

(No Model.)

G. W. COY.
TELEPHONE SWITCH.

No. 552,705.

Patented Jan. 7, 1896.

Fig-1.

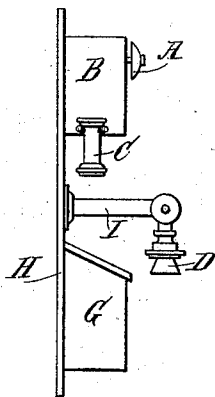


Fig 4.

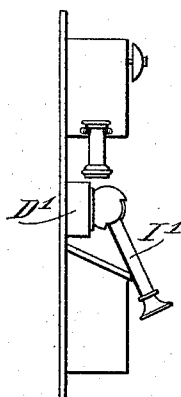


Fig 2.

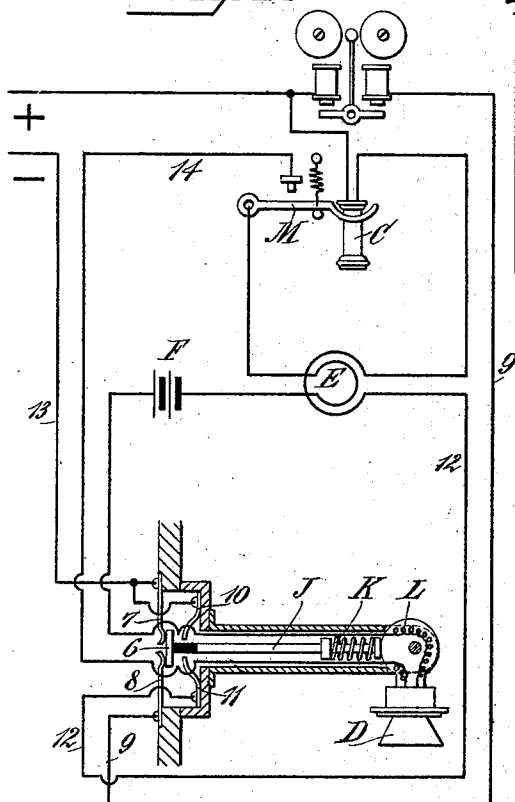


Fig. 3.

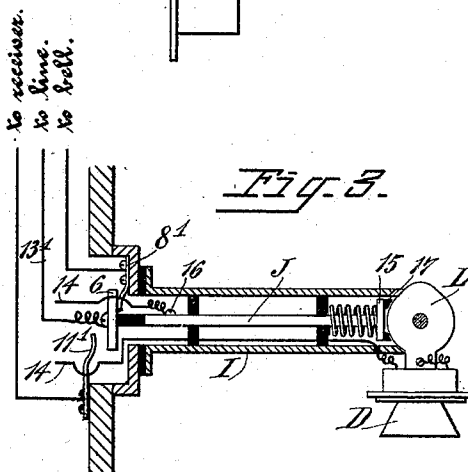
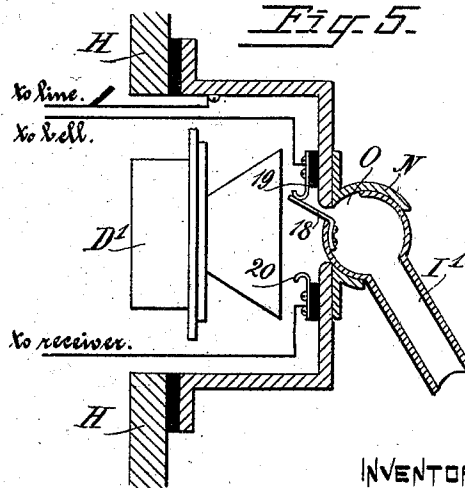


Fig. 5.



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GEORGE W. COY, OF MILFORD, CONNECTICUT.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 552,705, dated January 7, 1896.

Application filed April 5, 1895. Serial No. 544,655. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. COY, a citizen of the United States, and a resident of Milford, in the county of New Haven and State of Connecticut, have invented certain new and useful Telephone-Switches, of which the following is a specification.

My invention relates to telephony, and particularly to telephone apparatus wherein one or more switches are employed in cutting into and out of circuit one or more of the various elements of said apparatus—such as the call-bell, the receiver and the transmitter.

The main object of the invention is to so construct and arrange said parts that one or more of said switches may be operated, and, if desired, all the necessary switching may be done through the instrumentality of the transmitting apparatus instead of being done, as heretofore, by means of the receiver or hand-switches.

My invention therefore consists in the combination, with one or more switches of the switch mechanism of a telephone apparatus, of a transmitting apparatus, a part or all of which is movably and loosely mounted and so arranged that it shall automatically assume a position such as to prevent the use thereof for speaking purposes, while at the same time it holds the switch mechanism in the proper "off-line" condition.

My invention further consists in the construction, combination and arrangement of parts hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 represents in side elevation, and Fig. 2 in diagram, the principal features of my invention as applied in a telephone apparatus. Fig. 3 represents a modification of the switching mechanism. Figs. 4 and 5 represent in side elevation and vertical section, respectively, modifications of my transmitting apparatus and switching mechanism.

The forms of switch herein shown and the manner of operation by a movable transmitting apparatus or portion thereof may be greatly varied, and several variations thereof form the subject-matter of applications filed by me March 15, 1895, Serial No. 541,850;

April 1, 1895, Serial No. 544,011, and April 1, 1895, Serial No. 544,012.

In the apparatus as illustrated the general arrangement is on the usual plan, and only those features which embody my invention are shown in detail.

A indicates the call-bell, which may be mounted in a suitable box, as B, made to contain the magneto. The latter being of the usual form and arranged in the usual manner is omitted from the drawings.

C indicates the receiver; D, the transmitter; E, the induction-coil, and F the battery in the local circuit. The coil, the battery and the switches operated by the transmitter are preferably located in the box G, mounted on the back H along with the box B and the transmitter-arm.

For the purpose of doing the switching by means of the transmitter as it is moved into and out of speaking position, I have shown in Fig. 1 an ordinary microphone, preferably of the Hunning pattern, hinged to an arm, as I, fixed to the back H. This arm I preferably make hollow and locate within it a rod, as J, to be moved in one direction by a spring K, and in the other direction by a cam L, attached to the transmitter. Upon the inner end of rod J, and insulated therefrom, is a contact 6, which in the normal position of the transmitter engages with contacts 7 and 8, connected to the bell-circuit 9. When the microphone is raised into the speaking position, plate 6 is brought into engagement with contacts 10 and 11, located in the receiver-circuit 12. Circuits 9 and 12 have a common return through conductor 13. In this construction the local-circuit switch may be variously constructed and operated; but perhaps the simplest construction is that shown in Fig. 2, wherein said switch consists of a spring-controlled arm M, which closes the local circuit 14 when the receiver is removed therefrom and breaks again when the receiver is hung up. The local circuit may, however, be controlled by the movement of the microphone, the switch therein being simultaneously operated in connection with the bell and receiver switches. Such construction is illustrated in Fig. 3, wherein the rod J has a contact-plate 15 at its outer end, which engages with a portion of the cam L', connected

to the microphone when the microphone is raised into speaking position. One terminal of the microphone is then permanently connected to the cam, while the other terminal is directly connected to the local battery, the local battery being in turn connected to the rod J, as at 16, the circuit being completed from the rod through the pivot to the cam, and the arm I being insulated from its support, as indicated. Upon the contact 15 is located blocks of insulation 17, which prevent the cam L from engaging plate 15 when in the normal position, as seen in Fig. 3. The rod J, with its plates 6 and 15, may be termed a "movable contact device," operating, as it does, contacts in part of the circuits of the apparatus, being itself in one circuit and being actuated by and making electrical engagement with the cam carried by the microphone. Fig. 3 also shows a modification in the bell and receiver switches, the contact 6 being directly connected to line, and only one contact, as 8', being used in the bell-circuit and one, as 11', being used in the receiver-circuit, the conductor 13', connected directly to contact 6, acting as the common return.

Other changes also may be made in the location and circuit connections of the various contacts.

In the construction shown in Fig. 2, after ringing up and removing the receiver from its hook, it is simply necessary to raise the microphone into speaking position to place the apparatus into condition for use, the raising of the microphone acting to cut out the bell and cut in the receiver, and the removal of the receiver from its hook acting to close the local.

In Fig. 3 the one act of raising the microphone into speaking position serves to operate all the switches of the apparatus, and in either instance upon releasing the microphone it assumes an averted position, thereby operating the switches to put the circuits into normal condition and at the same time to place the microphone into a position where it cannot conveniently be used.

In the modification forming the subject of Figs. 4 and 5 the microphone is represented as fixed, as by being located upon the back H, while the remaining portion of the transmitting apparatus, consisting of the tube I', is hinged in the front of the microphone in a manner to allow it to resume the position indicated when not in use. This tube terminates in a cylindrical shell, which is mounted in a cylindrical bearing, as at N. An opening O through said shell is formed in line with the bore of the tube, which opening is closed when the tube drops into the normal position, so that the transmitting apparatus cannot be used until the tube is raised into the proper speaking position, when the opening O will be in line with the opening to the diaphragm of the transmitter. In this manner an air stop or valve is constructed, to open which the user is obliged to raise the

tube I'. This feature is taken advantage of by so connecting a contact to said tube that as the tube is raised the bell shall be cut out of circuit and the receiver shall be cut into circuit. Such contact is represented at 18, and in position of rest this contact engages with a contact 19 in the bell-circuit, and when the tube is raised the contact 18 breaks connection with contact 19 and engages with contact 20 in the receiver-circuit. I have shown the line-circuit as connected to the box inclosing the microphone from which circuit passes through the bearing O N to the contact 18.

The speaking-tube, instead of swinging downwardly or being hung up in the manner shown, may be otherwise averted from the speaking positions so long as when it assumes or is placed in the position of rest it will operate the switch mechanism.

I have discovered that in using a microphone having a chamber containing granulated carbon, such as the Hunning transmitter, it will not pack and become useless if when not in use it is swung into an inverted position, since the movement thereof from one position to the other keeps the granules shaken up and prevents their becoming matted or packed together.

The movement of the microphone is insured for each use of the apparatus, even for receiving messages, since its position controls the receiver-circuit. This is brought about by the two distinct switches, the one in the local, as at M, and the one in the main, as at 6, which switches are so connected in the circuit or the circuit so arranged with respect thereto that both said switches must be operated in throwing the apparatus into and out of use.

Obviously the arrangement of contacts, attachment of circuits and construction of parts may be variously changed without departing from my invention.

I do not herein claim the air-stop above described, as it is claimed in the above-mentioned application, Serial No. 544,012.

What I claim as my invention is—

1. In a telephone apparatus, the combination with switch contacts in the circuit or circuits thereof, of a movable contact device mounted on a suitable support and operating upon said contacts and being itself in a circuit of said apparatus, and a transmitter pivoted to said support and provided with an attachment movable therewith for actuating said movable contact device and also for making and breaking electrical engagement therewith, substantially as set forth.

2. In a telephone apparatus, the combination with the switch contacts in the various circuits thereof, of a reciprocating rod mounted on a suitable support provided with means for controlling said circuit, and a transmitter pivoted to said support and provided with means for controlling the reciprocation of said rod for the purpose specified.

3. In a telephone apparatus, the combination with switches in the circuits thereof, of an arm carrying a spring-seated rod controlling said switches, and a transmitter pivoted to said arm and provided with a cam for actuating said rod in the operation of the switches, substantially as set forth.

4. In a telephone apparatus, the combination with the switches in the bell and receiver circuits, of the movable transmitting apparatus provided with means for actuating said switches, and a switch in the local circuit operated by the movement of the receiver.

5. In a telephone apparatus, the combination with the switches in the bell and receiver circuits, of a common actuating means for said switches, and a switch in the local circuit of the transmitter entirely independent

of the other switches and operable by the movement of the receiver.

6. In a telephone apparatus, the combination of the main circuit including the receiver, a switch therein, a local circuit including the transmitter, and a switch therein separate and distinct from the switch in the main circuit, the circuit being so arranged that both said switches must be operated to throw either the transmitter or receiver into or out of use, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 29th day of March, A. D. 1895.

GEORGE W. COY.

Witnesses:

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HENRY T. HIRSCH.