sup>2</sup> of the jack. The contacts *D* and *D*<sup>2</sup> each carry the insulating-blocks *D*<sup>3</sup> and *D*<sup>4</sup>, adapted to be engaged by the insulating-shoulder *D*<sup>5</sup> of the plug *H*. The contact-strip *D*<sup>2</sup> also carries a notched contact-piece *D*<sup>6</sup>, Fig. 3, which is engaged by the conducting-tip *H*<sup>2</sup> of the plug, as shown in Fig. 6, when the plug is inserted and extended to connect the line-circuit with the cord-circuit. The contact-strip *D* carries a contact-pin *D*<sup>7</sup>, which is adapted to extend through an opening in the sleeve *H*<sup>3</sup> of the jack and engage the shank *H*<sup>4</sup> of the plug *H*, thereby completing the line-circuit and connecting the line with the cord-circuit.

When no plug is in the jack, the line-strip *D*<sup>2</sup> is in contact with a sleeve *E*<sup>2</sup> of the jack, and as the annunciator *E* is connected in a branch between the sleeve of the jack and the lead 1 of the line-circuit the annunciator will first be operated to give a calling-signal. Upon the insertion of the plug *H* within the jack-sleeve, as shown in Fig. 6, the lead 2 of the line-circuit is connected with one side of the cord-circuit through the medium of the line-contact *D*<sup>2</sup>, its contact part *D*<sup>6</sup>, and the

plug-tip  $H^2$ , while the lead 1 of the line-circuit becomes connected with the other side of the cord-circuit through the medium of the line-contact D, its contact-pin  $D^7$ , and the shank  $H^4$  and also with the annunciator through the medium of the annunciator branch conductor, the jack-sleeve  $E^2$ , and plug-shank  $H^4$ . When the plug H is given an extended insertion within the jack in order to extend a calling-signal, Fig. 7, the line-contacts D and  $D^2$  are forced outward by means of their insulating-blocks and the insulated shoulder on the plug, so as to make contact with the two generator-contacts  $B^2$  and B, respectively, and at the same time to both separate the contact-piece  $D^6$  of the line-strip  $D^2$  from the plug-tip  $H^2$  and the contact-pin  $D^7$  on the line-strip D from the plug-shank  $H^4$ . In this way the generator is included in the line-circuit, so as to extend the signal, and at the same time both sides of the cord-circuit are disconnected from the line-circuit. Upon the release of the plug H after the signal has been suitably extended it is automatically returned to position to connect the line with the cord-circuit by the coil-spring  $A^4$ , which is of course compressed, as shown in Fig. 2, by the extended insertion of the plug. This spring  $A^4$  could of course be replaced by any suitable means for causing the automatic return of plug from its extended or supplemental position.

It will be observed that in the form of spring-jack herein shown the signal can be extended to the called-for subscriber by imparting to the plug a supplemental or extended insertion, and also the connection between the cord and line circuits, made by the insertion of the plug into what may be termed its "normal" position, is broken by such supplemental or extended insertion.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a line-circuit having one of its sides provided with a branch which includes an annunciator, a generator and generator-circuit, a spring-jack provided with oppositely-disposed spring line-contacts to which the opposite wires of the line are

connected, a sleeve, as  $E^2$ , supported between these line-contacts and connected to the annunciator branch, a pair of generator-contacts connected to the respective wires of the generator-circuit and supported outside of and normally out of contact with the line-contacts, and a plug which can connect the cord-circuit with the line-circuit by its normal insertion, and can, by an extended insertion, spread the line-contacts and thereby connect them to the generator-contacts and also disconnect the line and the cord circuits.

2. The combination, with a line-circuit having one of its sides provided with a branch which includes an annunciator, a generator and generator-circuit, a spring-jack comprised of an insulating supporting-block, a pair of oppositely-disposed spring line-contacts to which the opposite wires of the line are connected, one of these line-contacts being provided near its end with a contact-pin, as  $D^7$ , and the other with a contact, as  $D^6$ , a pair of insulating-blocks attached to the inner sides of these line-contacts and between the contact-pin  $D^7$  and the contact part  $D^6$ , a sleeve supported between the line-contacts and having normal contact with the one carrying the part  $D^6$  and having an opening through which the pin  $D^7$  normally projects, this sleeve being connected to the annunciator branch, a pair of generator-contacts carried by the supporting-block and arranged outside of and normally out of contact with the line-contacts when connected to the generator-circuit, a spring-actuated device supported on the main block, and a plug comprised of a central rod connected to one of the cord-wires and an exterior shank or sleeve, as  $H^4$ , connected to the other cord-wire and insulated from the central rod, and an insulating-shoulder between the end of the central rod and the end of the shank or sleeve, for the purposes herein set forth.

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

WILLIAM O. MEISSNER.

Witnesses:

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