J. J. HARTLEY.

KNIFE SWITCH.

APPLICATION FILED JULY 5, 1904.

991,502. Patented May 9, 1911.

Fig. 1.

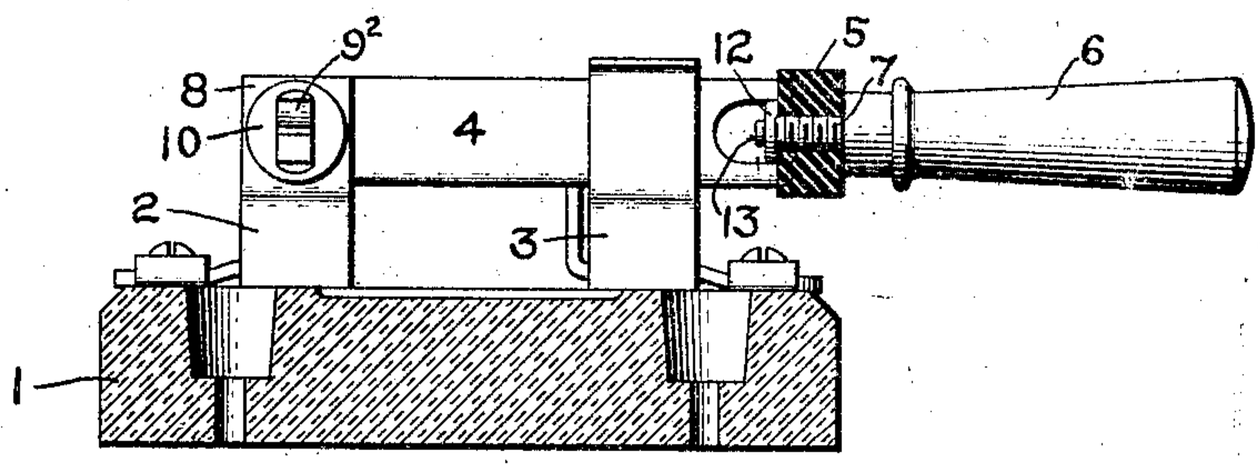


Fig. 2.

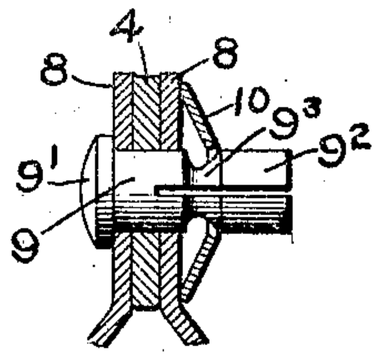


Fig. 3.

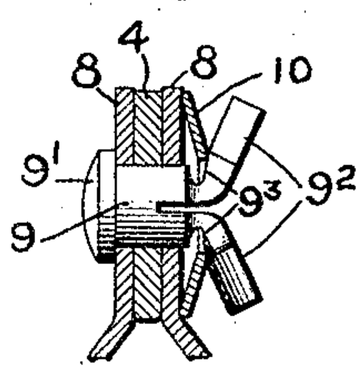


Fig. 4.

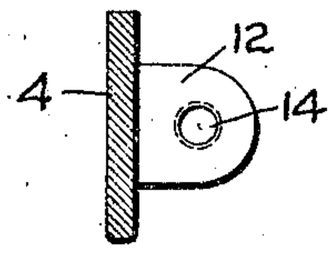


Fig. 5.

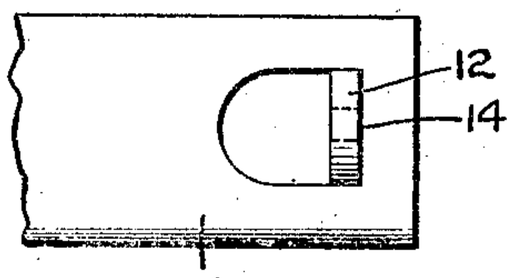
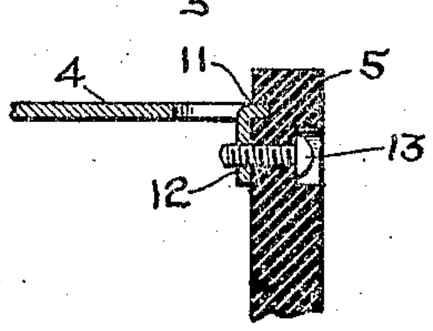


Fig. 6.



Witnesses.
Irving E. Steers.
Helen Orford

Inventor.
James J. Hartley.
by Albert G. Davis
Atty

UNITED STATES PATENT OFFICE.

JAMES J. HARTLEY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

KNIFE-SWITCH.

991,502. Specification of Letters Patent. Patented May 9, 1911.

Application filed July 5, 1904. Serial No. 215,226.

To all whom it may concern:

Be it known that I, JAMES J. HARTLEY, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Knife-Switches, of which the following is a specification.

This invention relates to electric switches, and its object is to simplify the construction of the same, and facilitate and cheapen the manufacture thereof.

The novel features are the pivot-pin for the blade and the mode of fastening the blade to the insulating piece carrying the handle.

In the accompanying drawing, Figure 1 is a longitudinal section of a two-blade switch embodying my improvements; Fig. 2 is a cross-section of the pivot on a larger scale, with the parts assembled before completion; Fig. 3 is a cross-section of the pivot completed; Fig. 4 is an end view of a blade; Fig. 5 is a side elevation of one end thereof; and Fig. 6 is a horizontal section of the joint between the blade and the handle-supporting cross-piece.

The switch may be of any desired style of construction, the one illustrated being a simple two-bladed knife-switch, having a base 1 of insulation, hinge-clips 2, contact-clips 3, blades 4 pivoted to the hinge-clips and shutting into the contact-clips, a cross-piece 5 connecting the free ends of the blades, and a handle 6 suitably attached to the cross-piece, as by a screw-threaded shank 7.

The jaws 8 of the hinge-clip are held in close contact with the blade by the head 9′ on a pivot-pin 9, and a spring washer 10. Heretofore the washer has been secured by a cotter or split pin passing through a transverse hole in the projecting end of the pivot-pin or by a bolt and nut. The cotter is objectionable because considerable time is consumed in inserting it, the washer meanwhile being held compressed by a pair of pliers. Unless the parts are accurately made, the washer is frequently loose and does not exert any pressure on the clip and in the case of a bolt and nut the parts easily become loosened.

In order to save time and lessen the number of parts, I use a pivot-pin having a split shank 9^2 provided with an inclined surface at the point where it engages with the eye of the washer. This surface is preferably one side of a circumferential groove 9^3 in the pin. When the ends of the pin are spread apart, the inclined wall of the groove forces the middle of the washer in toward the clip, so that its edges are sure to exert a firm pressure thereon. This action will be fully understood from a comparison of Figs. 2 and 3; the latter showing the completed structure. The operation of assembling the parts and spreading open the pin can be quickly performed, and saves an appreciable amount of time in the manufacture of the switch. It will be noticed that the shank of the pin has a solid section adjacent to the head 9′ to afford a smooth bearing for the switch-blade.

My invention also includes a simple but rigid joint between the switch-blade and the insulating cross-piece, which serves as a support for the handle. Here, again, the object is to save material, reduce the number of parts, and lessen the time of manufacture, in order to decrease cost and increase out-put. The end of the blade is let into a groove 11 in the cross-piece, and adjacent thereto a tongue 12 is punched out of the blade, integral therewith and standing preferably at right angles thereto against the adjacent face of the cross-piece. A screw 13 passes through a hole in the cross-piece and engages with a tapped hole 14 in the tongue. The cross-piece is preferably counter-sunk for the head of the screw as shown in Fig. 6, to prevent the hand of the switch-operator from making accidental contact therewith.

While I have shown and described my invention as applied to a double pole switch, it is evident that it is equally applicable to switches having any number of blades.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. A pivot-pin for an electric switch, having a split shank and a circumferential groove.

2. The combination with a switch-blade and a hinge-clip, of a spring-washer and a pivot-pin having a split shank and an inclined surface in the sides thereof engaging the eye of said washer.

3. The combination with a switch-blade and hinge-clip, of a spring-washer, and a

pivot-pin having a split shank and a circumferential groove engaging with said washer.

4. In a switch the combination with an insulating handle support having a transverse slot therein, of a blade having one end entering said slot and an integral tongue at an angle thereto located a distance from the end of the blade, and a fastening screw engaging said tongue.

5. In a switch, the combination with an insulating handle-support, of a blade entering a groove in said support, an integral tongue punched-up from said blade and standing adjacent to the side of said support, and a screw passing through said support into said tongue.

6. In a joint for switch blades, the combination with an insulating bar provided with a recess, of a blade extending directly into said recess, a clip extending from the blade at a distance from the end thereof, and a securing screw tapped into the terminal of the clip.

In witness whereof I have hereunto set my hand this 1st day of July, 1904

JAMES J. HARTLEY.

Witnesses:

BENJAMIN B. HULL

HELEN ORFORD.