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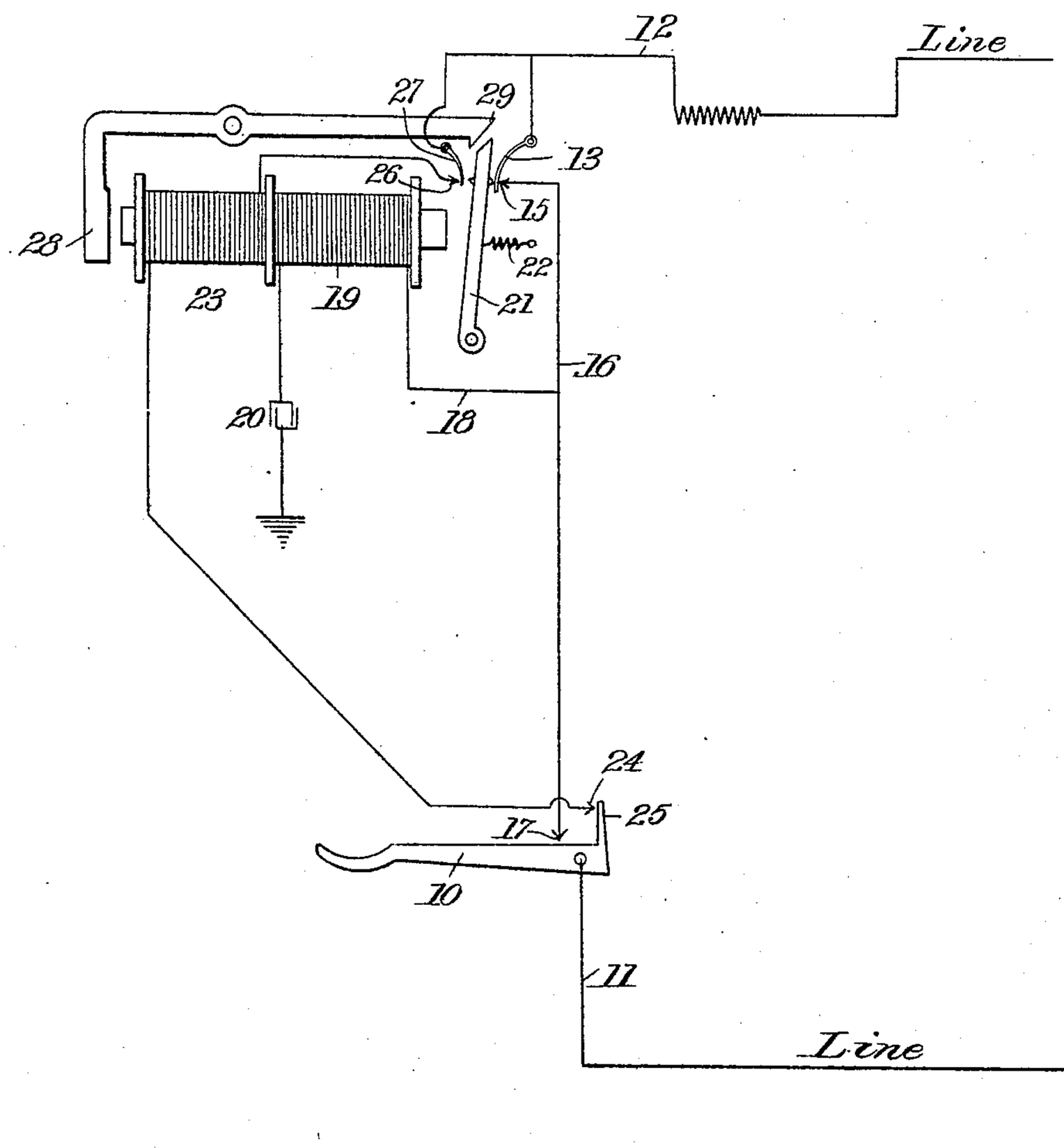
R. A. DAVIDSON.

TELEPHONE.

APPLICATION FILED MAY 14, 1906.



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TELEPHONE.

No. 835,181. Specification of Letters Patent. Patented Nov. 6, 1906.

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To all whom it may concern:

Be it known that I, ROBERT A. DAVIDSON, a citizen of the United States, residing at Santa Cruz, in the county of Santa Cruz and State of California, have invented new and useful Improvements in Telephones, of which the following is a specification.

This invention relates to certain new and useful improvements in telephones.

The invention has for its object the production of simple, practicable, and efficient means whereby when a subscriber leaves his receiver off the hook through inadvertence a signal is transmitted to the central office.

A further object of the invention is to provide means whereby the central office upon receiving such a signal may operate means for automatically opening the talking-circuit or opening the signaling-circuit to central office, means being also provided whereby said circuit may be automatically closed when the receiver-hook is again pressed down or the subscriber attempts to signal the central office.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawing the figure is a diagrammatical view illustrating my invention.

Referring to the drawing, 10 designates the receiver-hook or switch, which is connected to the main line-wire 11, as shown. The other line-wire 12 terminates in a pivoted arm 13, which engages a contact 15 to close the talking or signaling circuit to wire 16, which in turn terminates in a contact 17. The receiver-hook 10 closes the circuit through contact 17 when the receiver has been removed. From wire 16 extends a branch 18, forming the coil of an electromagnet 19, the other end of the magnet-winding being shown as grounded in any suitable manner, the drawing illustrating the winding as grounded through the condenser 20. Said magnet 19 serves to attract the armature 21, pivoted adjacent thereto, a spring 22, connected to said armature, serving to hold the same normally away from the magnet and in a position to close the circuit at contact 15. A second magnet or relay 23 is provided, one end of the winding thereof terminating in a contact 24, which is engaged by a shoulder 25 of the receiver-hook when the receiver is hung thereon, the other end of said winding terminating in a contact 26. A pivoted arm 27, connected to the main line-wire 12, is arranged to close the circuit to magnet 23 when the armature 21 is attracted by magnet 19. An armature 28 is pivoted adjacent magnet 23, said armature being provided with a hooked end 29 to engage the end of armature 21 when the same has been attracted by its magnet, thus preventing the return thereof through action of spring 22.

In practice should the subscriber after having used the telephone fail for any reason to hang up the receiver a signal-current is transmitted through contact 17, wire 16, contact 15, and main wire 12. The central operator upon recognizing the cause of the signal sends an alternating or pulsating ringing-current out upon the line, whereupon magnet or relay 19 is energized and the armature 21 attracted thereto. The armature in its movement opens the circuit at 15 and closes the circuit to the second magnet through contact 26, and at the same time the end of said armature passes under the hook 29 of armature 28 and is locked against return movement. The parts remain in this position until the subscriber replaces the receiver upon the hook or attempts to signal the operator. As soon as this takes place the circuit to magnet 23 is completed through contact 24, resulting in the attraction of armature 28, the rocking of which disengages hook 29 from armature 21, and the latter is returned to its normal position by spring 22. The talking-circuit is thus again closed at 15 and the circuit to magnet 23 opened again at 26.

The advantages and operation of my improved telephone will be clear to those skilled in the art to which it appertains, and it will be particularly noted that the same is specially applicable to party-lines, although I do not desire to limit its use to this particular class of systems. It will be observed that I have provided simple and practicable means whereby the failure to replace the receiver is at once detected and the system at once placed in condition to open at this particular instrument the talking or signaling circuit until the same is again required, said circuit being automatically closed by any attempt to use the telephone.

From what has been said it will be noted that I have illustrated and described the coil of the magnet as grounded through a condenser; but I do not desire to limit myself in this respect, as the current may pass from said coil in any other suitable or preferred manner. The same is equally true of the connections with the relay, as it is possible to connect the latter to the line in various ways, and the desired result can be thereby obtained without interfering with the normal talking or signaling circuit or the transmission of sound therein. In fact, it is practically impossible to anticipate all of the various ways in which the different connections may be made with the line-wires; but it will be understood that I desire to claim, broadly, any such connection in which the results herein described are obtained.

I claim as my invention—

1. An improvement in telephones comprising a telephone system having a normally open talking-circuit, a receiver-hook to automatically close said circuit when the receiver is removed, and means independent of said hook and operated from the central office for opening said circuit said hook controlling said circuit-opening means to restore the system to normal.

2. An improvement in telephones comprising a telephone system having a normally open talking or signaling circuit, a receiver-hook to automatically close said circuit when the receiver is removed, means operated from the central office for opening said circuit independently of said hook, and means controlled by said hook for automatically closing said circuit after operation of said circuit-opening means.

3. An improvement in telephones comprising a telephone system having a normally open talking or signaling circuit, a receiver-hook to automatically close said circuit when the receiver is removed, a circuit-closer normally closing said circuit and also controlled by said hook, and means independent of said hook and operated from the central office for actuating said circuit-closer to open the circuit.

4. An improvement in telephones comprising a telephone system having a normally open talking-circuit, a receiver-hook to automatically close said circuit when the receiver is removed, a circuit-closer normally closing said circuit, an electromagnet controlled from the central office, an armature for said magnet for operating said circuit-closer to break the circuit, and means controlled by said hook for restoring said circuit-closer to normal position.

5. An improvement in telephones comprising a telephone system having a normally open talking-circuit, a receiver-hook to automatically close said circuit when the receiver is removed, an independent circuit-closer normally closing said circuit, electromagnetic means for operating said circuit-closer to open said circuit independently of said hook, and means controlled by said hook for automatically operating said circuit-closer to close the circuit.

6. An improvement in telephones comprising a telephone system having a normally open talking or signaling circuit, a receiver-hook to automatically close said circuit when the receiver is removed, an electromagnet, one terminal of the winding of which is provided with a contact adjacent said hook, a circuit-closer normally closing said talking or signaling circuit, and means for operating said circuit-closer to open said circuit and simultaneously connecting the other terminal of said winding with said circuit, whereby when the receiver is returned to its hook the circuit will be completed through said magnet.

7. An improvement in telephones comprising a telephone system having a normally open talking or signaling circuit, a receiver-hook to automatically close said circuit when the receiver is removed, two circuit-closers, one of which normally closes said talking or signaling circuit the other being normally open, means for operating said circuit-closers to open the circuit through the first mentioned and close the circuit through the last mentioned, and means controlled by the receiver-hook for permitting the parts to return to their normal positions.

8. An improvement in telephones comprising a telephone system having a normally open talking-circuit, a receiver-hook to automatically close said circuit when the receiver is removed, a circuit-closer normally closing said circuit, an armature controlling said circuit-closer, a magnet for operating said armature, means for locking said armature from movement when attracted by said magnet, and means controlled by said hook for freeing said armature from said locking means.

9. An improvement in telephones comprising a telephone system having a normally open talking or signaling circuit, a receiver-hook to automatically close said circuit when the receiver is removed, a circuit-closer normally closing said circuit, a second circuit-closer, a magnet in circuit with the last-mentioned circuit-closer, an armature for alternately operating said circuit-closers, a magnet controlling said armature, and a locking device for said armature controlled by the first-mentioned magnet, the circuit to said magnet being controlled by said hook.

10. An improvement in telephones comprising a telephone system having a normally open talking or signaling circuit, a receiver-hook to automatically close said circuit when the receiver is removed, a circuit-closer nor-

mally closing said circuit, a second circuit-closer, a magnet in circuit therewith, an armature for alternately operating said circuit-closers, a magnet controlling said armature, and a pivoted lever for engaging the end of said armature to lock the same in position, said lever having an angular portion forming an armature for the first-mentioned magnet, the circuit to said magnet being controlled by said hook.

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

ROBERT A. DAVIDSON.

Witnesses:

L. F. GROVER,

H. B. TOWNE.