

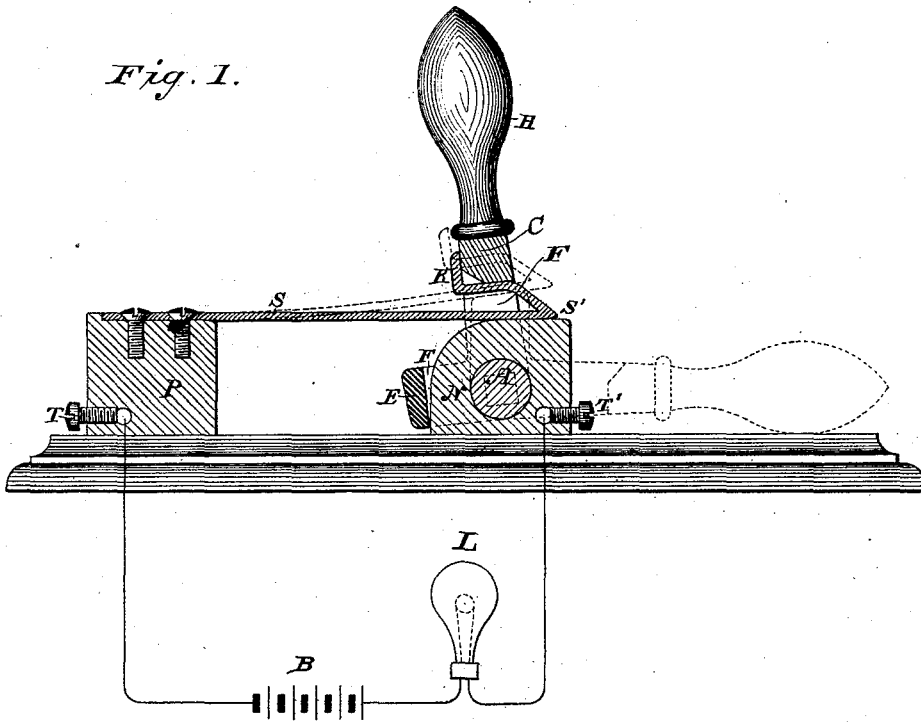
(No Model.)

D. P. HEAP.  
ELECTRIC SWITCH.

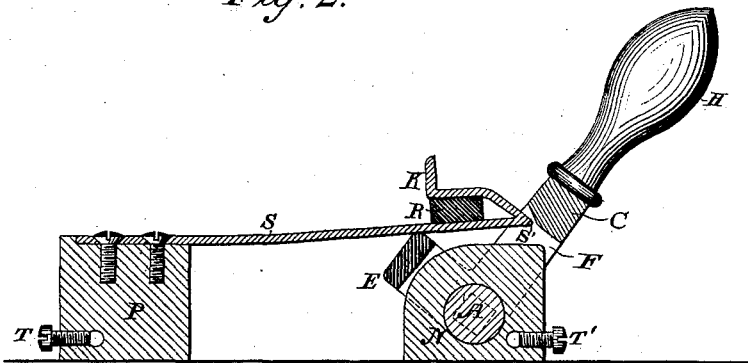
No. 281,363.

Patented July 17, 1883.

*Fig. 1.*



*Fig. 2.*



WITNESSES

*Wm A. Skink.*  
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# UNITED STATES PATENT OFFICE.

DAVID P. HEAP, OF UNITED STATES ARMY.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 281,363, dated July 17, 1883.

Application filed March 14, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID P. HEAP, a citizen of the United States and officer in the United States Army, have invented a new and useful Electric Switch, of which the following is a specification.

My invention relates to improvements in electric switches for strong electrical currents; and the objects of my improvements are, first, to prevent the injurious effects of sparking; second, to assure a good contact between metallic surfaces not affected by the spark; and, third, to prevent accidental closing of the circuit by interposing a non-conductor between the contact-surfaces when it is desired to leave the circuit open. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a section and elevation of the switch, showing the circuit closed; and Fig. 2 is also a section and elevation, showing the circuit just broken and the non-conductor about to be interposed between the contact-surfaces.

Similar letters refer to similar parts throughout the two views.

The switch consists of a metal block, P, to which one terminal from any source of electricity, B, is attached by the binding-screw T. To this block is fastened a metal spring, S S', bent at the free end, as shown, and whose position in a state of rest would cause it to clear the metal block N about an eighth of an inch. This block N is in electrical communication with the other terminal, which is fastened to the binding-screw T'. Through the block N passes the spindle or axis A, also of metal, carrying the metal frame F, which supports the metal contact-piece C and the insulated handle H. The axis, frame, contact-piece, and handle are all rigidly connected and turn together. The frame F is bent at right angles, and carries a piece of ebonite or other non-conductor at E.

The action of the switch is as follows: When it is desired to close the circuit, the handle H is raised from the position shown in dotted lines, Fig. 1, to that indicated by the full lines. In raising it the contact-piece C first touches the spring S S' near the end S', and the spark passes; but as the handle moves to the position shown the under side of the

spring S is pressed firmly down on the block N, a piece of rubber, R, Fig. 2, being inserted to increase the pressure, if necessary. Between the spring S S' and the block N there is a large bearing-surface, and it is on this contact that the final closing of the circuit depends. As no spark passes between the upper surface of the block N and the under surface of the spring, these surfaces will not be oxidized or otherwise deteriorated by the spark. As there is a rubbing contact between the contact-piece C and the spring, these surfaces will be kept clean and the passage of the spark between them be assured.

The only part on which there is much wear is the spring S S', which can be readily and cheaply replaced. The end of the spring is bent at K to prevent the handle being carried too far. The piece of ebonite E may rest on the base of the apparatus for the same purpose. To open the circuit the handle is turned back until it becomes horizontal. As the spring rises from the block N before contact is broken with the piece C, the spark will pass from the spring to the piece C, as before. As the handle is carried to the horizontal position the piece of ebonite or other non-conductor is interposed between the spring and the block N, as shown by the dotted lines in Fig. 1, and thus will prevent the spring from being accidentally depressed.

This device may be used for shifting the electrical current from one circuit to another by attaching a similar frame, contact-piece, &c., to an extension of the axis A, and having them work in connection with a spring similar to S S', electrically connected to the other circuit.

I am well aware that electrical switches have heretofore been made and used in which the circuit is closed by depressing a spring, and so bringing it in contact with a piece of metal. I therefore do not claim such a combination, broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in an electrical switch, of a metal spring and a contact-piece, the latter being made in two parts, one of which is fixed and the other movable, the movable part being adapted to first make contact with one portion of the spring and to press another por-

tion thereof against the fixed portion of the contact-piece, whereby the electric spark passes between the spring and the movable part of the contact-piece, and the final closing of the circuit is made between the spring and the fixed portion of the contact-piece, substantially as set forth.

5 2. The combination, in an electric switch, with a spring which is held in contact with a

fixed contact-piece when the circuit is closed, 10 of a non-conductor which is automatically interposed between the spring and the fixed contact-piece by the same motion which opens the circuit, substantially as set forth.

DAVID P. HEAP.

Witnesses:

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