April 24, 1928.

1,666,979

J. SACHS

FUSIBLE SWITCH

Filed Jan. 25, 1923

Fig. 1

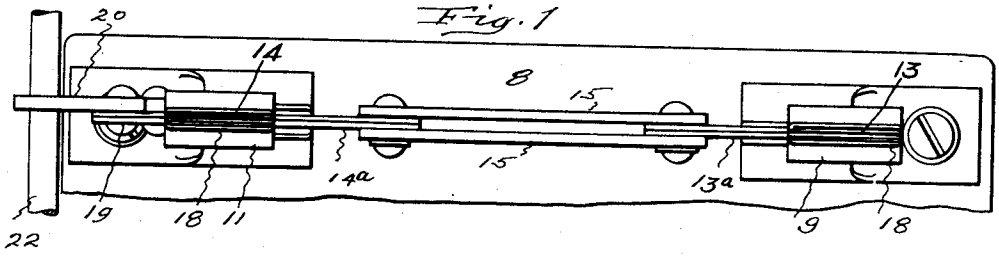


Fig. 2

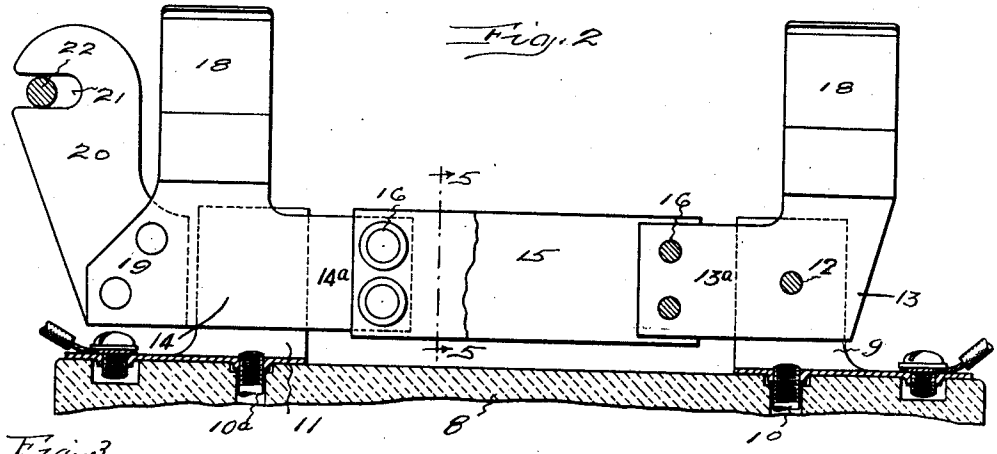


Fig. 3

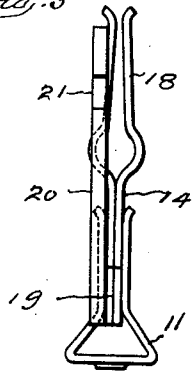


Fig. 5

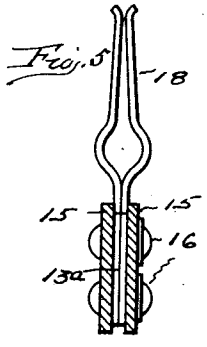


Fig. 6

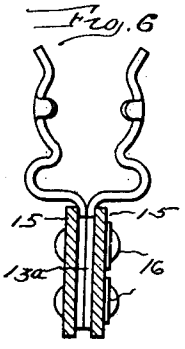


Fig. 4

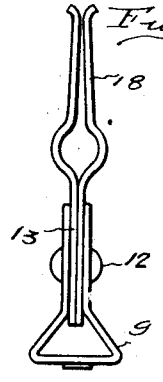
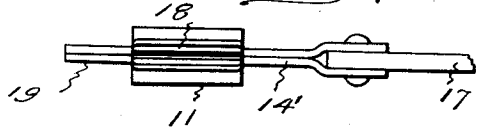


Fig. 7



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UNITED STATES PATENT OFFICE.

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FUSIBLE SWITCH.

Application filed January 25, 1923. Serial No. 614,848.

This invention relates to the class of knife blade switches which carry enclosed fuses. In this type of switch the switching member comprises two conducting elements mechanically joined but electrically separated by insulating material, with clips for receiving an enclosed fuse designed to electrically connect the elements, one element being pivoted to a clip fastened to an insulating base and the other element being adapted to be swung into and out of engagement with another clip fastened to the base.

One object of the persent invention is to provide a very simple and inexpensive construction for the switching elements which will insure an efficient electrical connection between the fuse clips and the terminal clips.

Another object of the invention is to provide a very strong and inexpensive insulating construction for connecting the conducting elements constituting the ends of the switching member.

In the accompanying drawings Figure 1 shows a top view of one switching member provided with clips for a knife blade type of fuse constructed according to this invention. Fig. 2 is a side elevation of the same with the base and terminal clips in section. Fig. 3 is a view of one end of the structure. Fig. 4 is a view of the other end of the structure. Fig. 5 is a section on the plane indicated by the dotted line 5—5 on Fig. 2. Fig. 6 is a section similar to Fig. 5 but showing the fuse clips shaped for receiving a ferrule type of enclosed fuse. Fig. 7 is a detail showing a modified manner of uniting the conductor elements and the insulating connection.

Only one switching member is illustrated. The invention is applicable, however, to switches having two or more poles. The base 8, which is desirably porcelain, is made of a size necessary to receive the number of switching members to be used. A switch terminal clip 9 is secured to the face of the base near one end by a screw 10 and a switch terminal clip 11 is secured to the face of the base near the opposite end by a screw 10^a. The switching member is held at one end between the ears of the clip 9 by a pivot stud 12 while the other end of the switching member is formed to swing into and out of engagement with the ears of the clip 11. The switching member comprises two separated end conductor elements 13 and 14.

As has been heretofore proposed for switches of this general class each of the conductor elements 13 and 14 is formed of two similar plates of conducting material which are arranged and adapted to fit between and engage at their outer faces with the ears of the respective terminal clips 9 and 11. In accordance with one phase of the invention I depart from prior practice by placing the two plates constituting each conductor element 13 or 14 in direct face to face contact with each other instead of spacing them apart as has been heretofore deemed necessary. The two plates of each pair are respectively provided with integral extensions which are so shaped and arranged as to constitute pairs of clips 18, 18 for receiving the terminal portions of a fuse. The clips may be shaped as shown in Fig. 5 for receiving the terminals of a knife blade contact type of enclosed fuse or they may be shaped as shown in Fig. 6 for receiving the terminals of a ferrule contact type of enclosed fuse.

Insulating means is provided for connecting the pairs of conducting plates and holding them in fixed relation to each other to form a unitary switch member.

By making the two conducting plates relatively thin and placing them in direct contact as described I am enabled to provide conductor or blade elements which are of the ordinary or standard thickness and which are thus adapted to engage standard sized terminal clips; and at the same time the relatively thin plates by their described upward extensions form fuse clips of the required degree of flexibility. In addition to adapting the conductor elements for engagement with standard clips and in addition to providing the desired flexible clips I also by my inventon avoid the expense incident to the making and assembling of spacer members such as have heretofore been deemed necessary.

In accordance with the invention I also preferably provide an improved arrangement of the aforesaid insulating means for connecting together the two conductor elements 13 and 14, this arrangement being of utility and advantage whether the said elements are constructed in detail as described, or otherwise. For the attachment of the connecting insulating means the conductor element 13 is formed with an ear 13^a extending longitudinally toward the element 14 and the said element 14 is provided with

an ear 14^a extending longituidnally toward the element 13.

The two elements 13 and 14 are preferably connected by two spaced strips or plates 15 of insulating material which engage the opposite outer faces of the said conductor elements at portions thereof other than the portions which are engaged by the terminal clips 9 and 11, that is, at the opposite outer faces of the said ears 13^a and 14^a. These plates 15 are secured to the said ears by means of rivets 16 as shown. The provision of two spaced plates secured to the outer face of the conductor elements instead of a single centrally disposed plate gives greatly increased strength without a corresponding increase in the total amount or thickness of the insulating material.

The two spaced plates 15 are particularly advantageous when each of the conductor elements comprises two conducting plates in direct face to face contact as already described. By providing the two connecting plates in combination with the two conducting plates I attain not only the advantages described as being incident to the positioning of the said conducting plates in contact, but I avoid any necessity for specially forming the said conducting plates to receive or engage the connecting insulating means.

Notwithstanding the advantages incidental to the use of the two connecting plates 15, in conjunction with the two conducting plates, it is nevertheless possible, if desired, to provide a single conducting plate 17 as illustrated in Fig. 7, and at the same time retain some of the advantages which are incident to the use of two contacting conducting plates, such as 14'.

In the device illustrated the conductor element 14 at the swinging end of the switching member has an extension 19 to which is fastened an insulating piece 20 provided with a slot 21 for receiving a rod 22 by means of which the switching member may be manipulated.

The switching blades and fuse clips of the construction described may be rapidly and cheaply stamped to shape from sheet metal by simple tools. They are easily put together and attached to the insulation which mechanically connects but electrically separates them. As the switching blades and fuse clips are integral the electrical efficiency of the connections from the fuse to the switch clips is high.

The invention claimed is:

In an electric switch of the knife blade type, the combination with a base and two separated clips secured to the base in alignment with each other and each having ears with standard spacing between them, of a pivotally mounted switch member comprising four thin plates of conducting material arranged in pairs with the inner faces of the plates of each pair in direct contact with each other and with their combined thickness such as to adapt them to fit between and electrically engage at their outer faces with the ears of the corresponding terminal clips, opposed integral extensions on the plates of the respective pairs forming pairs of fuse receiving clips, and two spaced plates of insulating material connecting the conducting plates and respectively secured to and engaging the opposite outer faces of the said plates at portions thereof other than the terminal clip engaging portions.

JOSEPH SACHS.