

No. 623,352.

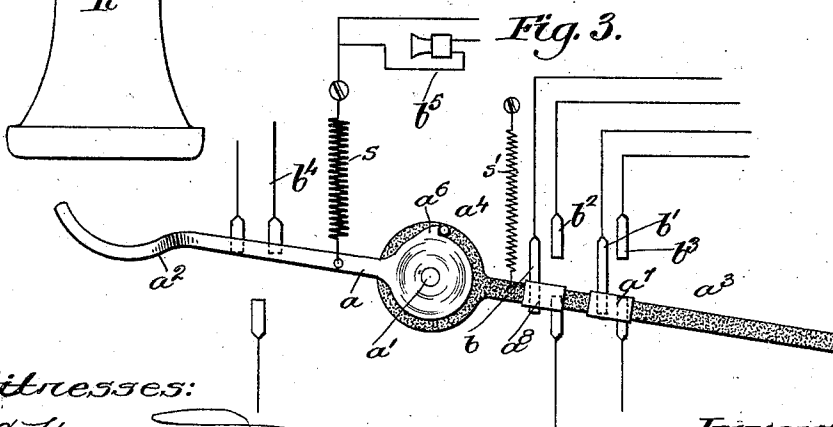
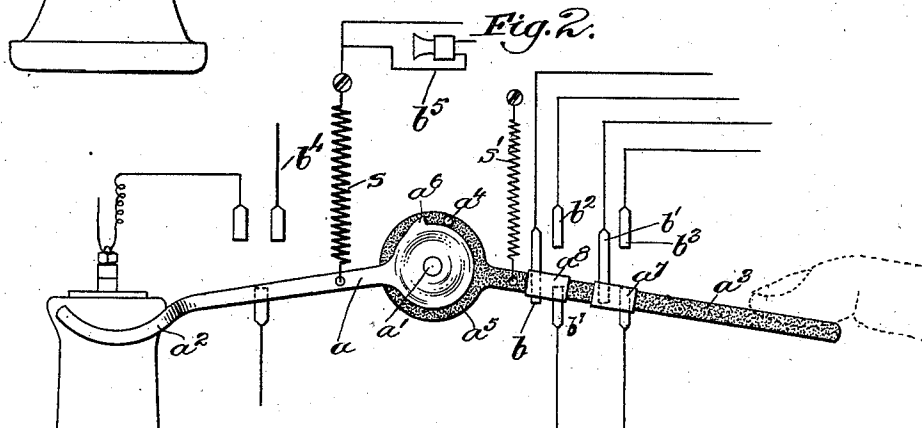
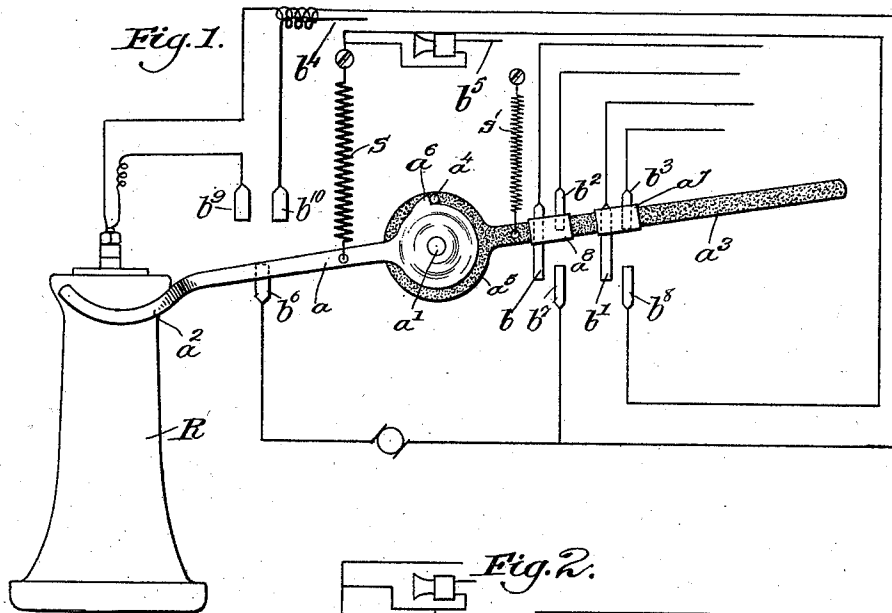
Patented Apr. 18, 1899.

G. C. BUELL.

DUPLEX SWITCH FOR TELEPHONES.

(Application filed Aug. 15, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

GEORGE C. BUELL, OF BOSTON, MASSACHUSETTS.

DUPLEX SWITCH FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 623,352, dated April 18, 1899.

Application filed August 15, 1898. Serial No. 688,600. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BUELL, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Duplex Switches for Telephones, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a duplex switch for telephones, being particularly intended for use where an auxiliary instrument is found desirable on a subscriber's premises, said switch being capable of automatically cutting said auxiliary telephone in and out of the main line, as desired.

My invention will be more definitely described hereinafter in connection with the accompanying drawings, illustrative of a preferred embodiment thereof, and the invention will be more particularly defined in the appended claims.

In the drawings, Figure 1 shows in side elevation a simple embodiment of my invention, the circuit connections therefor being indicated diagrammatically. Figs. 2 and 3 are similar views illustrating the positions the parts assume in use.

Inasmuch as the telephone itself and the wiring and various appurtenances thereof form no essential feature of my invention and may be of any usual or preferred kind, I have not deemed it necessary to indicate herein more than is sufficient merely to make my invention understood.

In the drawings, *a* indicates an automatic switch pivoted at *a'* and having a bifurcated hook-like end *a''* to receive a receiver *R* in usual manner, this lever being herein shown as actuated by a spring *s* against the gravity of the receiver *R*.

Forming a practical continuation of the lever *a* is an auxiliary member *a'''* thereof, pivoted also on the pivot *a'* and interlocked with the main or forward part of the switch by any suitable means, a pin *a''''* being herein shown projecting from the hub *a'''* of the part *a'''* in the path of a shoulder *a'''''* on the member *a*, so that the member *a'''* may move down independently of the member *a*; but if the receiver is removed from its hook the entire switch will necessarily be moved, as indicated in Fig. 3.

The member *a'''* of the switch is normally sustained by any suitable means, a spring *s'* being herein shown for the purpose, and said member *a'''* is insulated by any convenient means from the forward part of the lever, being herein shown as itself formed of ebonite or indurated fiber and provided with brasses or other contact-blocks *a''''* *a'''''* to contact with the required springs or contacts of the circuits.

I have herein indicated a common arrangement of the various contacts, and inasmuch as this will be readily understood without explanation I will simply mention that the contacts *b b'* are to the main line *b'' b'''* are to the primary instrument thereof, such as is usually in charge of a telephone attendant or normally left for the routine business of the establishment, it being supposed that the instrument herein shown is the one, for example, in the president's office, and wires *b''* and *b'''* lead to the local battery.

From the above explanation it will be understood that the parts are normally in position, as shown in Fig. 1, but that if it is desired to call up the central office the user of the telephone simply depresses the member *a'''* of the switch, as indicated in Fig. 2, thereby establishing the auxiliary circuit for the call, this operation, however, not disturbing the member *a* of the switch, the only effect so far having been to transfer the two main-line connections from the primary instrument to the secondary one. When, however, the operator removes his finger from the member *a'''*, the spring *s'* thereof immediately breaks the auxiliary circuit and restores the primary telephone to the main line, as before. When the operator removes the receiver, the parts assume the position shown in Fig. 3, it being understood that the spring *s* or other automatic actuator thereof is stronger than the corresponding part *s'*, and therefore compels the two parts of the switch-lever to move together in interlocked relation.

By my invention it is impossible for the operator to leave the apparatus out of its normal position, for the reason that the moment the finger is removed from the lever *a'''* its spring restores it to the position in Fig. 1, and similarly it is restored whenever the receiver is hung on its hook after use, thereby automat-

ically putting the primary instrument in circuit again for its ordinary use, which has been temporarily suspended during the use of the line-wires by the auxiliary.

5 No provision is here made for signaling from the primary to the auxiliary telephones, which may be done independently; but this feature is not material to the invention. More than one of these auxiliary instruments
10 may be employed, connected in series, each when in use cutting out all beyond it on the line.

When the receiver R of the auxiliary instrument is hung on the lever *a* and the member *a*³ thereof is in the position indicated in Fig. 1, then the circuit is as follows: from the central station to contact *b*, thence through block *a*⁸ to contact *b*² and to the primary instrument and back to contact *b*⁸ to
20 block *a*⁷, contact *b*¹, and thence back to the central station, and when the member *a*³ is depressed, as in Fig. 2, the circuit is from the central station to *b*, through *a*⁸ to *b*⁷ to *b*⁶, through arm *a* and spring *s* to *b*⁸, *a*⁷ to *b*¹,
25 and thence again to central, and when the parts are in the positions shown in Fig. 3 the line or secondary circuit is from the central station to contact *b*, block *a*⁸ to contact *b*⁷ to *b*⁶, through arm or lever *a* to spring *s* to
30 contact *b*⁸, block *a*⁷ to *b*¹, and thence to the central station, and the local circuit is from battery on the premises through wire *b*⁴, arm *a*, spring *s*, transmitter *b*⁵, and back to battery.

35 My invention relates, as before explained, to a provision whereby an instrument termed herein for convenience an "auxiliary" instrument and another instrument termed herein for convenience the "primary" instrument,
40 which may be in the same office or building and are on the same main line, the primary instrument being normally connected into the main line and the auxiliary instrument cut out from the main line, so that, for example,
45 when central calls the office the call will go to the primary instrument and will there be attended to and will not reach the auxiliary instrument in any manner; but if a person wishes to use the auxiliary instrument my invention enables said person automatically to
50 cut out the primary instrument there at the office and cut in the auxiliary instrument, and also enables said person (by depressing the lever *a*³, as shown in Fig. 2) to call up central
55 independently of the primary instrument, and with the certainty that upon raising the finger the auxiliary apparatus will automatically restore the parts to their normal position, placing the primary instrument in the line
60 and entirely cutting out the auxiliary instrument therefrom.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

65 1. In a telephone apparatus where two or more instruments are used at one end of a main line, a switch; including a member for

supporting the receiver and performing the usual operations of an automatic switch, in combination with switching mechanism for transferring the main-line connections from one instrument to another, operated by said supporting member, but capable, when desired, of being operated independently of said supporting member, substantially as described.

2. In a telephone apparatus, a switch including a receiver-hook, performing the usual operations of an automatic switch, together with switching mechanism for transferring the line connection from one instrument to another, said receiver-hook and said switching mechanism being operable dependently or independently, at will, substantially as described.

3. In a telephone apparatus, a switch including a member for supporting the receiver, and performing the usual operations of an automatic switch, in combination with switching mechanism capable of operating independently of said supporting member, for transferring the line connection from the primary instrument to an auxiliary instrument, said switching mechanism having means independent of said supporting member for automatically restoring it to its normal position, substantially as described.

4. The herein-described duplex switch for telephones, comprising a lever made in two parts, one part being adapted to support the receiver and perform the usual operations of an automatic switch, and the other part being provided with means automatically maintaining it in a given position, said two parts being connected to move together on the removal of the receiver, but the other end of the lever being capable of independent operative movement when the receiver end of the lever is down, substantially as described.

5. A two-part switch-lever for telephone apparatus, one part of which is movable independently of the other in one position of the latter, and moved and controlled by the movement of the said latter, and means as springs normally tending to move said two parts in opposition to each other, substantially as described.

6. The herein-described duplex switch for telephones, comprising a lever made in two parts, one part being adapted to support the receiver and act as an automatic switch, and the other part being provided with means normally maintaining it in a given position, said part being manually movable independently of the said supporting part, said two parts being connected to move together on the removal of the receiver, substantially as described.

7. A two-part switch-lever for telephone apparatus, said two parts being interlocked to move in unison by the movement of one part, the other part being manually movable in one direction independently of the last-mentioned part, and means normally holding said two levers in a given relation, with said manually

movable part out of its said manually-moved position relatively to the other part, substantially as described.

5 8. A two-part switch-lever for telephone apparatus, said two parts being pivoted together and projecting in opposite directions, one part being movable on its pivot independently of the other part when the latter is in one position, means normally holding said two
10 parts in a given relative position, said independently-movable part being automatically

moved by the movement of said other part and without changing the normal relative position of the said two parts, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE C. BUELL.

Witnesses:

GEO. H. MAXWELL,
EDWARD F. ALLEN.

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