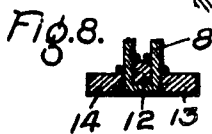
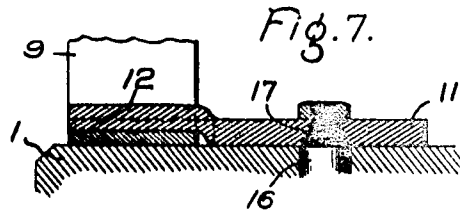
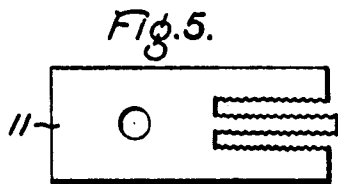
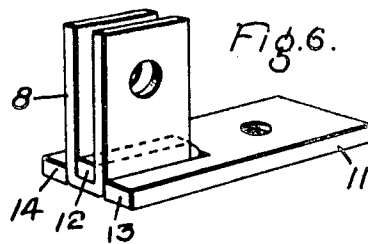
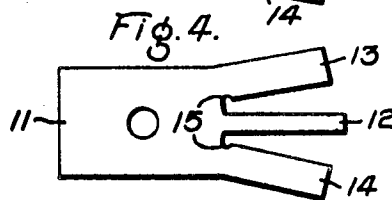
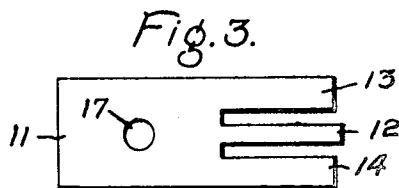
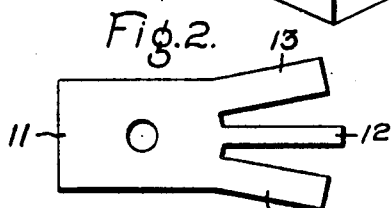
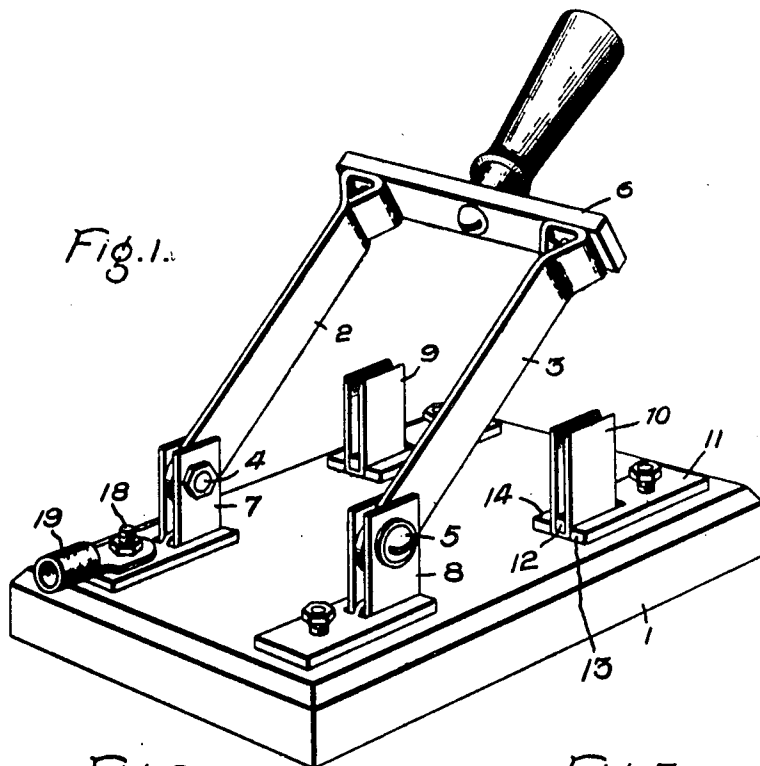


No. 878,005.

PATENTED DEC. 10, 1907.

H. P. BALL.
KNIFE SWITCH.

APPLICATION FILED APR. 8, 1905.



Witnesses:
Marcus D. Byng.
Allen Sanford

Inventor:
Henry P. Ball,
by *Albert D. Damm*
Att'y.

UNITED STATES PATENT OFFICE.

HENRY PRICE BALL, OF NEW YORK, N. Y., ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

KNIFE-SWITCH.

No. 873,005.

Specification of Letters Patent.

Patented Dec. 10, 1907.

Application filed April 5, 1905. Serial No. 253,932.

To all whom it may concern:

Be it known that I, HENRY PRICE BALL, a citizen of the United States, residing at New York, county of New York, 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 switches and has for its object the improvement in the construction of that type of switch commonly known as a "knife-switch". In carrying out my invention I aim to cheapen the cost of production of this switch by making the parts so that the greatest economy of time and material may be effected, while at the same time producing a structure which is thoroughly efficient and durable.

My invention, therefore, consists of the details of construction and arrangement of elements hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a switch embodying my improvements; Fig. 2 shows the foot-piece for the clip as it is blanked out; Fig. 3 shows the same with the parts bent into the desired form; Figs. 4 and 5 show slight modifications in the blank for the foot-piece; Fig. 6 shows the assembled clip; Fig. 7 shows an arrangement for making a back connection with the clip; and Fig. 8 shows a method of soldering.

Referring to the drawings, 1 is an ordinary insulating switch-base of slate or soapstone to which the switch blades 2 and 3 are pivoted by means of bolts 4 and 5. The rear end of these blades are bent into a delta-shaped head so as to form a good bearing for the cross-bar 6, to which the blades are secured in any desirable manner as by riveting. The blades are mounted in clips 7 and 8, the construction of which is substantially the same as that of the contact clips 9 and 10. It is the construction of these clips which I consider the principal part of my invention, which I shall now proceed to describe.

Each clip is composed of a foot-piece 11 which is blanked out in a punch-press with two slots forming a tongue 12. It has been found that in punching out these slots the punch is frequently broken. In order to make the punches stronger, I make them V-shaped so as to form a punching such as is shown in Fig. 2. The parts 13 and 14 are then bent so as to make the slots parallel. The tongue 12 is now bent up out of the

plane of the foot-piece, but remaining parallel therewith, as shown, the amount of the offset being the thickness of the metallic strip which is bent into a U-shape, and forced into the slots and into engagement with the tongue. The strip is thus flush with the underside of the foot-piece and engages with the sides of the slots, whereby the strip and the foot-piece are joined very firmly. It is desirable to make the strip of metal of such thickness that it will fit the slots snugly and make a drive fit therewith, but it is evident that if desired the strip could fit loosely and the space between the strip and the sides of the slots be filled with solder. In either construction, the strip is firmly held in position between the tongue and the base, and between the tongue and the parts 13 and 14, so as to resist displacement in any direction.

In Fig. 4 I have shown the corners of the slots 15 rounded out so that the parts 13 and 14 may be more easily bent.

In Fig. 5 I have shown the slots punched out with a serrated edge so as to form a better surface for the solder without preventing the proper lining up of the clips. The joints are now soldered preferably with solder-wire in the manner shown in Fig. 8.

In Fig. 7 I have shown the method of making a back connection. In doing this, I insert a stud 16 in the hole 17 in the foot-piece. In order to get a greater surface at the end of the stud, I use a taper tap of any degree of taper desired. This stud passes through the base and electrical connection is made thereupon with the underside of the base. In the form shown in Fig. 1, the connections are made by means of screws 18 and connector 19.

It will thus be seen that I have produced a switch in which both the supporting and contact clip may be quickly and accurately formed with a minimum waste of material, the foot-pieces being blanked out in a punch-press, while the strips forming the clip proper may be bent into the U-shaped form in a similar manner. The parts may then be quickly assembled by unskilled workmen, very little finishing being required.

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

1. In an electric switch, the combination with a base and a blade movably mounted on said base, of a contact clip for engagement with said blade comprising a foot-piece secured to said base and having a tongue be-

tween slots in said foot-piece struck up from the plane thereof, and a bent engaging strip surrounding said tongue in engagement with the sides of said slots and with the portion
5 underlying said tongue resting upon said base.

2. In an electric switch, the combination with a base, of a blade and a cooperating contact, and a supporting clip pivotally carrying said blade comprising a foot-piece secured to said base and having a tongue between slots in said foot-piece struck up from the plane thereof, and an engaging strip bent around said tongue in engagement with
10 the sides of said slots and with the portion underlying said tongue resting upon said base.

3. A clip for an electric switch comprising a foot-piece having a tongue between

slots in said foot-piece and bent out of the plane thereof, and a U-shaped engaging strip around said tongue in engagement with the sides of said slots and in fixed relation with said tongue.

4. A clip for an electric switch comprising a foot-piece having a tongue formed by parallel slots and offset from said foot-piece, and a metallic strip bent to enter said slots in engagement with the sides thereof and engage said tongue, said strip being flush with the underside of the said foot-piece.

In witness whereof, I have hereunto set my hand this first day of April, 1905.

HENRY PRICE BALL.

Witnesses:

JULIUS BEURET,
HARRY W. PUGH.