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1,727,631

ELECTRIC SWITCH

Filed May 9, 1927

Fig. 1

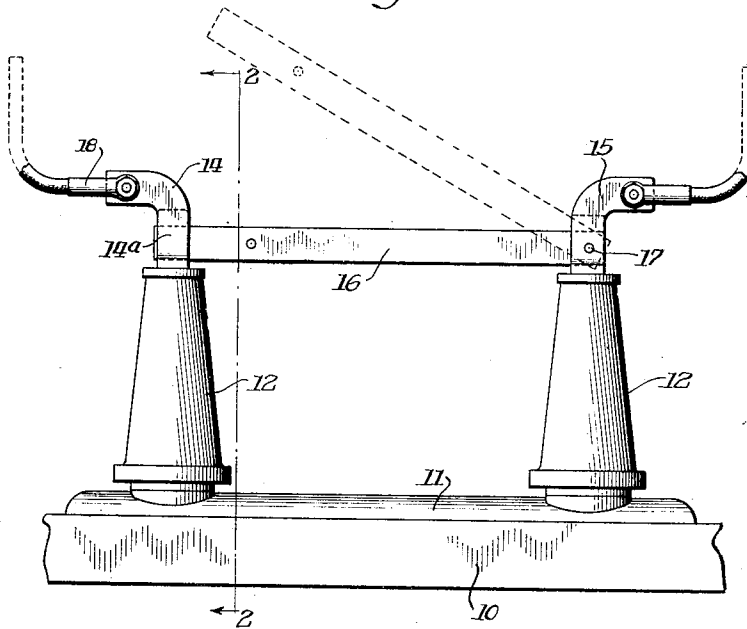
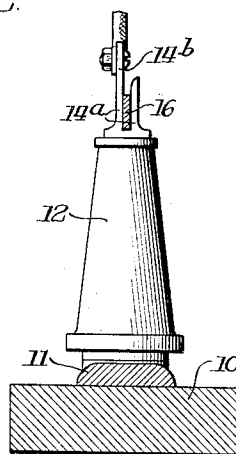


Fig. 2



witness:

A. Burkhardt.

Inventor:
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Attys.

UNITED STATES PATENT OFFICE.

GOTTFRIED BRUHLMANN, OF COLLINGSWOOD, NEW JERSEY, ASSIGNOR TO AKTIEN-GESELLSCHAFT BROWN BOVERI & CIE., OF BADEN, SWITZERLAND, A JOINT-STOCK COMPANY OF SWITZERLAND.

ELECTRIC SWITCH.

Application filed May 9, 1927, Serial No. 189,897, and in Germany June 4, 1926.

This invention relates to electric switches of the knife or similar types used for the connection of current carrying conductors.

The object of the invention is the provision of a switch of this type constructed in such fashion as to use the electrodynamic influences of the current to hold the switch closed, as in the event of a heavy flow or surge of current, and maintain the desired insulation of the terminals from the mounting which supports the switch, without involving the use of insulators of undesirable height or size.

Another object is the provision of a switch having these attributes which is of simple construction, reliable in performance, and susceptible of manufacture at low cost.

Other and further objects of the invention will be pointed out or indicated hereinafter, or will be apparent to one skilled in the art upon an understanding of the invention or its employment in practice.

In the accompanying drawing forming a part of this specification, I illustrate one embodiment of the invention, but it is to be understood that this is presented simply by way of example, and the scope of the invention, as indicated in the appended claims, is not to be construed as limited simply to this particular construction or the details thereof.

In said drawing,

Fig. 1 is a side elevational view of a switch embodying the invention; and

Fig. 2 is a sectional view on line 2—2 of Fig. 1.

Various expedients have been resorted to for preventing the unintentional opening of connecting switches incident to the passage of heavy or suddenly increased currents. In some instances catches have been designed for this purpose, but these are likely to interfere with the operation of the switch, and to prove unreliable. Various arrangements of holding clips and the switch blade have been devised to hold the latter closed under the electrodynamic forces of the current, but these have involved either bringing the terminals or the switch blade closer to the support from which it is insulated, or the

lengthening of the insulators in order to maintain the proper clearance to prevent flash-overs. The present invention provides in a very simple construction an arrangement whereby the electrodynamic forces of the current may be availed of to the purpose indicated without involving either a decrease in the spacing of the switch terminals and blade from the support or the use of insulators of undesirable height or size. The nature of the invention may be ascertained from the embodiment illustrated, wherein the reference numeral 10 designates the panel or support on which the switch base 11 is mounted. The switch base carries the insulators 12, upon which are mounted the switch terminals 14 and 15, to the latter of which the switch 16 is pivoted at 17. The terminal 14 has the clip portion 14^a to receive the blade and the binding arm 14^b for connection of the conductor 18. The terminal member is so constructed that the portion which receives and retains the blade is between the binding portion and the insulator. The terminal member 15 may be similarly connected with the pivot 17 between an extended binding portion and the insulator, although it also may be formed with the binding portion concentric with the pivot or substantially on a line with the switch blade when the latter is in closed position.

When an electric current is passed through a conductor in the form of a loop, electrodynamic forces are developed which tend to expand the loop or increase the area enclosed within it. This effect is availed of by the present construction to hold the switch closed, as the free end of the switch and the terminal member with which it contacts, occupy a salient position in the course taken by the current, the bottom of the terminal clip being at the outer side of the salient. Consequently, the electrodynamic forces developed upon the movable blade by the flow of current have the effect of forcing the free end of the blade into its seat rather than out. Since the terminal members and the switch blade are positioned entirely beyond the ends of the insulators, all current-

carrying parts are spaced the full length of the insulators from the base and support, and consequently the insulators need not exceed in length the actual distance requisite to prevent flashing-over between the current carrying members and the switch support. Accordingly, it will be seen, the construction, while very simple, is very effective in attaining the result desired, with insulators of minimum size.

What I claim is:

1. In an electric switch, the combination with an insulator, of a terminal member mounted thereon comprising a seat portion and a portion for connection to a line, said seat portion disposed between said last-mentioned portion and the insulator, and a movable switch member closing on the seat portion with a movement toward the insulator.
2. In electrical apparatus, spaced insulators, a supporting base therefor, terminal current-conducting elements carried by the respective outer ends of said insulators and extending axially with respect to the latter and thence laterally outwardly in opposite directions therefrom, and a switch member supported for movement into and out of contacting relation with one of said elements to complete or break said path and arranged to complete such path by a movement in substantially the direction of electrodynamic forces resultant to current flow in said path.
3. In switch apparatus, a supporting insulator, a switch member supported for movement into and out of circuit-closing position and arranged for disposition when in such position with one of its ends adjacent to and overhanging an end portion of said insulator and with its longitudinal axis substantially perpendicularly disposed with respect to the longitudinal axis of said insulator, a terminal switch element complementary to said end of said member and disposed for contacting engagement therewith when said member is in circuit-closing position, said element being affixed to said end portion of said insulator and extending outwardly therefrom in a direction substantially coincident with the longitudinal axis of said insulator, the extended portion of said element extending outwardly beyond the outer edge of said member an appreciable distance when said member is in circuit-closing position, and a conductor connected to the extended portion of said element.

In testimony whereof I have hereunto subscribed my name this 3rd day of May, A. D. 1927, at Camden, in the county of Camden and State of New Jersey.

GOTTFRIED BRUHLMANN.