

(No Model.)

J. C. FRANCIS.
TELEPHONE SWITCH.

No. 488,993.

Patented Jan. 3, 1893.

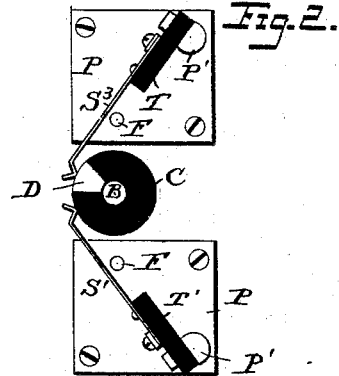
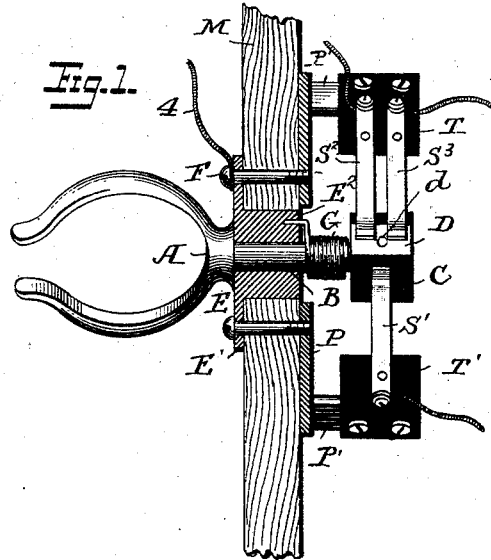
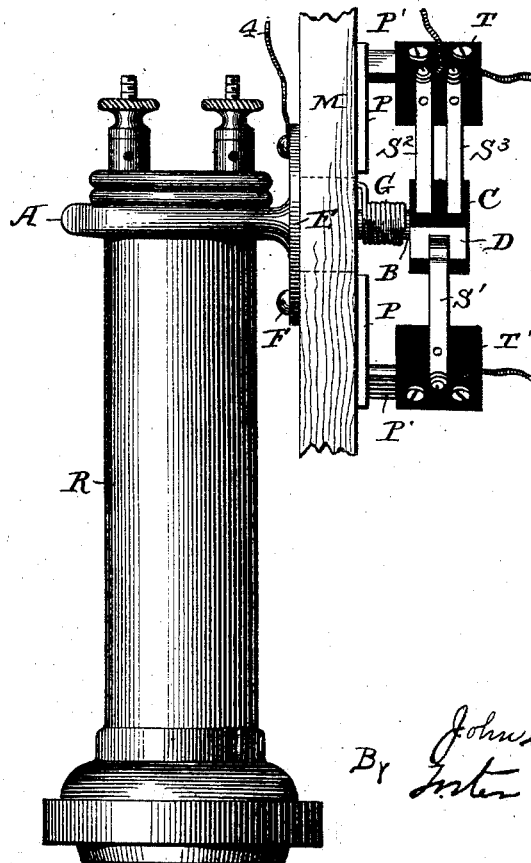


Fig. 3.



Witnesses
Prof. Winkel
Alle N. Dobson

Inventor
John C. Francis.
By *John C. Francis*
Attorneys

UNITED STATES PATENT OFFICE.

JOHN CHISHOLM FRANCIS, OF NEW YORK, N. Y., ASSIGNOR TO THE ECHO
TELEPHONE COMPANY, OF SAME PLACE.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 488,993, dated January 3, 1893.

Application filed February 15, 1892. Serial No. 421,860. (No model.)

To all whom it may concern:

Be it known that I, JOHN CHISHOLM FRANCIS, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Telephone-Switches, of which the following is a specification.

My invention relates to telephone switches, and has for its object to provide means whereby when the ordinary hand telephone or receiver is in position on its hook, the switch will be held in such a position as to include the signal devices in the line, and when the hand telephone is removed from its hook for the operator to listen, the switch is automatically moved to cut out the signaling devices, and include the telephone instruments in the line.

To these ends my invention consists in the construction and arrangement substantially as hereinafter more particularly pointed out.

Referring to the accompanying drawings, Figure 1, is a sectional device through the telephone switch, the box or support showing the position of the parts when the hand telephone is removed; Fig. 2, is a side view of the same; Fig. 3, is a sectional view showing the position of the switch when the hand telephone is on the hook.

It is well understood that in operating the ordinary telephone lines, it is desirable to have the circuits normally arranged, so that the signal devices at the subscriber's station are normally included in the line, while the telephone instruments are excluded, so that not only is the resistance of the telephone instruments normally out of the line, but the instruments are less liable to injury from excessive current or otherwise, which may pass over the line. When, however, the instruments are to be used for talking, it is equally desirable to have the signal devices excluded from the main line so as to cut out their resistance, and to include the telephones, and my invention involves a simple, cheap and effective switch, whereby this may be accomplished.

In the drawings M represents a portion of the box, case, or other support for the switch, and this may of course be a part of the case usually supporting the transmitter, signal de-

vices, &c., belonging to the subscriber's station. Supported in this case is the hook A, which is shown of a form to receive the ordinary hand or receiving telephone R. This hook is provided with a shank or shaft B, which extends through the casing M, and is preferably mounted in a bearing piece E, so as to furnish a good support for the hook. This bearing piece E comprises a plate E', which is adapted to fit on the outside of the box or case, and an inward projection E², fitting in an opening in the case, and it may be secured to the case by suitable screws F.

Mounted on the end of the shaft or spindle B, is a commutator or switch piece C, consisting essentially of a block of insulating material provided with a sector D of conducting material, and this may be secured to the spindle in any suitable way, as by a screw d, so as not only to hold it in position, but form good electric connection between the sector and the spindle. The spindle or shaft is provided with a tension spring G, shown in the present instance as a coiled spring, one end of which is fastened to the spindle, and the other to the bearing E², and the tendency of this spring is to maintain the parts in the position shown in Fig. 1.

Mounted upon suitable insulating plates as T, T' are the spring contacts or brushes S', S², S³, and these are arranged so as to normally bear on the surface of the commutator C. Connected to these brushes are the wires leading to the usual instruments, as for instance, connected to the brush S' is a wire leading to the signaling devices, while the conductors connected to the brushes S² and S³ lead to the telephone instruments in the usual way. In the present instance, these insulating plates are mounted upon posts or projections P', which are in turn connected to, or form part of the plates P, and these may be supported or attached to the casing M in any suitable manner, or preferably as shown by the screws F, which also hold the plate E' in position. With this arrangement, it will be seen that as shown in Fig. 1, with the hand telephone or receiver removed, under the tension of the spring, the hook and commutator are turned to the position shown, so as to bring the conducting sector D under

the ends of the two brushes S^2 , S^3 , and the line 4, being connected to the plate E' , the circuit is traced through the plate and bearing to the shaft or spindle B, and thence through the sector D to the brushes S^2 , S^3 , and to the telephone instruments in the usual way. When, however, the hand telephone is placed in the hook, the weight of the telephone is such that it overcomes the tension of the spring G, and the parts are turned automatically to the position shown in Fig. 3, in which it will be seen that the conducting sector D, is under the end of the brush S' leading to the signal devices, while the brushes S^2 and S^3 rest upon the insulating portion of the commutator. Under these conditions, the devices are in position to receive the signal calling the subscriber, and as soon as he removes his hand telephone to listen to the call, the transmitter is automatically included in the circuit by the rotation of the commutator under the influence of the spring and the signal devices are cut out.

What I claim is;—

1. A telephone switch comprising a rotatable hook for supporting the telephone having a shaft rotating therewith in the plane of the hook, a commutator mounted on the shaft, and brushes bearing on the commutator, substantially as described.

2. A telephone switch comprising a rotatable hook, having a shaft rotating therewith in the plane of the hook a spring for rotating it, a commutator mounted on the shaft of the hook, the commutator having a conducting portion connected to the shaft, and con-

tact terminals bearing on the commutator, substantially as described.

3. A telephone switch comprising a rotatable hook, the shaft of which is mounted in bearings of conducting material, a spring for rotating the shaft, a commutator mounted on the end of the shaft, and having a conducting portion connected to the shaft, and contact terminals bearing on the commutator, substantially as described.

4. In a telephone switch, the combination of the rotatable hook, a bearing for the same mounted in the case, the rotating shaft of the hook passing through the bearing and carrying a circular commutator provided with a conducting portion on its end, insulating supports mounted in the case, and contact terminal springs mounted on the supports, and bearing on the commutator, substantially as described.

5. In a hand telephone switch, a movable support for the telephone having a shaft in the plane of the support, a commutator mounted on the shaft, brushes bearing on the commutator and devices for altering the relative position of the commutator and brush upon the removal of the telephone, substantially as described.

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

JNO. CHISHOLM FRANCIS.

Witnesses:

GEORGE G. CROSBY,
JOHN A. KHUNES.