Jan. 9, 1962 E. BASSANI 3,016,432

SAFETY AND PROTECTION DEVICE FOR ELECTRIC SWITCHES AND THE LIKE, PARTICULARLY FOR MIDDLE VOLTAGE EQUIPMENTS

Filed Feb. 10, 1959

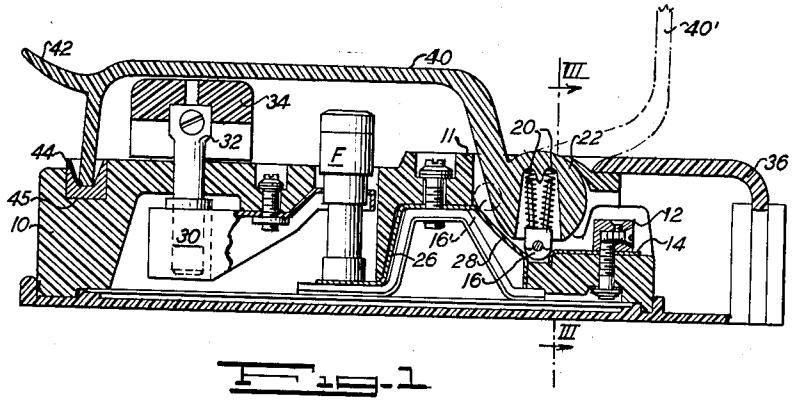



Fig. 1

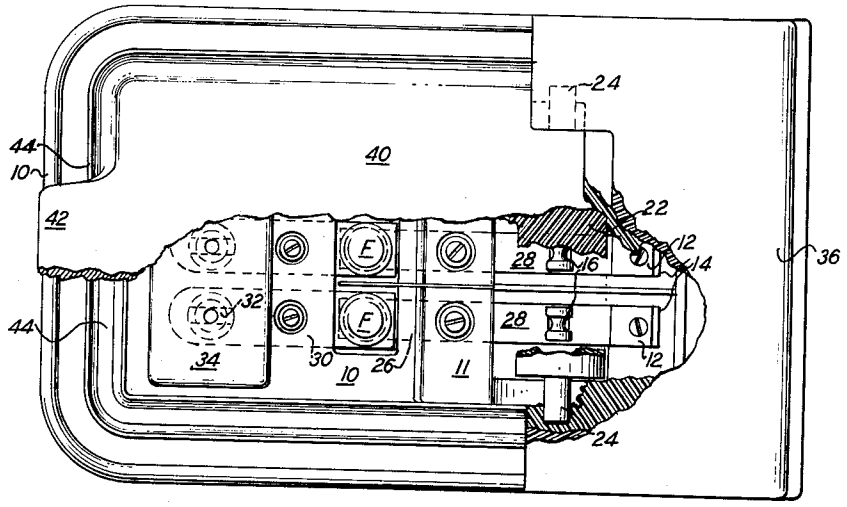



Fig. 2

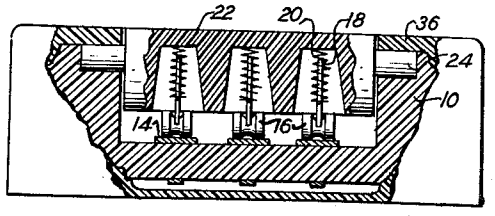



Fig. 3

United States Patent Office

3,016,432

Patented Jan. 9, 1962



3,016,432

# SAFETY AND PROTECTION DEVICE FOR ELECTRIC SWITCHES AND THE LIKE, PARTICULARLY FOR MIDDLE VOLTAGE EQUIPMENTS

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Filed Feb. 10, 1959, Ser. No. 792,393
Claims priority, application Italy June 7, 1958
3 Claims. (Cl. 200—50)

This invention relates to a safety device to prevent accidental contact with the voltage carrying components of an electric switch or the like, so that the components thereof, which need to be inspected or replaced (as for instance the fuses, terminals, branch junctions or the like), be not accessible when the switch is closed, whereas in case same components are to be inspected or serviced, the circuit is automatically broken, and the components become dead.

The above features are very important in the case of switches for movable or portable electric equipments, which are to be frequently moved, and that are to be connected with the main line by pin-plugs and the like, and by flexible cords.

In latter case, accidents take place often, due to the fact that the voltage carrying components are easily accessible to the operator.

The above and further ill-effects are positively removed by the safety device according to the invention, and characterized by the fact that the movable components of switch (by which the making and breaking of electric circuit are controlled) is provided with at least one cap or cover that fits an actuating handle and can engage with the switch base, thereby covering and making non-accessible the auxiliary components of same switch, as for instance fuses, terminals, and so on.

According to the invention, the cap by which the auxiliary components of switch are protected, is provided with a suitable profiled bar fitted on one end thereof. Pins, formed on both ends of said bar, are pivotally connected with suitable supports secured to switch base, being thereby said cap hinged to said base, and said bar is provided with spring contacts that cooperate with fixed contacts, for making or breaking the electric circuit through latter fixed contacts, according to open, or closed position taken by said cap.

It is to be understood that the protection, as applied for, extends also to electric switch provided with a device according to the invention.

The invention will be now disclosed in the following description, taken with the accompanying drawing, in which a preferred embodiment of the device according to same invention as fitted to a switch provided with pin-plug socket and fuses, is shown only as a not restrictive example.

In said drawing:

FIG. 1 is a longitudinal section of switch.

FIG. 2 is a plan view of same switch, some parts being in section.

FIG. 3 is a cross-sectional view on line III—III of FIG. 1.

Referring now to the above figures, the device comprises a base 10, whereon the different components of a switch are fastened.

The supply lines are clamped to terminals 12 secured within suitable recesses formed near one end of base 10.

Spring contacts 14, also secured to said terminals, are formed on one of their ends with suitably shaped tongues to engage with and to establish an electrical contact with rollers 16, fitted on suitable forks 18, which are acted upon by spring means 20.



The above stated rollers 16 form the movable contacts of the switch and are retained in place together with their forks by a support which, in the case as illustrated, consists of a bar 22, provided on both its ends with the pins 24.

Openings provided all on same side are formed along the longitudinal axis of said bar and are suitably aligned; the number of said recesses depend on the number of switch poles. One fork 18, with its roller 16 and springs 20 is seated in each one of said openings.

Each spring contact 14 cooperates with a suitably shaped counter-contact 26 provided with an inclined plane 28, across which the roller 16 is caused to run, whereupon same roller will snap into a recess, defined by the upper end of said inclined plane on one side, and by the wall of block 11, secured onto the base 10, on the opposite side.

The counter-contacts 26 are connected in known manner with the fuses F, and with pin-plug sockets, which fixed portion, made up by the spring contacts 30, is secured to base 10, whereas the movable portion, comprising the contact pins 32, consists of an insulating support 34, to which said pins 32 are secured, together with their terminals for corresponding electrical conductors.

The pins 24, formed on the bar 22, are fitted in suitable seats machined in the base 10 and are retained therein by a plate 36, acting as a bar cover and provided with an opening formed on its ends through which a portion of said bar come out.

According to this invention, a suitably shaped cap or cover 40, provided at one end with a handle or the like 42, is mounted on the bar 22.

The edge of said cover can be brought into engagement with a groove 44, formed in the base 10 and provided with a suitable packing 45.

It is to be understood that all auxiliary components of switch, that is the fuses F and the pin-plug socket 30, 32, as well as all other electrical components with which the switch might be fitted (as for instance terminals, coils, lamps, and the like) can be covered and made non-accessible by the aforedescribed cover.

More particularly, when the cover is engaged with the base 10, the switch is closed, that is an electrical path is established by the roller 16 between the contacts 14 and 26. In case the pin 32, or the fuse F, or any other component is to be removed, then the cover 40 must be opened and brought to the position 40', whereby the switch also opens, that is the rollers 16 are brought in the position 16'. The above stated components are thus made accessible and at the same time are positively disconnected from supply lines attached to terminals 12, whereby any danger for the operator is fully prevented.

It is to be understood that the invention is not limited in its application to the details specifically described or illustrated, and that, within the scope of the appended claims, the invention may be embodied otherwise than as herewith specifically described or illustrated.

What I claim is:

1. A switch comprising a base, two groups of spaced and fixed contacts aligned on said base, electrical components mounted on said base and coupled to the contacts of one group, a cover, a crosspiece on said cover and hinged to said base, said crosspiece being provided with aligned recesses, a plurality of resilient contacts in said crosspiece, said resilient contacts each comprising a spring-loaded roller located in one of said recesses adapted to connect said groups of contacts with said cover pivoted towards said base, and a handle integral with said cover for simultaneously lifting the cover to expose said components and removing said resilient contacts between said groups of contacts.

2. A switch as claimed in claim 1 comprising a block

on said base supporting the contacts of one group and defining therewith spaces for accommodating the rollers with the cover open.

3. A switch as claimed in claim 1 wherein the contacts of said one group are inclined with respect to said base, said rollers rolling on the contacts of said one group during lifting of said cover and compressing said spring.



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