Sept. 10, 1940. C. H. REYNOLDS 2,214,180

ELECTRICAL SWITCH

Filed Feb. 5, 1938

Fig-4

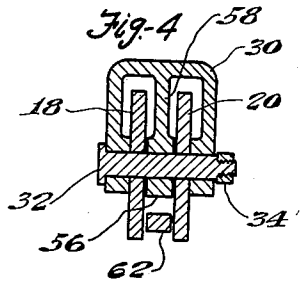


Fig-3

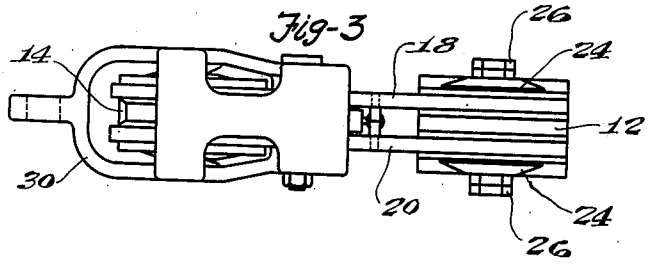


Fig-5

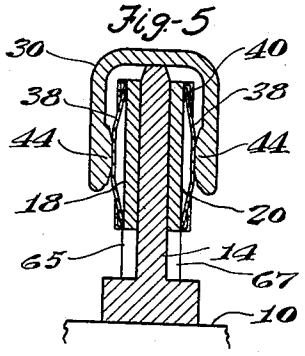


Fig-2

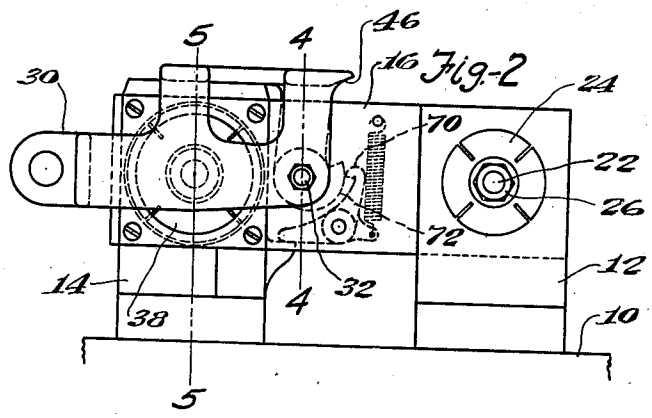
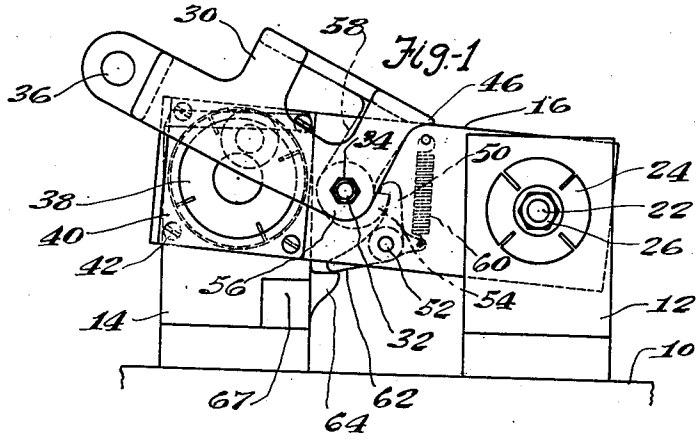


Fig-1



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ELECTRICAL SWITCH

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Application February 5, 1938, Serial No. 188,885

6 Claims. (Cl. 200—162)

The invention relates to an electrical switch and particularly to a high pressure contact switch.

The invention has for an object to provide a novel and improved construction of electrical switch of the type in which the movable member or blade is adapted to embrace the stationary contact member and in which provision is made for applying auxiliary pressure to said movable blade when the switch is in its closed position so as to insure a tight and efficient contact between the switch members.

A further object of the invention is to provide a novel and improved electrical switch of the character described in which auxiliary means are provided for tightly pressing and holding the blade members into high pressure contact with the stationary contact member after the switch members have been closed whereby to prevent undue spreading of said blade members.

With these general objects in view, and such others as may hereinafter appear, the invention consists in the electrical switch hereinafter described and particularly defined in the claims at the end of this specification.

In the accompanying drawing illustrating the preferred embodiment of the invention, Fig. 1 is a view in side elevation of an electrical switch embodying the present invention showing the switch in its partly closed position; Fig. 2 is a view similar to Fig. 1 showing the switch fully closed; Fig. 3 is a plan view of the switch; Fig. 4 is a cross section taken on the line 4—4 of Fig. 2, and Fig. 5 is a cross section taken on the line 5—5 of Fig. 2.

In general the present invention contemplates an electrical switch of the type having a movable member or blade which is arranged to embrace a stationary contact member when in circuit closing position and in which provision is made for applying additional pressure against the sides of the blade members when the switch is closed in order to assure a most efficient contact and to retain the switch members in their closed position.

The invention may be embodied with advantage in a double bladed switch in which the blades are spaced apart and adapted to engage the stationary contact between the blades when the switch is in its closed position. In practice it has been found that after continued use of a switch of this type the blades are apt to become spread apart to such an extent as to result in an imperfect contact. In order to prevent undue spreading of the blades and to maintain a high pressure contact between the switch members provision is made for applying pressure to the sides of the blades at the point where they engage the stationary contact.

Referring now to the drawing, 10 represents the supporting base of a switch upon which is mounted the contact members 12, 14 designed to cooperate with a movable member 16 of the switch. As herein shown, the movable member of the switch comprises a pair of blades 18, 20 which are pivotally connected by a bolt 22 to the contact member 12 and the blades 18, 20 are secured in contacting relation therewith by the usual washers 24 and nuts 26. The blades 18, 20 in their closed position are adapted to embrace the contact member 14 of the switch.

In accordance with the present invention provision is made for pressing the blade members 18, 20 securely into tightly fitting engagement with the contact member 14 and for this purpose, as herein shown, an operating lever 30 is pivotally mounted upon and connected to the blades by a bolt 32 and nut 34. The operating lever is yoke shaped and is arranged to embrace the outer surfaces of the blades 18, 20. The lever 30 is provided at its outer end with an eye or opening 36 for receiving a suitable hook for operating the switch. As illustrated herein, in the preferred form of the invention, the blades 18, 20 are provided with yieldable disks 38 mounted upon the outer surfaces of the blades adjacent the contact member 14. The disks 38 are retained upon the blades by retaining plates 40 secured thereto by screws 42.

Referring now to Figs. 1 and 5, as therein illustrated, the operating lever 30 is provided with opposed raised portions 44 upon the inner surfaces of the yoke 30 which are arranged to engage the disks 38 and to yieldingly press the blades 18, 20 firmly into engagement with the contact member 14 when the switch is in its closed position. It will be observed that a similar result might be obtained without the disks 38 by fabricating the lever 30 of sufficiently resilient material so that the engagement of the portions 44 directly with the blade members themselves will serve to apply the desired pressure.

The pivotal operating lever 30 is provided with an abutment 46 which is arranged to engage the top of the blades 16, 18 during the switch opening operation so that the lever 30 is in an angular position with relation to the blades, see Fig. 1. In order to retain the lever 30 in this angular relation to the blades during the ini-

tial portion of the switch closing movement, a latch mechanism is provided. As herein illustrated, see Fig. 1, a latch 50 pivotally mounted between the blades 18, 20 upon a pin 52 is arranged to engage a latch member 54 formed upon the hub 56 of a depending portion 58 of the lever 30. A spring 60 normally urges the latch 50 in a counterclockwise direction, viewing Fig. 1, and in latching relation with the latch member 54.

Provision is made for releasing the latching mechanism when the switch is nearly in its closed position and for this purpose an arm 62 extending from the hub of the latch 50 is arranged to engage a lug 64 formed as a part of the contact 14. Engagement of the arm 62 with the lug 64 effects a pivotal movement of the latch 50 to release the lever 30 and continued movement of the lever 30 operates to seat the blades 18, 20 against the shoulders 65, 67 of the contact 14. Thereafter the lever 30 pivots about the bolt 32 and engages the disks 38 as illustrated in Figs. 1, 2 and 5.

From the description thus far it will be observed that in the operation of the switch the initial opening movement will tend to release the pressure against the sides of the blades and to rock the lever 30 until the abutment 46 comes in contact with the top of the blades 18, 20. During this movement the rounded portion 70 of the latch will ride up on the cam portion 72 of the latch member and pivot into latching position again. Continued movement of the lever 30 will pivot the blades upwardly and open the switch.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. In an electrical switch, in combination, a stationary contact member, a double bladed switch member movable into and out of engagement with said contact member, yieldable disks loosely mounted upon said blades, frame members fixed to said blades and in which said yieldable disks are mounted, and an operating lever pivoted to said movable blades adapted to be moved into engagement with said yieldable disks to press the blades into high pressure contact with the stationary contact member when the switch has substantially reached its closed position.

2. In an electrical switch, in combination, a stationary contact member, a double bladed switch member movable into and out of engagement with said contact member, pressure applying means comprising resilient members loosely mounted upon said blades, frame members fixed to said blades and in which said resilient members are mounted, an operating lever pivoted to said movable blades and adapted to engage and compress said resilient members to apply lateral pressure against said blades when the switch is in its closed position, a latching mechanism adapted to lock said operating lever to said blades to permit the switch closing operation to be performed, and means for releasing said latching mechanism to permit the operating lever to apply pressure against said resilient members and the blades when the switch has substantially reached its closed position.

3. In an electrical switch, in combination, a stationary contact member, a double bladed switch member movable into and out of engagement with said contact member, pressure applying means comprising resilient members loosely mounted upon said blades, frame member fixed to said blades and in which said resilient members are mounted, an operating lever pivoted to said movable blades and adapted to engage and compress said resilient members to apply lateral pressure against said blades when the switch is in its closed position, a latching mechanism adapted to lock said operating lever to said blades to permit the switch closing operation to be performed, and means for releasing said latching mechanism to permit the operating lever to apply pressure against said resilient members and the blades when the switch has substantially reached its closed position, said latching mechanism having provision for resetting the latch during the switch opening operation.

4. In an electrical switch, in combination, a stationary contact member, a double bladed switch member movable into and out of engagement with said contact member, and pressure applying means comprising cup shaped metal resilient members loosely mounted upon said blades, frame members fixed to said blades and in which said resilient members are retained, and an operating lever pivoted to said movable blades, said resilient members being adapted to be automatically compressed by said operating lever to press the blades into high pressure contact with the stationary contact member during the downward rotary movement of said operative lever and after said movable blades have substantially reached their closed position, and said resilient members being also adapted to be released by said operating lever during the upward rotary movement of the latter and before said movable blades have been substantially moved out of their closed position.

5. In an electrical switch, in combination, a stationary contact member, a double bladed movable switch member adapted to embrace said stationary contact member when the switch is in its closed position, resilient members loosely mounted upon the outer surface of said movable blades, frame members fixed to said blades and in which said resilient members are retained, and an operating lever pivoted to said movable blades and adapted to engage and compress said resilient members to press the blades into high pressure contact with said stationary contact after the blades have substantially reached their closed position.

6. In an electrical switch, in combination, a stationary contact member, a double bladed movable switch member adapted to embrace said stationary contact member when the switch is in its closed position, resilient members loosely mounted upon the outer surface of said movable blades, frame members fixed to said blades and in which said resilient members are retained, and an operating lever pivoted to said movable blades and adapted to engage and compress said resilient members to press the blades into high pressure contact with said stationary contact after the blades have substantially reached their closed position, and said operating member being also adapted to release the pressure upon said resilient members before said movable members have substantially moved out of their closed position.

CHARLES H. REYNOLDS.