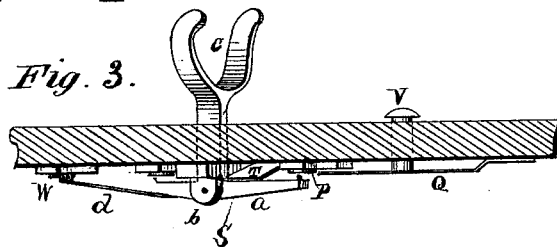
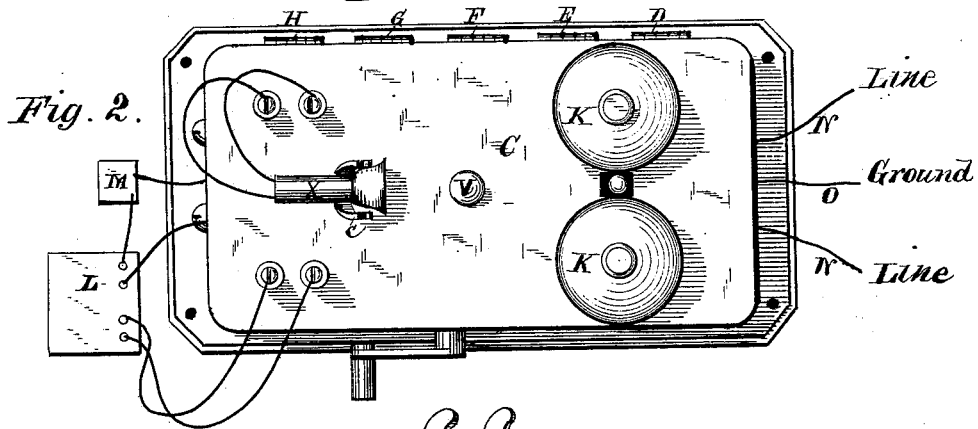
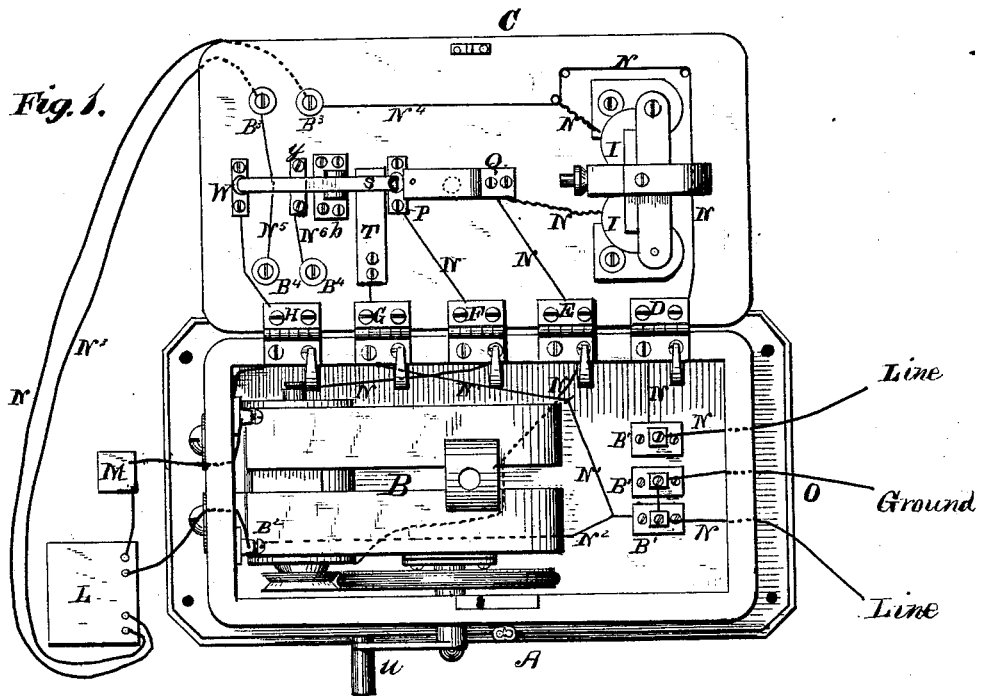


C. ANDERSON & A. E. BRIGGS.  
Telephone and Microphone Switch.

No. 218,362.

Patented Aug. 12, 1879.



Attest.

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By Atty. Ellsworth  
Their Atty.

# UNITED STATES PATENT OFFICE.

CHARLES ANDERSON AND ARTHUR E. BRIGGS, OF CINCINNATI, OHIO,  
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## IMPROVEMENT IN TELEPHONE AND MICROPHONE SWITCHES.

Specification forming part of Letters Patent No. **218,362**, dated August 12, 1879; application filed  
June 3, 1879.

*To all whom it may concern:*

Be it known that we, CHARLES ANDERSON and ARTHUR E. BRIGGS, both of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Improvement in Telephone and Microphone Switches; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a telephone-box with the cover open and with a microphone attached. Fig. 2 is a similar view with the cover closed, and Fig. 3 is a perspective view of the switch and its connections with the telephone separated from the switch-hook.

Similar letters of reference in the several figures denote the same parts.

Our invention has for its object to provide an improved switch for telephone-lines and for a telephone-line with microphones attached; and to this end it consists in a spring-switch connected with each telephone apparatus, adapted to support the weight of the telephone, for the purpose of breaking the telephone and microphone connections with the line, and, when relieved of the weight of the telephone, to automatically make said connections, as I will now proceed to describe.

In the accompanying drawings, A represents a telephone-box, containing a magneto-engine, B, and the binding-posts B<sup>1</sup> for line and ground wires. C is the cover, hinged to the box by five hinges, D E F G H, respectively. I are electro-magnets, mounted upon the inside of the cover, so as to enter the box when the cover is closed. The armature of these magnets is provided with a bell-arm, which projects through the cover between two bells, K K, on the outside, for sounding each alternately when a call is made upon the line.

L is the microphone, and M the battery thereof. These several parts are not new in telephone-lines, but are at present in use in various parts of the country.

N N are line-wires extending each side the box, if the latter be at an intermediate station, a center-post being placed between the two binding-posts of the line-wires to receive the ground-wire O, if used.

The magneto-engine, as well as the electro-magnets, is interposed in the main line, for the purpose of establishing a current or circuit, the interruptions or breakings of which sound the call upon the bells. To effect this the wires N from the poles of the engine extend to the two hinges E F; thence one to a metal plate, P, in the cover, and the other to the upper end of a flat metallic spring, Q, also secured at such end to the cover, with its lower free end resting upon the plate P.

This upper wire connects with the electro-magnets, and the latter, upon the opposite side, connect with the line-wire, which extends across the cover of the box to the upper hinge, D, and thence to a binding-post in the box.

The connection from the plate P to the line is through the switch S, the construction of which I will presently describe; thence, by a flat spring, T, on the cover and a short wire, to the hinge G, which, in its turn, is joined to the line by a wire, N<sup>1</sup>, extending within the box, to one of the binding-posts B<sup>1</sup>.

To create a current upon the line thus established, the crank U on the outside of the box is turned, and, through friction-pulleys on the crank-shaft and the shaft of the armature, motion is communicated to the latter to rotate it in its cylinder. This establishes a short circuit in the usual manner, the interruptions of which cause the bells to sound, and the interruptions are produced by pushing a button, V, projecting from the front of the cover and bearing against the break-spring Q, as shown by dotted lines, Fig. 1, each push of the button lifting the spring from the plate P, and thus breaking the short circuit and throwing the current to line.

The primary current from the microphone is from the battery to the lower hinge, H; thence to a lower plate, W, on the cover; thence along the switch S and spring T to the hinge G; and from the hinge, through the wire N<sup>1</sup>, to its binding-post B<sup>1</sup>. From the binding-post it passes along the wire N<sup>2</sup> to a post, B<sup>2</sup>, in the lower end of the box, thence to the microphone, and from there to the opposite pole of the battery.

The induced current from the microphone passes to the line along wires N<sup>3</sup> N<sup>3</sup> to binding-posts B<sup>3</sup> B<sup>3</sup> in the cover, the upper post

being joined by a wire, N<sup>4</sup>, on the cover with the line-wire N from the electro-magnet. The lower post, B<sup>3</sup>, is connected by a wire, N<sup>5</sup>, with the lower of two binding-posts, B<sup>4</sup> B<sup>5</sup>, near the opposite edge of the cover, and to these posts the telephone X is attached. The upper post, B<sup>4</sup>, is connected by a wire, N<sup>6</sup>, with a plate, Y, secured to the cover under the switch, as shown. The induced current is employed for working the telephone, and transmits the telephonic connections in both directions from the apparatus on the line, as will be readily understood.

The switch S, which, with its connections, forms the subject of our invention, is composed of a rigid bar of metal, *a*, pivoted near its lower end between the ears of a plate, *b*, secured to the inside of the cover, and provided with a forked hook, *c*, projecting through to the front of the cover. The upper and lower ends are adapted to make connection with the plates P Y on the cover when the bifurcated hook is operated, the contact-surfaces being faced with platinum to insure a perfect connection. The spring T serves to hold the upper end of the switch off the plate P and its lower end on the plate W.

The object in bifurcating the hook is to suspend the telephone between its arms, so that the weight thus applied shall overcome the tension of the spring J and swing the switch so that its lower end shall break connection with the plate Y, thus cutting out the telephone and microphone, and throw its upper end down upon the plate P, to establish the circuit for sending the calls upon the line. The lower end of the bar *a* also carries a thin metallic spring, *d*, to make the microphone-connection with the plate W on the cover when the spring is in contact with such plate, their contact-surfaces being faced with platinum.

The distance from the pivot of the switch to the lower plate, W, is so great that if the switch were made long enough to cover it, its intermediate point could not come in contact with the plate Y of the telephone-circuit; hence the employment of the spring becomes necessary, because it will yield when it touches the plate W, and allow the intermediate switch-point to bear upon the plate Y at the same time.

When the line is not in use for transmitting intelligence, the telephone is hung upon the forks of the switch, thus breaking the telephone and microphone connections.

When a call is to be made to a distant station, the crank is turned and the push-button operated, as above described; and when it is desired to communicate with a distant station, the operation of the crank is stopped and the telephone detached from the hooks. The switch, thus relieved of its weight, is automatically operated by the spring T, to break the connection with the plate P, thus cutting out the call mechanism, and to make the connection with the plates Y W, to establish the telephone and microphone circuits for receiving and transmitting the communication.

When a microphone is not employed with the telephone-line, the switch may be made without the spring, in which case a slight change in the arrangement of the telephone-wires is necessary—that is to say, the microphone-wires are left off, and the two posts B<sup>3</sup> electrically connected.

Having thus described our invention, we claim as new—

1. The spring-switch S, adapted to support the telephone, combined with the stops of the telephone and microphone lines, whereby, when the telephone is removed from the switch, the local or primary circuit of the microphone is connected, and the secondary circuit of the microphone put upon the main line and through the telephone, substantially as described, for the purpose specified.

2. The combination of the spring-switch and spring T with the stops W Y of the telephone and microphone lines, and the stop P and break-spring Q of the magneto device, substantially as described, for the purpose specified.

In testimony of which invention we hereunto set our hands this 22d day of May, A. D. 1879.

CHARLES ANDERSON.  
ARTHUR E. BRIGGS.

Witnesses:

E. A. ELLSWORTH,  
W. BLACKSTOCK.