

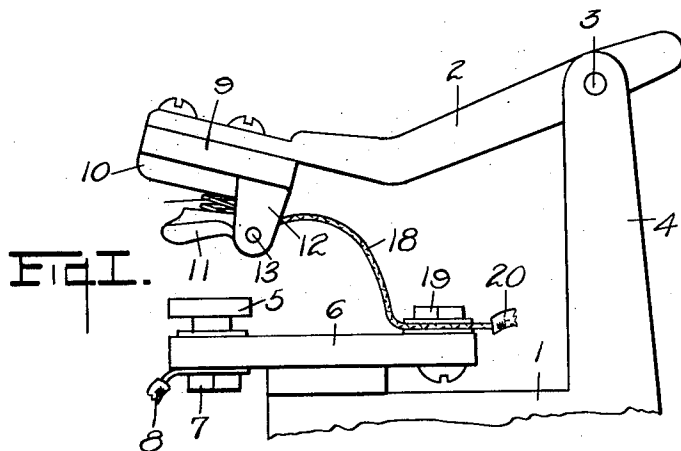
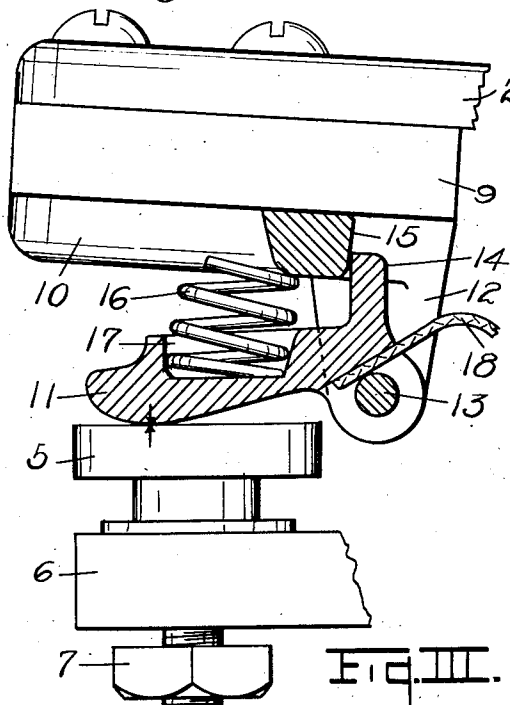
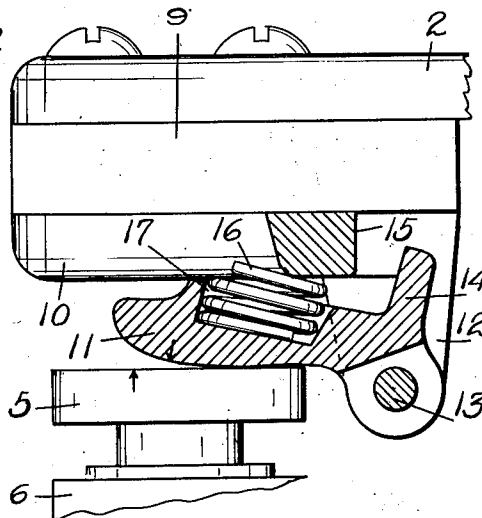
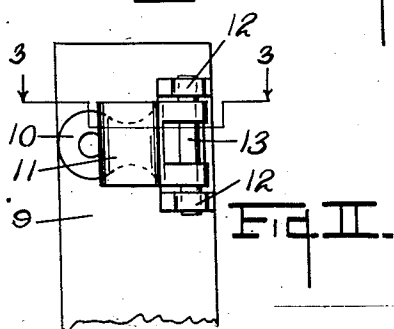
Sept. 21 , 1926.

1,600,325

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ELECTRIC SWITCH

Filed April 25, 1923



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Patented Sept. 21, 1926.

1,600,325

UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

Application filed April 25, 1923. Serial No. 634,444.

This invention relates to improvements in electric switches.

The main object of this invention is to provide an improved electric switch adapted for heavy currents which insures a good contact between the contact members and one in which arcing is minimized.

Further objects, and objects pertaining to details and economies of construction and operation will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of our invention is clearly illustrated in the accompanying drawing forming a part of this application, in which:

Fig. I is a fragmentary side elevation of a switch embodying the features of our invention, the operating means for the switch arm being omitted as such means forms no part of our present invention.

Fig. II is an inverted view of the movable contact member, its supporting plate being partially broken away as we illustrate only a single pair of contacts, whereas in practice in motor control switches there are two pairs of contacts, but as these are duplicated, one only is illustrated.

Fig. III is an enlarged detail view partially in vertical section on a line corresponding to line 3—3 of Fig. II, the contact members being shown at their point of initial engagement.

Fig. IV is a detail view corresponding to that of Fig. III with the contact members fully engaged.

In the drawing the sectional view is taken looking in the direction of the little arrows at the ends of the section line and similar numerals of reference refer to similar parts throughout the several views.

Referring to the drawing, 1 represents the frame of the switch, and 2 the switch arm which is pivoted at 3 on the bracket 4. The operating mechanism for the switch arm 2 is not illustrated as the details thereof form no part of our present invention. In practice we employ some mechanism which will open and close the switch with a snap action.

A relatively fixed contact member 5 is mounted upon an insulating block 6, the contact member 5 being provided with a binding post 7 for the cable 8. The switch arm 2 carries an insulating block 9 on which the supporting plate or base 10 of the movable switch 11 is mounted. This plate is provided with downwardly projecting ears 12 carrying the pivot 13 for the contact member 11. The contact member 11 is provided with a stop 14 which is yieldingly held in engagement with a coacting stop shoulder 15 on the plate 10 by means of the coiled spring 16 seated at 17 in the contact member.

A flexible conductor 18 connects the contact member 11 with the binding post 19 for the cable 20. The face of the contact member 11 is rounded at its outer end and has a flattened portion at the rear thereof. The pivot 3 is so arranged relative to the fixed contact member 5 that the pivot of the contact member 11 swings in the arc of a circle passing at one side of the fixed contact member so that its rounded tip first engages as indicated by the arrows in Fig. III, the continued movement resulting in a rocking and sliding movement as is shown in Figs. III and IV, thus insuring a good contact keeping the contact faces clean and relatively smooth. It will be observed that the pivot points 3 and 13 are so related to each other that in opening and closing the switch the contact member 11 has a sliding and rocking movement toward and from the point of first engagement of the switch contact members.

We have only illustrated such parts of a switch as seem necessary for the illustration of our present invention and we have not attempted to illustrate various adaptations and modifications which we contemplate as we believe the disclosure made will enable those skilled in the art to which our invention relates to embody or adapt the same as may be desired.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In an electric switch, the combination of a relatively fixed contact member, a pivoted switch arm having downwardly projecting pivot ears thereon, a contact member pivotally mounted on said ears and having a stop limiting its downward swing on its pivot, a spring normally holding said pivoted contact with its stop in engagement, and a flexible conductor connected to said pivoted contact member, the pivot for said switch arm being positioned so that the

said contact member carried thereby engages the said coacting contact member with a rocking and sliding movement away from the initial point of contact when the switch arms is actuated to close the switch and with a rocking and sliding movement toward the initial point of contact when the arm is actuated to open the switch, the face of said pivoted contact member having a curved outer portion and a flattened inner portion coacting for the purpose specified.

2. In an electric switch, the combination of a relatively fixed contact member, a pivoted switch arm having downwardly projecting pivot ears thereon, a contact member pivotally mounted on said ears and having a stop limiting its downward swing on its pivot, a spring normally holding said pivoted contact with its stop in engagement, and a flexible conductor connected to said pivoted contact member, the pivot for said switch arm being positioned so that the said contact member carried thereby engages the said coacting contact member with a rocking and sliding movement away from the initial point of contact when the switch arm is actuated to close the switch and with a rocking and sliding movement toward the initial point of contact when the arm is actuated to open the switch, coacting for the purpose specified.

3. In an electric switch, the combination of a relatively fixed contact member, a pivoted switch arm, a contact member pivotally mounted on said arm, said contact member having a curved outer portion and a flattened inner portion, the pivot for said switch being positioned relative to said switch contact member and to said contact member carried by said arm so that said contact member on said arm engages said switch contact member with a rocking and sliding movement away from the initial point of contact with said switch contact member when the switch arm is actuated to close the switch, and with a rocking and sliding movement toward the initial point of contact when the switch arm is actuated to open the switch, all coacting for the purpose specified.

4. In an electric switch, the combination

of a relatively fixed contact member, a pivoted switch arm, and a contact member pivotally mounted on said switch arm, the pivot for said switch arm being positioned relative to the contact carried thereby and to said switch contact so that the said contact member carried by said arm is engaged with said switch contact with a rocking and sliding movement away from the initial point of engagement on the closing of the switch and with a rocking and sliding movement toward the initial point of contact when said arm is actuated to open the switch.

5. In an electric switch, the combination of a relatively fixed contact member, a pivoted switch arm, and a contact member pivotally mounted on said switch arm, the pivot for said switch arm being disposed so that the switch member carried thereby engages the coacting contact member with a rocking and sliding movement away from the initial point of contact when the switch is closed and toward the initial point of contact when the switch is opened.

6. In an electric switch, the combination of a relatively fixed contact member, and a movable contact member pivotally mounted to swing in an arc at one side of said fixed contact member, said movable contact member being yieldingly mounted upon its support whereby it engages the fixed contact member with a tilting and sliding movement away from the initial point of contact when the switch is closed and toward the initial point of contact when the switch is opened.

7. In an electric switch, the combination of a relatively fixed contact member, and a coacting contact member mounted to swing in the arc of a circle at one side of said relatively fixed contact member and engage the same with a rocking and sliding movement away from the initial point of contact when the switch is closed and toward the initial point of contact when the switch is opened.

In witness whereof we have hereunto set our hands and seals.

HARLEY M. DUNLAP. [L. S.]
DELMER M. PUTNAM. [L. S.]