

H. F. JOHANINGMYER.
KNIFE SWITCH.
APPLICATION FILED MAY 6, 1914.

1,164,191.

Patented Dec. 14, 1915.

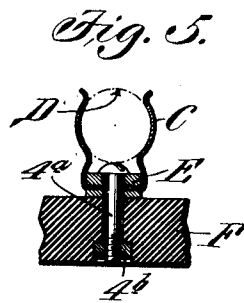
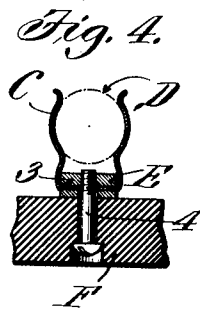
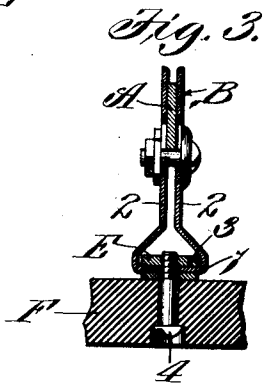
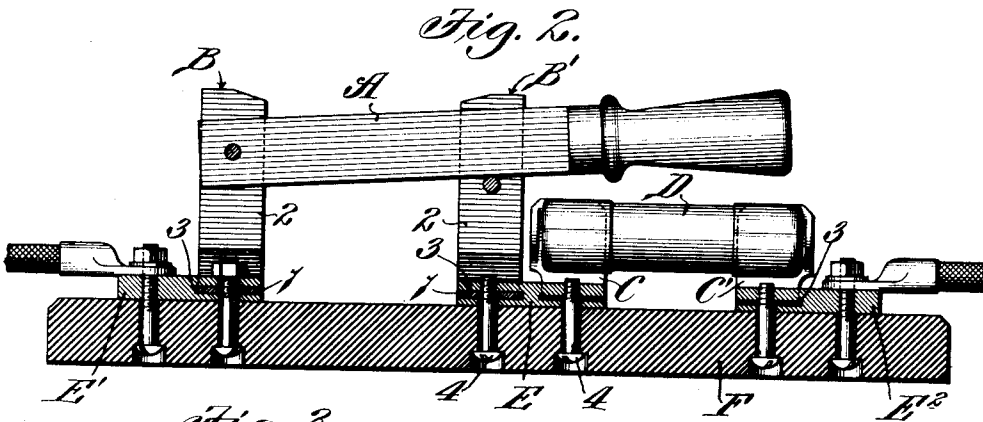
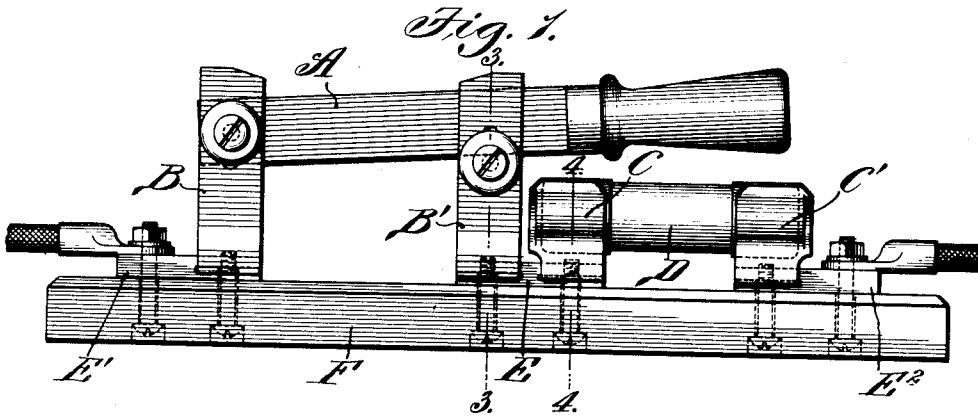
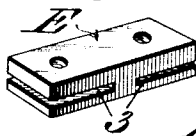


Fig. 6.



Witnesses:
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By Bakewell & Chumley, Attys.

UNITED STATES PATENT OFFICE.

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KNIFE-SWITCH.

1,164,191.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY F. JOHANINGMYER, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Knife-Switches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to knife switches and other kinds of electrical devices that comprise a bifurcated member or clip which is secured to a block of insulating material.

In the knife switches now in general use the standards which support and receive the blade or knife of the switch are usually formed from two pieces or strips of metal arranged parallel to each other with their inner ends fitting in slots formed in a base plate that is connected to the insulating block of the switch, said pieces being connected to the base plate by pins that extend edge-wise through the base plate and pass transversely through the portions of said pieces that fit in the slots in the base plate. The clips for the fuse blocks and the fuse terminals of knife switches are also generally formed in the same manner.

One objectionable feature of structures of the character described is the relatively small degree of contact between the base plate and the members that form the standards for the knife or the clips for the fuse, the contact area of said parts being limited to the thickness of the base plate.

Another objectionable feature is the comparatively high cost of manufacture, especially in small switches and fuse blocks, owing to the frequent breakage of the drills used to bore the small holes edge-wise through the base plates that receive the retaining pins.

Another objectionable feature of such structures is that the two members that form the standard or clip are not always arranged parallel to each other and at right angles to the base plate. Moreover, such structures are not as strong as conditions sometimes require, and the parts of same are apt to work loose if the device is subjected to hard usage.

The main object of my invention is to provide an electrical device of the general type referred to which is so designed that there is a relatively great degree of contact area

between the base plate and the standard or clip members; in which the standard or clip members will always be disposed at absolute right angles to the base plate and the two side parts of each member parallel; and which is so designed that it is stronger and cheaper to manufacture than the structures of this type which are now in general use.

Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 of the drawings is a side elevational view of a knife switch constructed in accordance with my invention and equipped with fuse terminals; Fig. 2 is a vertical longitudinal sectional view of said switch; Fig. 3 is a vertical transverse sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a vertical transverse sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a view similar to Fig. 4 illustrating another way of securing the fuse terminal and base plate to the insulating block; and Fig. 6 is a perspective view of the base plate that carries the knife standard and one of the fuse terminals.

Referring to the drawings which illustrate the preferred form of my invention, A designates the knife or blade of the switch; B designates the hinge standard to which the blade is pivotally connected; and B' designates the blade or knife standard which embraces the free end portion of the blade.

The switch herein shown is provided with two fuse terminals or clips C and C' for receiving a fuse D; but it will, of course, be understood that it is immaterial, so far as my invention is concerned, whether or not the switch is provided with fuse terminals.

A base plate E supports the knife standard B' and the fuse clip C, and the hinge standard B and other fuse clip C' are supported by separate base plates E' and E'', respectively, all of said base plates being mounted on a block F of insulating material.

The standards and the fuse terminals are of the same general construction and are mounted on their respective base plates in the same manner, and therefore I will only specifically describe the knife standard B'. Said standard B' is a bifurcated member formed from a single strip or piece of metal that is bent to form a base portion 1 and two side portions 2 that are arranged parallel to

each other and are disposed at substantially right angles to the base portion 1. Said base portion 1 fits in a slot 3 formed in the base E intermediate the top and bottom faces of said base plate, said slot being located at one end of the base plate and extending transversely of same parallel to the top and bottom faces of the plate, so that two portions the full width of the base plate will embrace the base portion 1 of said member and thus give a relatively great degree of contact area between the member B' and the base plate which supports it. In other words, the bifurcated member B' is provided with a base portion, and the base plate which is arranged at right angles to said member is provided with a bifurcated portion that snugly embraces the base portion of said member. The member B' and the base plate can be connected together in various ways without departing from the spirit of my invention.

In the form shown in Figs. 1 to 4 inclusive, a screw 4 that extends through the insulating block F passes loosely through holes formed in the lower half of the bifurcated portion of the base plate and in the base portion 1 of the member B', and is screwed into a tapped hole in the top half of the bifurcated portion of the base plate, thus securely clamping the bifurcated portion of the base plate to the base portion 1 of the standard, and also securing said base plate to the insulating block F. If desired, a nut can be arranged on the screw 5 above the base plate instead of providing the base plate with a tapped opening for receiving the threaded portion of the screw. In some instances it is preferable to arrange the screw 4 in such a manner that it can be removed easily without dismounting the insulating block from the structure that carries same; and in Fig. 5 I have shown the screw 4^a passing through the base plate, the base portion of the standard and insulating block, and screwed into a nut 4^b mounted on the rear side of the insulating block in such a manner that it cannot rotate when said screw is turned in either direction.

A structure of the character described is exceptionally strong and rigid on account of the fact that the bifurcated member of the structure has a base portion which is snugly embraced by portions that extend the full width of the base plate; it can be manufactured cheaply owing to the fact that it is not necessary to form a number of small holes edge-wise through the base plate; and the device that secures the base plate to the insulating block also serves to connect the bifurcated member to the base plate. There is no danger of the two side parts of the bifurcated member not being arranged absolutely parallel to each other, as the bifur-

cated member is formed from a single piece or strip of metal, nor is there any danger of the side pieces of the bifurcated member not being arranged at right angles to the base plate when the structure is being assembled. Such a structure can be assembled quickly and there is very little liability of the parts of same working loose, as it comprises practically only three parts, namely, the bifurcated member, the base plate, and the screw or other fastening device that secures said parts together and connects the base plate to the insulating block. As previously stated, it is immaterial whether the screws 4 pass through the insulating block from the rear side to the front side of same, or vice versa; but one desirable feature that results from having the screw pass from the front to the rear side of the insulating block, as shown in Fig. 5, is that the clip or standard can be removed easily and replaced in case of wear or breakage without going to the trouble of disconnecting the insulating block from the mounting or support that carries same.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a knife switch, the combination of a supporting member of insulating material, a metal base plate on said supporting member provided at each of its ends with a slot that extends transversely of said plate parallel to the top and bottom faces of same, a standard of substantially U-shape whose cross piece lies in and is snugly embraced by the slot at one end of the base plate, and a fuse clip of substantially U-shape whose cross piece lies in and is snugly embraced by the slot at the other end of the base plate.

2. In a knife switch, the combination of a supporting member of insulating material, a metal base plate on said supporting member provided at each of its ends with a slot that extends transversely of said plate parallel to the top and bottom faces of same, a standard of substantially U shape whose cross piece lies in and is snugly embraced by the slot at one end of the base plate, a fuse clip of substantially U shape whose cross piece lies in and is snugly embraced by the slot at the other end of the base plate, and fastening devices that securely clamp the slotted portions of the base plate to the cross pieces of said standard and clip and also secure the base plate to the supporting member.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this fourth day of May, 1914.

HARRY F. JOHANINGMYER.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL.