

(No Model.)

E. P. WARNER.
TELEPHONE SWITCH.

No. 425,058.

Patented Apr. 8, 1890.

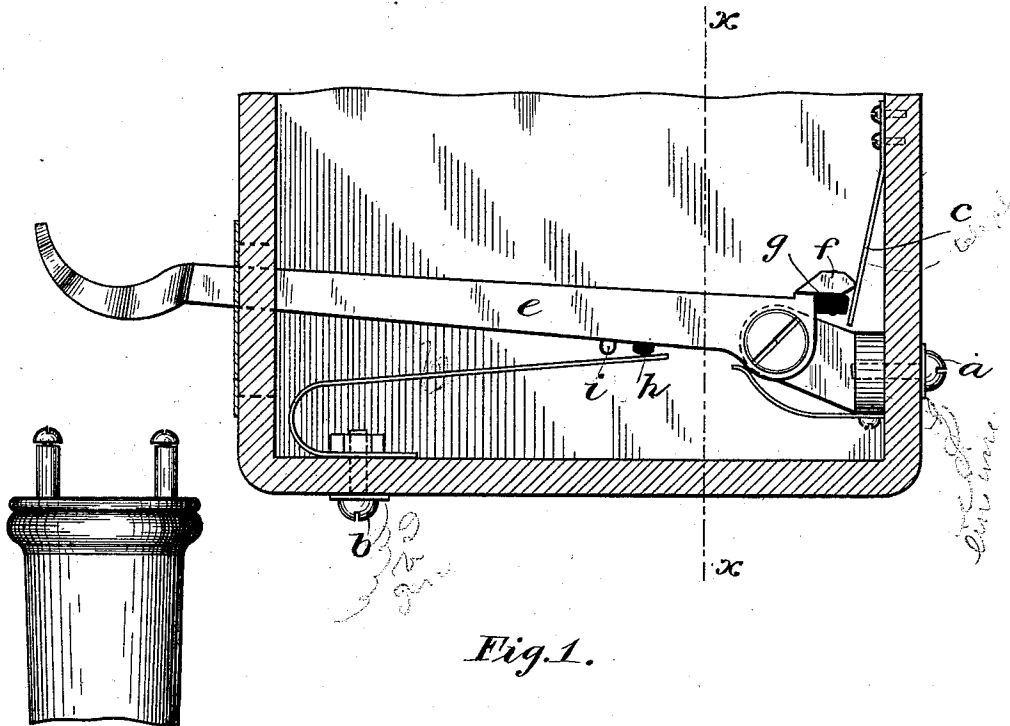
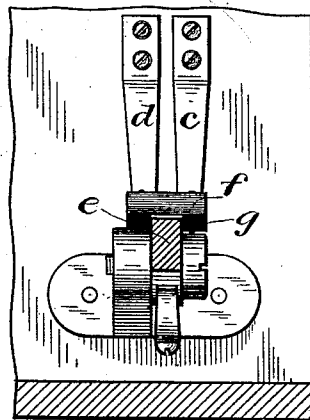


Fig. 1.

Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 425,058, dated April 8, 1890.

Application filed February 1, 1888. Serial No. 262,639. (No model.)

To all whom it may concern:

Be it known that I, ERNEST P. WARNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone-Switches, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to telephone-switches, and is of the class usually spoken of as "gravity-switches."

The object of my invention is to dispense with the spiral spring heretofore usually employed, the contact-springs being so disposed as to operate the switch-lever in connection with the telephone. The circuits are thus changed as the telephone is taken down and hung up.

Heretofore a spring adjusted to press backwardly against a telephone-switch lever to lift the same when the weight of the telephone is removed has been employed, a curved surface, partly of metal and partly of insulating material, serving as a bearing for the free end of the spring and so arranged that this surface should slide over the spring when the lever is moved in either direction. The insulating portion of the bearing-surface in this prior device was in such position that the spring should rest thereon when the telephone was hung up, the removal of the weight of the telephone from the switch permitting the lever to be raised by the action of the spring, thereby moving the insulated portion of the curved surface from under the spring and sliding the metallic portion thereof under the spring to form electrical contact therewith. This alternate sliding movement of an insulating surface like rubber or vulcanite, and a conducting surface like brass, over a contact-spring is objectionable, since small particles from either surface are sure to be carried upon the other surface, thus tending to form a partial electrical connection at the insulating surface and a defective or poor connection at the brass or metal surface. I arrange the underlying spring in the switch, so that the motion of the switch-lever while chang-

ing the bearing of the spring from a rubber or like insulating point to a metallic point effects the change by a rocking movement without the objectionable sliding movement heretofore employed.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a telephone-switch embodying my invention. Fig. 2 is a view thereof as seen from section-line *xx* of Fig. 1.

The line-wire may be considered as permanently connected with binding-post *a*. The ground branch containing the bell and generator may be considered as connected with contact-spring *b*, while the branch containing the telephone may be considered as connected with spring *c*. Spring *d* may be considered as the local contact.

I have not deemed it necessary to show the circuits of the telephone-call box, since they form no part of my invention.

The pivoted lever or hook *e* is provided with the lug *f* and the strip of insulation *g* upon its shorter arm. On the under side of the said lever, I provide insulation *h* and contact *i*. Spring *b* bears against insulation *h* or contact *i* according to the position of the switch-lever. Spring *b* is secured to the frame under the lever and is bent backward under the lever a sufficient distance to permit the bearings *h* and *i* to alternately rest thereon as the lever is rocked or vibrated without coming against the same portion of the spring, and the spring should be of sufficient strength to raise the switch-lever to the position shown in Fig. 1 when the telephone is removed. When the lever is thus raised, spring *b* is separated from its electrical contact with the lever, while the springs *c d* are closed to the lug or electrical contact upon the shorter arm of the lever. On hanging up the telephone the force of spring *b* is overcome and the lever is brought down, so that its electrical contact *i* closes upon said spring *b*, while at the same time the springs *c d* are separated from lug *f* and held separated therefrom by the insulation *g*. As the switch is moved back and forth the contact-points have a sliding motion upon the surface of the springs. Thus the

electrical connections are kept bright, and any particles of dirt that may get between them and their springs will be worked out.

Telephone-switches thus constructed I have found more durable, less expensive, and more certain in their action than any automatic telephone-switch heretofore devised.

It is evident that my switch admits of certain modifications which will readily suggest themselves to persons skilled in the art. For example, when required, a greater number of springs, contacts, and insulating pieces may be provided arranged in the manner which I have described. I have shown three contact-springs *b c d*, these being the usual number required in telephone-call boxes. One of the springs—for example, spring *c*—might be dispensed with in case no local circuit were required.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with two springs vibrating between two different bearings upon the shorter arm of the pivoted telephone support or switch lever, one of said bearings being of insulating material and the other of metal, of a spring pressing against said lever upon the longer arm thereof and of sufficient force to overcome the pressure of the springs at the shorter arm or heel of the lever, two

bearings being provided upon the longer arm of the lever for said spring, one of insulating material and the other of metal, and the telephone, whereby on hanging up the telephone the electrical connection between the lever and the springs at the shorter arm or heel is broken, while at the same time electrical connection is formed between the lever and the spring pressing against the longer arm, substantially as described.

2. The combination, with the pivoted telephone hook or support having two lugs or bearing-pieces provided upon the under side thereof, one of said bearing-pieces being of insulating material and the other of metal, a spring secured at one end under said lever and having its free end extending backwardly under said bearings to permit said bearings to alternately rest upon different portions thereof as the lever is rocked or vibrated, whereby the electrical connection between the spring and lever is opened and closed alternately as the bearings are brought against different portions of the spring, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 5th day of January, A. D. 1888.

ERNEST P. WARNER.

Witnesses:

CHAS. C. WOODWORTH,
CHAS. G. HAWLEY.