

Jan. 22, 1929.

C. WILLIAMS ET AL

1,699,645

SWITCH

Filed Oct. 29, 1925

Fig. 1

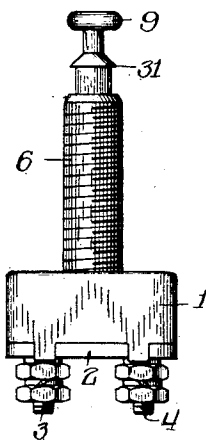


Fig. 2

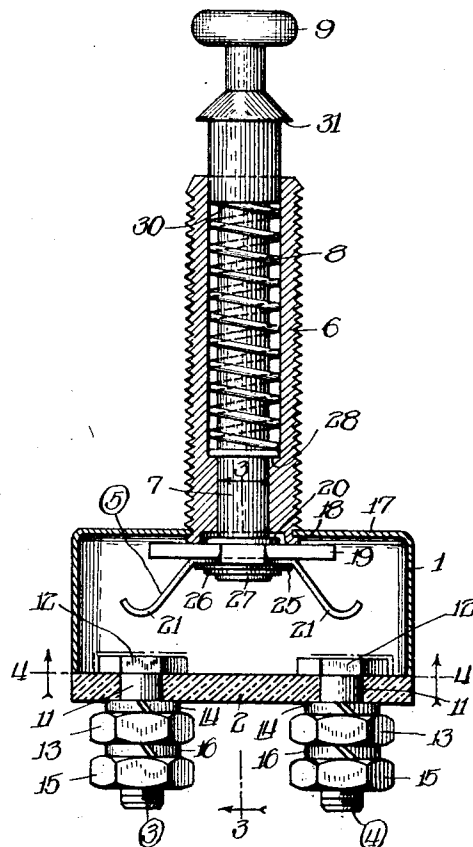


Fig. 3

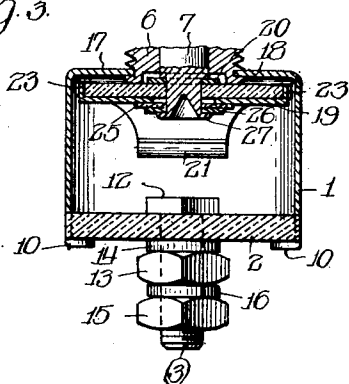
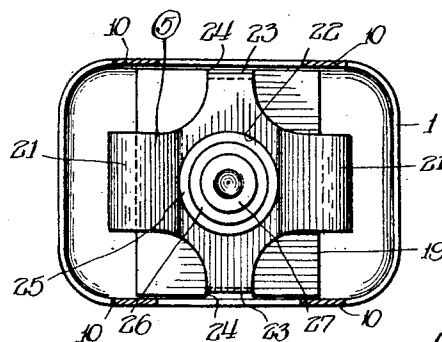


Fig. 4



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UNITED STATES PATENT OFFICE.

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SWITCH.

Application filed October 29, 1925. Serial No. 65,516.

The present invention relates to switches. The present invention will be described with particular reference to a type of switch adapted to be mounted upon the dashboard of an automobile for controlling an electric circuit of said automobile, though as the description proceeds it will be noted that it has a wider scope.

An object of the present invention is to provide a sturdy switch, positive in its action, which is adapted to be mounted upon the dashboard of an automobile and which presents an unobtrusive appearance upon the face of said dashboard.

A further object is to provide an electric switch of general application which is sturdy and reliable in operation and which is simple to manufacture.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view in elevation of one embodiment of the present invention;

Figure 2 is a longitudinal sectional view of the structure shown in Figure 1;

Figure 3 is a sectional view taken along the plane indicated by the arrows 3—3 of Figure 2; and

Figure 4 is a view taken along the planes indicated by the arrows 4—4 of Figure 2.

The numeral 1 indicates a box-like casing, or housing, which is closed on one side by the insulating member 2. Terminals 3 and 4 are mounted in said insulating member 2 and are adapted to be bridged by the resilient contact member 5 disposed within said casing 1. Secured to the casing 1 in the wall opposite to the insulating member 2 is the stud 6, which is externally screw-threaded throughout at least a portion of its length. Said stud houses a plunger 7, which is normally urged by the spring 8 in a direction outwardly of the stud 6. Said plunger 7 is provided with a head portion 9 for convenience of operation.

The screw-threaded stud 6 is adapted to extend through the dashboard of an automobile (not shown). A nut (not shown) will be provided for holding the stud 6 and casing 1 in position. It will be noted that the stud 6 is so formed that a nut for cooperation with the screw-threaded portion may be inserted thereon over the outer end of said

stud. The switch will therefore be conveniently clamped upon the dashboard of an automobile, the casing 1 being disposed at the rear of said dashboard; the stud 6 extending through a hole in said dashboard; and a nut being used to clamp the switch in place.

The casing 1 may consist of a metal stamping having an open side which is provided with the closure member 2 of insulating material. Said casing 1 is provided with fingers 10—10 adapted to be bent over on the outer side of the insulating member 2 to hold said insulating member 2 in firm engagement with the adjacent edge of the casing 1. Said insulating member 2 is provided with a pair of spaced apertures for receiving the screws 11—11, which screws may take the form of machine screws, but which screws should be of a material which is a good conductor of electricity. Said screws 11—11 are provided with the heads 12—12, which bear upon the inner surface of the member 2. Nuts 13—13 cooperate with lock washers 14—14 upon the screws 11—11 to hold said screws firmly in position within said member 2. Other nuts 15—15 upon said screws 11—11 serve as means for connecting electric wires to the terminals 3 and 4, lock washers 16—16 being used if preferred.

The wall 17 of the casing 1 opposite to the member 2 is apertured to receive the stud 6, said stud being preferably riveted over on the inside surface of the wall 17, as indicated by the numeral 18, to provide a firm connection between casing 1 and stud 6.

The plunger 7 located within the stud 6 is shouldered close to its lower extremity, which shoulder forms an abutment for the insulating means 19, a washer 20 being provided between said insulating member 19 and the shouldered portion of the plunger 7 if preferred. The resilient contact member 5 is provided with the two diverging legs or wiping portions 21—21 adapted to have a wiping contact with the flat top portions of the terminals 3 and 4. Said resilient contact member 5 is provided at its center with the aperture 22, which is of sufficient size to prevent any possibility of contact between the plunger 7 and the contact member 5. Said contact member 5 is secured in position on the insulating member 19 by means of the upturned portions 23, which are located with-

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in corresponding cut out portions 24—24 in the sides of the insulating member 19. A washer 25 of insulating material is disposed at the end of the plunger 7, which insulating washer bears against the under side of the resilient contact member 5 as the parts are viewed in Figure 2. Said insulating washer 25 is in turn held in place by means of the metallic washer 26. The insulating member 19 and the resilient contact member 5 and their cooperating washers above described are held in place at the lower extremity of the plunger 7 by a swedged or riveted over end portion 27 of the plunger 7. Said insulating means, it will be observed, serves the double function of limiting upward movement of the plunger 7 and of forming an insulating abutment for the contact member 5.

The stud 6 is provided interiorly, intermediate of its length, with the shoulder 28 adapted to form an abutment for the lower extremity of the spring 8 as the parts are viewed in Figure 2. The plunger 7 is provided with the shoulder 30, which shoulder is preferably disposed inwardly of the stud 6 and which takes the thrust of the spring 8 at the upper end of said spring as the parts are viewed in Figure 2. If preferred, the plunger 7 may be provided with another shoulder 31 adapted to contact with the upper extremity of the stud 6, as the parts are viewed in Figure 2, to limit the inward movement of plunger 7 and the consequent distortion of the resilient contact member 5.

As will be apparent from the drawing and from the description appearing above, the spring 8 normally holds the plunger 7 in a position to hold the resilient contact member 5 out of engaging position. When it is desired to move the contact member 5 into bridging relationship with the terminals 3 and 4, the plunger 7 will be moved inwardly. The diverging legs 21—21 of the contact member 5 will have a wiping action upon the tops of the terminals 3 and 4, so that said terminals and said contact member 5 will be self-cleaning. The insulating member 19 will be chosen of sufficient size that it will be prevented from turning in the casing 1 by reason of the sliding engagement of said insulating member 19 with the walls of said casing. By reason of the upstanding portions 23 of the contact member 5, which upstanding portions fit within corresponding cut out portions in the insulating member 19, relative turning movement between the contact member 5 and insulating member 19 is effectually prevented.

The parts are sturdy, and simple to manu-

facture and assemble. The switch is reliable and positive in its action.

Though a preferred embodiment of the present invention has been described in detail, many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is:—

1. In a switch, in combination, a metallic housing, a pair of terminal members secured to but insulated from said housing, a stud secured to said housing, a spring-pressed plunger within said stud, a guiding insulating member carried by said plunger and adapted to limit movement of said plunger in one direction relative to said housing, said insulating member being shaped to conform to opposed side walls of said housing whereby to prevent relative turning movement between said insulating member and said housing, a bridging contact member cooperatively associated with said terminal members, said bridging contact member having a pair of contact legs adapted to contact with said terminal members and a pair of holding legs disposed intermediate of said contact legs, said holding legs being disposed within corresponding recesses in said insulating member out of contact with said housing, and means for holding said bridging contact member against said guiding insulating member out of electrical contact with said plunger.

2. In a switch, in combination, a switch housing, a pair of terminal members secured to said housing but insulated therefrom, a plunger, a guiding insulating member disposed within said housing and having portions interfitting with the walls of said housing to prevent relative rotation between said guiding member and said housing, a bridging member cooperatively associated with said terminal members, said bridging member having a pair of legs adapted to contact with said terminal members and a pair of holding legs disposed intermediate of said contact legs, said holding legs being disposed in corresponding recesses in said guiding insulating member, and means for holding said contact member against said guiding insulating member out of electrical contact with said plunger.

Signed at Detroit, Michigan, this 17th day of October, 1925.

CLARENCE WILLIAMS.

Signed at Chicago, Illinois, this 12th day of October, 1925.

ERNST G. APPLETON.