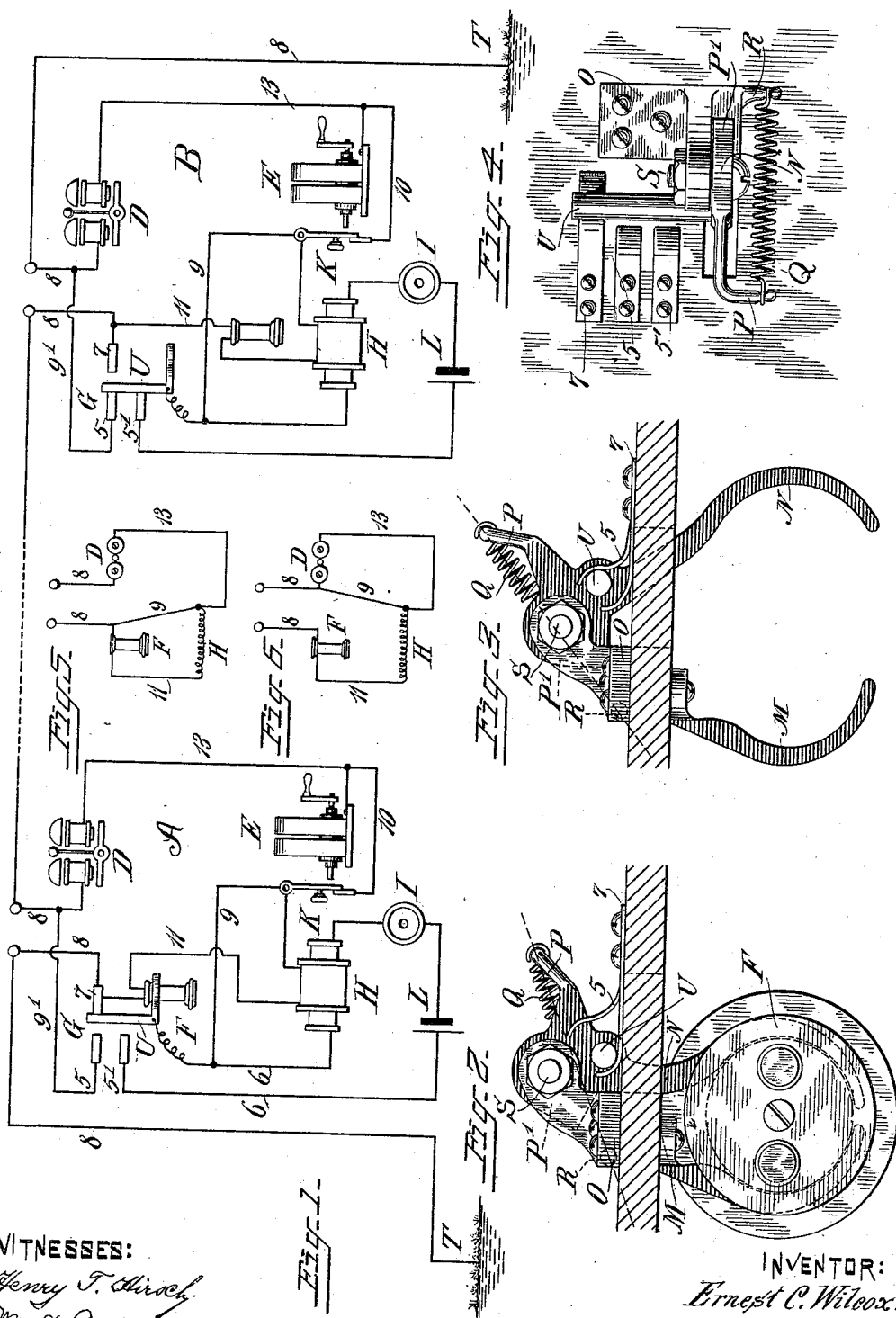


(No Model.)

E. C. WILCOX.
TELEPHONE SWITCH AND SYSTEM.

No. 544,711.

Patented Aug. 20, 1895.



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TELEPHONE SWITCH AND SYSTEM.

SPECIFICATION forming part of Letters Patent No. 544,711, dated August 20, 1895.

Application filed May 13, 1895. Serial No. 549,032. (No model.)

To all whom it may concern:

Be it known that I, ERNEST C. WILCOX, a citizen of the United States, and a resident of Meriden, in the county of New Haven and State of Connecticut, have invented a certain new and useful Telephone Switch and System, of which the following is a specification.

My invention relates to telephone systems and apparatus and particularly to the switching mechanism and to the arrangement of the circuits.

One object of the invention is the production of a receiver hook or support, which shall operate, on the removal of the receiver, to do part or all the switching necessary to put the apparatus into condition for talking and which shall maintain the apparatus in such condition until said support is manually restored to its normal position.

Another object is to so construct said support that when the receiver has been removed therefrom it will not again hold the receiver until manually restored to its normal position.

Another object of the invention is to so arrange the circuits that the call-bell and receiver shall always be connected to line; that in the normal condition of the apparatus the bell-coils shall be the only resistance in the line, the receiver and secondary of the inductorium being shunted, and that, in the speaking position, the receiver shall be alone in the line, the bell being shunted.

With these objects in view my invention consists in the combination and arrangement of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 diagrammatically represents my invention as applied to a line running through two stations or instruments, one of which is in the normal or out-of-use condition, while the other is in the condition for speaking. Fig. 2 is a plan view of my receiver-support in its normal position. Fig. 3 is a like view of said support in its open position. Fig. 4 is an elevation of the rear portion of the movable part of said support and the switch mechanism controlled thereby. Figs. 5 and 6 represent graphically the rela-

tion of the receiver and bell-shunts to one another.

I have represented in Fig. 1 at station A and in Fig. 5 the condition of the circuits of an instrument when not in use, which I have termed the "normal" condition, while at station B and in Fig. 6 the parts and circuits of the instrument are in the speaking position. Each instrument comprises a call-bell, as D, a receiver F, the receiver-support graphically represented at G in Fig. 1, the inductorium H, the transmitter I, the local battery L, and the calling switch or key K, the line being represented as grounded at T, though it may obviously have a metallic return.

The receiver-support I will now describe, as by it the local circuit and the shunting-circuit are controlled. It consists of two parts movable relatively with relation to each other, one or both of which may be movable. I, however, prefer to make one part, as M, rigid, preferably by mounting it upon the exterior of the case containing the apparatus. The other part N consists of a piece curved in conformity to the part M, so as to co-operate therewith in holding the receiver in place, and is pivoted, preferably, within the casing upon a suitable support, such as that indicated at O. This part N is provided with an extension, as P, to which is attached a spring Q, fixed at its opposite end to some suitable support, as a projection R, upon the plate O. The supports of this spring are so located with relation to the pivot S that when the receiver-support is closed its line shall be at one side of said pivot, thereby holding the parts M and N together, and when the receiver-support is open its line shall be at the other side of said pivot, thereby holding the parts M and N separated. By this construction it will be seen that when the part M has been moved away from the part N, as by taking down the receiver, it will remain in that position by virtue of the spring Q until it is manually returned to the normal position. A suitable stop is provided for limiting the outward movement of the part N—as, for instance, by forming a projection, as P', upon said part—which shall engage with the plate O, as indi-

cated in Figs. 2 and 3. The length and curvature of the parts M and N are such that the receiver cannot be held between them when once removed until the part N has by some means been pressed toward the part M. To the part N is connected a pin or bar U, which operates as the movable portion of the switch mechanism. Attached to the casing or other suitable support in proximity to said pin are contact-springs 5 and 5', the latter being connected to one terminal of the local circuit 6 and the former to the upper part 9' of the shunt-circuit 9, the other terminal of the local being connected to the bar U; also, a contact-spring, as 7, is located in proximity to said pin and connected to the line-circuit 8. The position of the contact-springs is such that when the receiver is on its support, as in the position indicated at station A, the bar U is out of contact with springs 5 and 5' and in contact with spring 7.

At E is represented the magneto for calling, which may be of any approved pattern, having, preferably, a normally-closed shunt, as 10, around the armature thereof, the key K serving to break the shunt and close circuit through the armature in any of the well-known ways.

In the normal position of the parts of my instrument, as shown at station A, the line-circuit 8 is through contact 7, bar U, branch 9, key K, branches 10 and 13, and the bell-magnets. The local circuit from battery L with transmitter I and the primary of the inductorium is open at contact 5'. The receiver is in a shunt 11 from the line through the secondary of the inductorium to the key K. It will thus be noticed that the receiver is normally in shunt to the bell. (See Fig. 5.) The calling-circuit consists of a branch 13, leading from the bell to the base of the magneto through the armature thereof to key K, thence by circuit 9, bar U, and contact 7 to line. Thus it will be seen the call-bell and receiver are always connected to line, and that in the normal condition of the apparatus the bell is directly in the line while the receiver is in a shunt, and in the speaking condition the receiver is directly in the line while the bell is in a shunt. In this way the making and breaking of the line-circuit in shifting from one of said conditions to the other is avoided. Figs. 5 and 6 graphically illustrate the simplicity of this arrangement, the bridging or shunting circuit 9 being connected between the bell and the receiver and merely shifted at its other end from one line-terminal to the other by the operation of my improved switch mechanism when the telephone apparatus is thrown into or out of use.

The operation of a system constructed on my improved plan is as follows: The parts of the instrument standing in the normal condition above described, a person desiring to

call up another station has only to close the circuit through the armature-coil, as by pressing the key K against the pin in the end of the armature-shaft, when the line-circuit will be completed through that instrument by way of the switch G, branch 9, key K, the magneto, branch 13, and the bell. After calling the key returns to its normal position and the receiver is taken from its support, thereby throwing the bar U into engagement with contacts 5 and 5', as represented at station B. The instrument now is in speaking condition, the line-circuit being through the receiver branch 11, the secondary of the inductorium, and the shunt branch 9 9' to line, the transmitter-circuit being also closed between bar U and contact 5'. Then, on closing the receiver-support, the parts assume the normal condition, as above described.

Many changes may obviously be made in the arrangement of the circuits and in the form and construction of the parts of the receiver support and switch without departing from my invention.

What I claim as my invention is—

1. A receiver support consisting of a fixed part and a part movable laterally with respect thereto, switch mechanism having a contact thereof connected to said movable part, and a device connected to said movable part for holding it in its normal position until moved outwardly by the withdrawal of the receiver and for holding it in the outward position until manually returned to the normal position.

2. A combined receiver support and switch consisting of a hook mounted on the wall of the telephone case, another hook co-operating therewith and pivoted to a bracket on the case, a switch contact carried by the movable hook, circuit contact springs arranged in the path of movement of said contact, and a spring acting to hold said movable hook and its contact in either of their extreme positions, as and for the purpose set forth.

3. The combination with a suitable support having an aperture therein, of a hook mounted thereon at one side of the aperture, a bracket on the opposite side of the support near the aperture, a hook pivoted to said bracket and protruding through the aperture into co-operative relation to the other hook, a contact bar carried by the pivoted hook, a spring contact arranged to engage said bar as it is moved in one direction, a spring contact arranged to engage said bar as it is moved in the opposite direction, and a device for retaining said bar and its supporting hook in either of their extreme positions, substantially as and for the purpose specified.

4. In a telephone apparatus, the combination with a receiver support consisting of a fixed hook and a co-operating pivoted hook, of a switch contact carried by the pivoted

hook, one line terminal and one local circuit terminal electrically connected to said contact, a spring contact located at one side of the movable contact and connected to the main line, spring contacts located at the opposite side of said movable contact and connected respectively to the line and to the other terminal of the local circuit, and a device for retaining the pivoted hook and its contact in either of their extreme positions, as and for the purpose set forth.

Signed at Meriden, in the county of New Haven and State of Connecticut, this 10th day of May, A. D. 1895.

ERNEST C. WILCOX.

Witnesses:

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RALPH A. PALMER.