(No Model.)

S. H. BARTLETT.

TELEPHONE SWITCH.

No. 306,050. Patented Oct. 7, 1884.

Fig. 1.

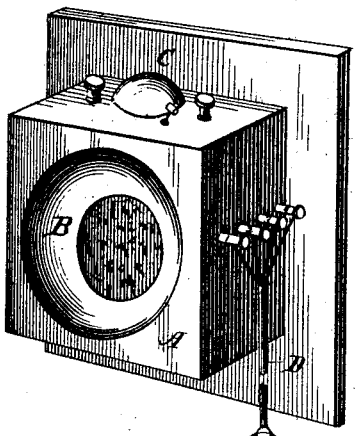


Fig. 2.

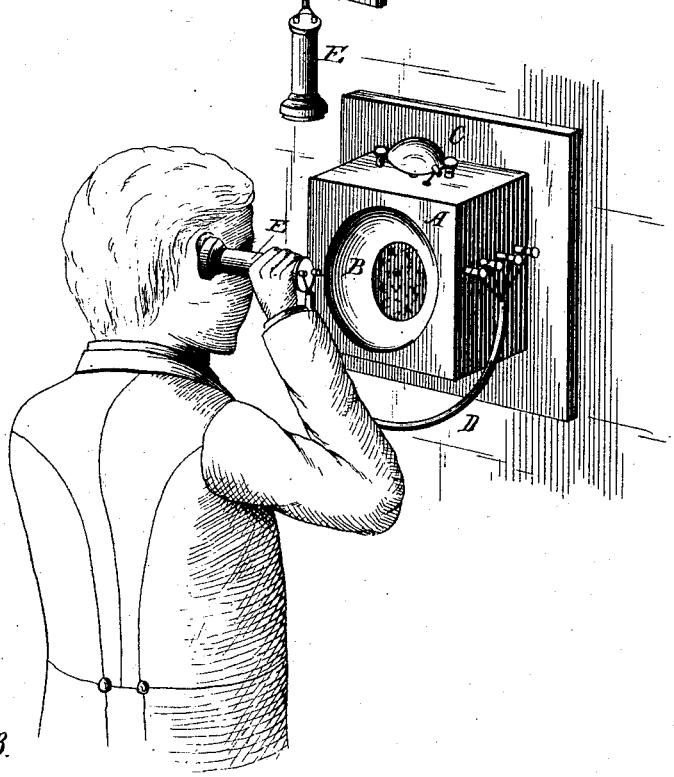
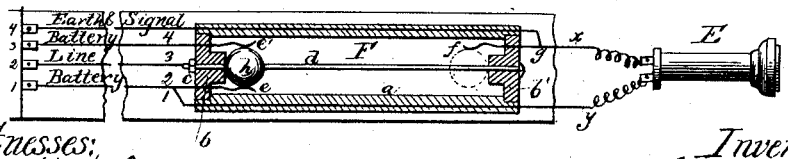


Fig. 3.



Witnesses:
John G. Hinkel
Wm. F. Sayers

Inventor:
S. H. Bartlett by
Foster & Freeman
Attys

UNITED STATES PATENT OFFICE.

SAMUEL H. BARTLETT, OF NEW YORK, N. Y.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 306,050, dated October 7, 1884.

Application filed May 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. BARTLETT, a citizen of the United States, residing in the city, 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 produce a simple, cheap, and effective switch that will automatically switch the telephone-instruments out of the circuit when not in use, and the signal-instruments into the circuit, and upon taking up the telephone for the purpose of receiving or sending messages the instruments will be automatically switched into the line.

To these ends my invention consists in a switch device arranged in the conducting-cord leading to the telephone, and having such connections and being so located that in the ordinary use of the instrument the necessary switching of the circuits will be automatically accomplished.

It also consists in a switch constructed and arranged as more particularly pointed out hereinafter.

Referring to the accompanying drawings for a more particular description of my invention, Figure 1 shows one arrangement of a transmitter and receiver when not in use. Fig. 2 shows the same in position for use; and Fig. 3 is a longitudinal section of the switch and cord.

It is usual at a telephone-station to place the transmitter and signaling-instruments in a box or case, and to have the receiver connected thereto by a conducting-cord, and hung, when not in use, upon the projecting arm or finger of a gravity-switch located in the box. These gravity-switches, being more or less exposed to extraneous influences, are liable to become rusty, or otherwise get out of order, and the subscriber often forgets to hang the telephone in position when through using it, thereby leaving the telephone-instruments in circuit and the signaling-instruments cut out. To overcome these difficulties, I construct an automatic switch and place it in the conducting-cord leading to the receiving-telephone, preferably near where the cord branches to be connected with the binding-screws of the instrument; and it will thus be seen that when the telephone is hanging in its normal position one set of contacts is automatically made, and when the instrument is grasped and raised to the ear or mouth of the operator another set of contacts is made, and the operator has only to drop the instrument to restore the circuits to their normal condition when the instruments are not in use.

The box or case A may be of any desired construction, and be supplied with any known transmitter, B, and signaling apparatus C. To the outside of the box are attached suitable binding-screws, 1 2 3 4, properly connected to the various circuits in any desired manner, and to these binding-screws are attached the terminals of a conducting-cord, D, made up of four insulated wires properly bound together in any of the well-known ways, and at the other end of the cord is attached a receiving-telephone, E, of any suitable construction.

Inside the conducting-cord D, and preferably near the receiver-terminal of the cord, I place my automatic switch F. This switch may be constructed in many ways so as to accomplish my object, and without departing from the spirit of my invention, one essential of which is a switch adapted to be placed in the conducting-cord and to form part of the same. One convenient form of such a switch is shown in the drawings, and consists of a cylinder or tube, *a*, of hard rubber or other non-conducting material, closed at the ends by two stoppers or caps, *b b'*, of similar material, which are held in place by a rod, *d*, of metal, running through the tube or cylinder and extending through the caps or stoppers, and having upon its projecting ends suitable nuts, *c*. This rod *d* is connected with the line-wire attached to the binding-post 2 on the box or case.

Projecting through the cap *b* are two spring contact-arms *e e'*, the outer ends of which are connected with the battery-wires attached to the binding-posts 1 and 3, and through the cap *b'* extends the spring-contact *f*, the outer end of which is connected at *g* to the wire *x* in one of the branches of the cord going to the telephone. The ground and signaling wire connected to the binding-post 4 is passed through

a groove or recess in the tube or cylinder *a*, and passes to one of the binding-screws on the receiver E, and a branch from the battery-wire connected to binding-screw *l* extends from the spring-contact *e* through a recess in the tube *a* and branch *y* of the cord to the other binding-screw of the receiver.

Inside of the tube or cylinder I provide some means for automatically closing and breaking the circuits at each end of the tube, as a small body of mercury or a metal ball, *h*, adapted to slide on the rod *d*, and make contact between it and the spring-contact *f* at one end and the contacts *e e'* at the other end. If mercury is used, the contacts need not be spring, but when the ball or other equivalent mechanical device is used I prefer to have them spring-contacts, as they keep brighter and make better and surer electric connection. From this construction it will be seen that when the receiver E is hanging in the position shown in Fig. 1 the ball or mercury will be in the end of the tube nearest the receiver, and the circuits may be traced as follows: From the binding-posts on the box. From binding-post 2 the main line passes to rod *d*, ball *h*, (shown in dotted lines,) contact *f* to earth and signaling-instruments by connection *g*, and wire to binding-post 4, the circuit through the receiver and local battery of the transmitter being broken.

When the receiver is in use, as shown in Fig. 2, the circuit will be as follows: From post 2 the line passes to rod *d*, ball *h*, contact *e*, battery-wire at point *i'* to one binding-post on the receiver, through the instrument and out of the other post to earth by wire to binding-post 4. The battery-circuit will also be completed through the contacts *e e'* and ball *h*. From this it will be seen that I provide a very simple and compact switch that is not liable to get out of order, being protected from all extraneous influences, and one that is sure of being properly operated, its action being entirely automatic and resulting from the most convenient and natural use of the receiving-instrument.

I am aware that flexible cords have had one member of a clamping device attached to their ends, there being a spring or other device connected to the clamp to make and break the electric circuit.

I am also aware that gravity-switch devices have been applied to the case of the telephone-receiver; but I do not claim such construction, as my switch is located and embedded in the cord and covered by part of the structure of the same, and I am enabled to use it with any kind of telephone or other electric instrument without necessitating any special construction thereof.

Without limiting myself to the construction and arrangement shown, I claim—

1. An electrical conducting-cord having a switch device contained therein, substantially as described.

2. An electrical conducting-cord composed of two or more wires bound together, having a switch device contained within the body of the cord, substantially as described.

3. The combination, with the operating-instruments of a telephone-station, of a receiver connected therewith by a conducting-cord, and a switch contained within the cord, substantially as described.

4. The combination, with a box or case containing a transmitter, of a receiver connected therewith by a conducting-cord, and an automatic switch contained within the cord, the arrangement being such that when the receiver hangs in its normal position it is cut out of the operative circuit, and when raised for use it is automatically cut into such circuit, substantially as described.

5. The combination, with the operating-instruments of a telephone-station, of a conducting-cord composed of several wires insulated from each other, a tube or cylinder contained within the cord and connected with the conducting-wires, and gravity-switch devices in the cylinder for making and breaking the electric circuits in the cord, substantially as described.

6. The combination, with a conducting-cord containing several insulated conductors, of a non-conducting tube provided with terminals of the conductors, a bar in said tube connected with one of said conductors, and a metal ball, or equivalent device, sliding on said bar and adapted to make and break contact with the terminals in the tube, substantially as described.

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

SAMUEL H. BARTLETT.

Witnesses:

HENRY E. WAITE,

WM. H. WOODHULL.