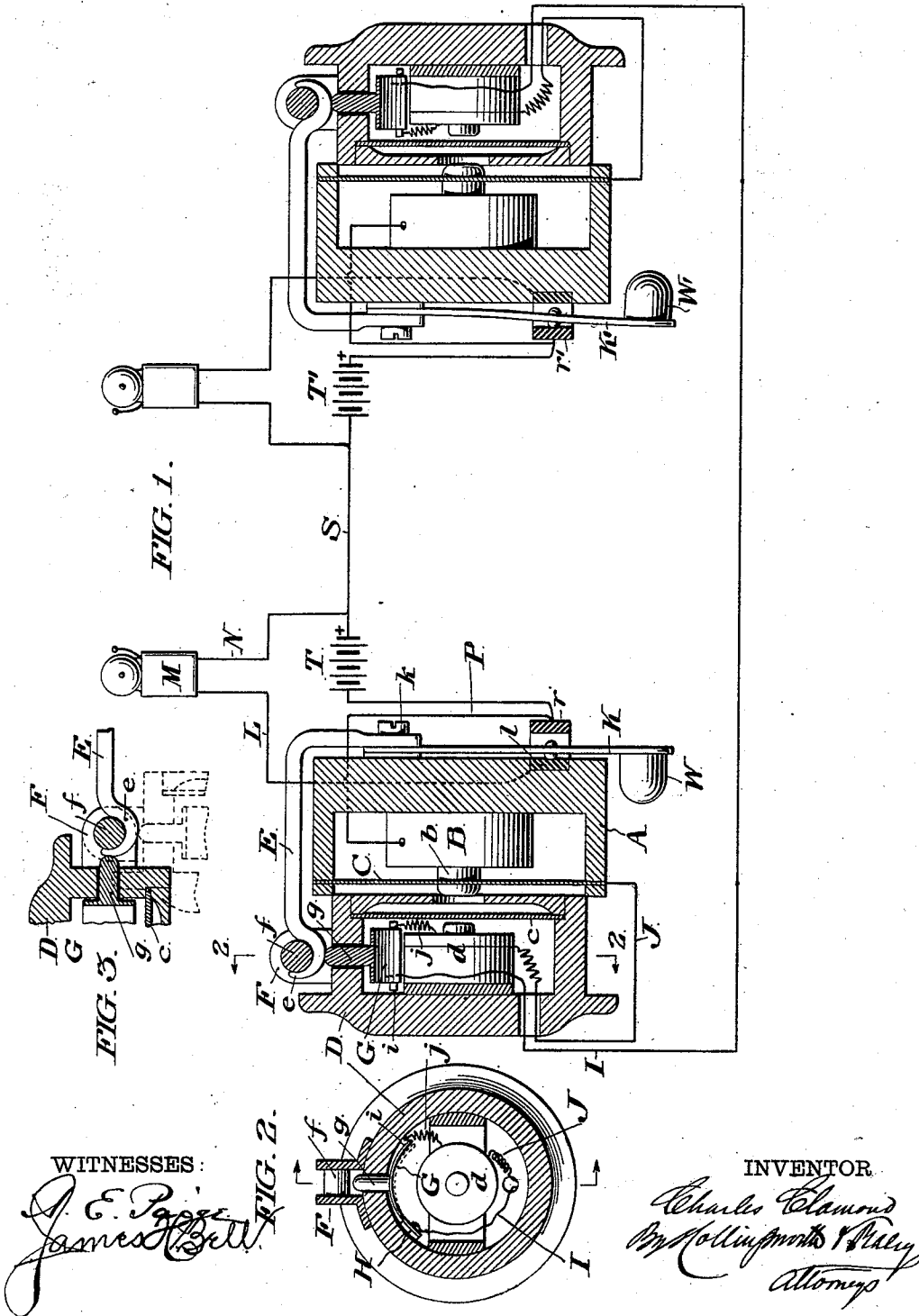


(No Model.)

C. CLAMOND.
SWITCH DEVICE FOR TELEPHONE CIRCUITS.

No. 534,359.

Patented Feb. 19, 1895.



UNITED STATES PATENT OFFICE.

CHARLES CLAMOND, OF PARIS, FRANCE.

SWITCH DEVICE FOR TELEPHONE-CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 534,359, dated February 19, 1895.

Application filed July 5, 1894. Serial No. 516,556. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CLAMOND, a citizen of the Republic of France, and a resident of Paris, in the Department of the Seine, Republic of France, have invented certain new and useful Improvements in Switch Devices for Telephone-Circuits, whereof the following is a specification, reference being had to the accompanying drawings.

The general purpose of my invention is to provide a means whereby, when a telephone receiver is hung up in convenient relation to the transmitter, the speaking circuit shall be disconnected, and the circuit of the call-bell or other alarm established.

The chief feature of my improvements consists in a method of construction whereby the moving member of the switch, which effects this purpose, is located in the receiver, instead of being mounted upon, or contained within, the transmitter casing. Advantageous results follow from this organization, such as the avoidance of any moving part of the switch exterior to the structure, and the facility afforded for repairs or adjustment of the switch when needed, since instead of having to detach the transmitter from its usually permanent position in order to obtain access to the switch device, the receiver can be readily opened for this purpose, or, if necessary, removed and another one substituted, without disturbing the remaining portions of the instrument.

In the accompanying drawings, Figure 1 shows the device in central vertical section, illustrating also, diagrammatically, the circuit to a similar instrument at the distant end of the line, said second instrument being also shown in vertical central section. Fig. 2 is a vertical section through the receiver, on the line 2-2 Fig. 1; and Fig. 3 is a detail view showing the receiver in two characteristic positions for the actuation of the switch.

Referring to the instrument which is shown at the left hand side of Fig. 1, A represents the cylindrical casing of the transmitter, made of insulating material and having a cup-shaped opening in its front face, in which is located a cylindrical receptacle, B, which contains the microphonic element of the transmitter. This element is preferably a plastic, viscid, paste, composed of an intimate mix-

ture of a finely powdered conducting solid with a non-conducting liquid, such as is described in my Letters Patent of the United States, No. 486,244, dated November 15, 1892. As, however, the present invention is not concerned with the character of the microphonic element, it is only necessary to state that a movable electrode, *b*, carried by the diaphragm, C, extends through the elastic cover upon the front face of the box, B, in such manner as to be capable of producing the necessary variations of the current in correspondence with the movements of the diaphragm, C, under the effects of sound waves. Said diaphragm, C, is composed of conducting material and forms part of the speaking circuit, as will be hereinafter described.

D indicates the shell or casing of the receiver, which is also preferably cylindrical in form, and provided with a cylindrical cavity to contain, beneath the diaphragm, *c*, the operative portions of the receiving member and also the switch.

The coil of the receiver magnet is indicated at *d*, and the circuit wires leading therefrom by *j*, J, respectively; the wire, J, leading to the diaphragm, C, of the transmitter, and the wire, *j*, leading to a terminal, *i*, (see Fig. 2) which is mounted upon the inner face of the wall of the receiver casing, D.

The switching member consists of an arc-shaped flat metal spring, G, one end of which is secured at H to the inner face of the casing, D, while the other end normally bears against the terminal, *i*, so as to be in electrical contact therewith. From the point, H, where said switch, G, is secured, the wire, I, leads to the line, said wire, I, being of course in electrical connection with the switch, G. Near the longitudinal center of the switch, G, a metallic pin, *g*, rigidly attached thereto, extends freely through an opening in the wall of the casing, D, and protrudes for a short distance. Immediately adjacent to, and on either side of the protruding end of said pin, *g*, short uprights, F, are mounted upon the exterior of the casing, and rigidly support a cylindrical cross-bar, *f*, of metal, which extends across immediately over the end of the pin, *g*. When the switch, G, is in its normal position, and the pin, *g*, is therefore protruded to its utmost extent, a small opening is left,

as indicated in Fig. 2, between the outer end of the pin, *g*, and the proximate face of the cross-bar, *f*.

At a convenient point upon the transmitter casing, *A*, is rigidly mounted on an overhanging metallic arm, *E*, which terminates in a tapering curved hook, *e*, whose extremity is small enough to be capable of insertion between the cross-bar, *f*, and protruding end of the pin, *g*, and whose concavity conforms substantially to the contour of said cross-bar. Said arm, *E*, is attached to the casing by a screw, *k*, and is in electrical connection with a spring blade, *K*, also attached at the same point, but having a free end provided with a push-button, *W*. The spring of said blade tends normally to hold it in electrical contact with a terminal, *l*, upon the rear of the casing, whence a wire, *L*, leads to a call-bell, *M*, the circuit being continued beyond said call-bell by the wire, *N*, which leads to the line wire, *S*, running to the remote end of the line. A shunt, *P*, also leads from said line wire, *S*, through a battery, *T*, to a terminal, *r*, and thence to the transmitting circuit at receptacle, *B*. Terminal, *r*, is normally out of contact with the blade, *K*, but within reach thereof when the push-button, *W*, is actuated.

Assuming that an instrument similar to that just described is arranged at the remote end of the line, (such parts as are essential to an understanding of the operation being indicated by corresponding letters to those just used but with the prime mark) the operation of the device will now be described.

To cut out the speaking circuit and establish the alarm circuit, the receiver is hung up upon the hook, *e*, in the following manner: The receiver being held in nearly a horizontal position, the point of the hook, *e*, is inserted between the cross-bar, *f*, and the outer end of the pin, *g*. The receiver is then released and permitted to fall rotatively downward, turning upon the cross-bar, *f*, which is seated within the concavity of the hook, *e*, and during this rotative movement the tapered hook acts as a cam or curved wedge to push the pin, *g*, inward. In so doing the pin, *g*, forces the spring switch, *G*, away from the terminal, *i*, thus breaking the circuit through the magnet of the receiver. At the same time, however, the circuit is established through the call-bell, *M*, as follows: from the return line through the wire, *I*; thence through the switch, *G*, and pin, *g*, to the hook, *e*, and arm, *E*; thence through the spring-blade, *K*, terminal, *l*, and wire, *L*, to the alarm, *M*, and thence through the wire, *N*, to the line wire, *S*.

In the diagram of Fig. 1, the alarm, *M*, is represented as sounding, the circuit at the other end of the line being established by means of the push-button, *W'*, blade, *K'*, and terminal, *r'*.

When now it is desired to throw out the alarm circuit and establish the speaking circuit, the receiver is removed from the hook, *e*, by turning the receiver outward and then lifting it off said hook, whereupon the pressure upon the pin, *g*, being released, the switch, *G*, at once springs into contact with the terminal, *i*, and establishes the circuit through the coil of the receiver magnet.

Having thus described my invention, I claim—

1. In a telephonic system comprising a transmitter, a receiver, an alarm, a suitable alarm and speaking circuit, the combination, with the receiver, of a movable switch mounted within the receiver casing and in permanent connection with the line wire, said switch being adapted in its normal position to establish the speaking circuit only and when shifted to break the speaking circuit and present a terminal for contact with the alarm circuit; a rigid support in electrical connection with the alarm circuit; and means substantially as set forth whereby engagement between the receiver and the support forces the switch to break the speaking circuit and establishes connection between said arm and said terminal, substantially as specified.

2. In a telephonic system comprising a transmitter, a receiver, an alarm, and suitable alarm and speaking circuits, the combination with the receiver, of a spring-switch mounted within the receiver casing, said switch being in permanent connection with the line wire and normally in position to establish the speaking circuit; a pin mounted on said switch and protruding through the receiver casing; a cross-bar mounted upon the receiver casing above the end of said pin; a supporting arm in electrical connection with the alarm circuit, and a tapering hook upon said arm, adapted to enter between said cross-bar and said pin, and force the switch to break the speaking circuit and establish the alarm circuit during engagement between the receiver and the said arm, substantially as specified.

CHARLES CLAMOND.

Witnesses:

OLTMER KERN,
EDWARD P. MACLEAN.