Nov. 9, 1926. 1,605,910

E. G. APPLETON ET AL

SWITCH

Filed April 17, 1925

Fig. 1

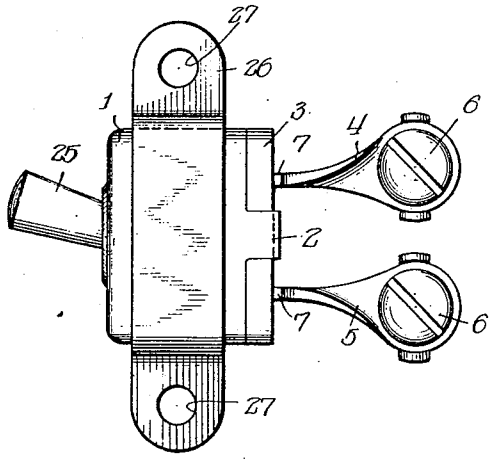


Fig. 2

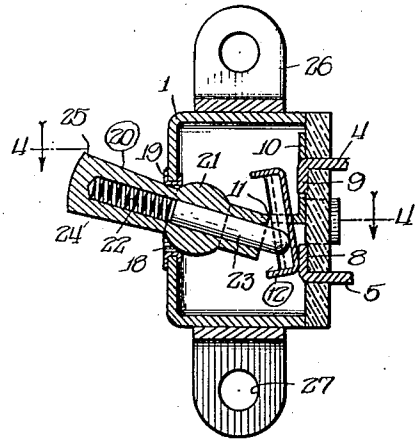


Fig. 3

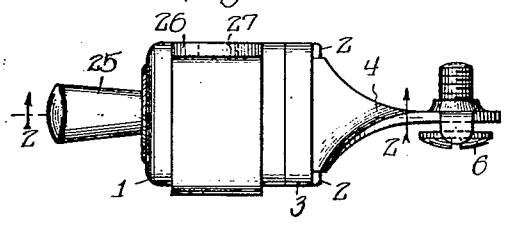


Fig. 4

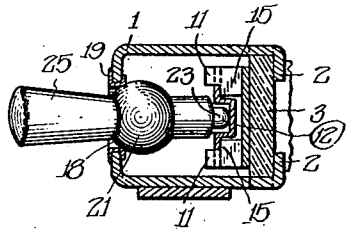


Fig. 5

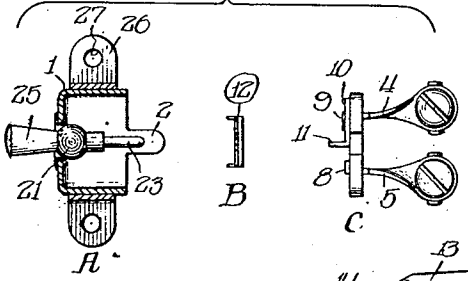


Fig. 6

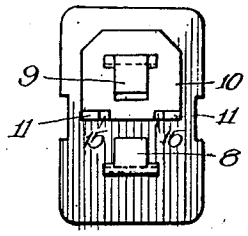
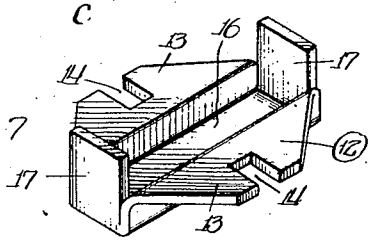


Fig. 7



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UNITED STATES PATENT OFFICE.

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SWITCH.

Application filed April 17, 1925. Serial No. 23,747.

The present invention relates to switches.

More particularly the present invention relates to switches of the type which may be selectively biased to either open circuit or closed circuit position. Alternate operations of an operating member will move the switching mechanism alternately between open circuit and closed circuit positions, and the parts are so arranged that the switching mechanism will remain in the position to which it has been moved until positively moved therefrom.

An object of the present invention is to provide a switch of the character above referred to which is simple in construction, inexpensive to manufacture and positive in its action.

A further object is to provide a switch which will operate with a snap action between open circuit and closed circuit positions, which will insure a good electrical contact when in closed circuit position and which involves a minimum of parts.

A further object is to provide a switch made up of stampings which may be cheaply formed and which may be readily assembled.

A further object is to provide a small and inconspicuous switching mechanism which will combine efficiency with low cost.

Further objects will appear as the description proceeds.

Referring to the drawings—

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

Figure 2 is a sectional view showing the interior of the construction shown in Figure 1, the section being taken along the plane indicated by the arrows 2—2 of Figure 3;

Figure 3 is a view in side elevation of the structure shown in Figure 1;

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

Figure 5 illustrates certain important parts of the construction shown in the preceding figures, said parts being separated for purposes of clarity, the various parts of Figure 5 being represented by characters A, B and C;

Figure 6 is an end view, on an enlarged scale, of the structure shown in part C of Figure 5; and

Figure 7 is a view in perspective of part B of Figure 5.

In order that the invention may be easily understood, certain figures of the drawing are of a size greater than certain preferred embodiments of the present invention. However, no limitation is intended as to dimensions of the switch embodying the present invention.

The numeral 1 indicates a cup-shaped member, which may be swedged from a piece of sheet metal. Said cup-shaped member 1 is provided with the ears 2—2 disposed at the open end of said cup-shaped member, which ears may be readily bent over upon the closure 3, which closure is composed of insulating material. The closure 3 is slotted for the reception of a pair of terminal members 4 and 5, which terminal members are provided with the binding screws 6—6. Said terminal members 4 and 5 have shoulder portions 7—7 abutting against the outer surface of the insulating closure 3, and the inner extremities of said terminal members 4 and 5 are swedged over, as indicated by the numerals 8 and 9. One of the swedged over portions, indicated as the portion 9 (the inner end of terminal 4), has holding engagement with the plate 10, which plate has the upstruck fingers 11—11.

The upstruck fingers 11—11 serve the purpose of providing a rocking support or fulcrum for the movable contact member which is indicated as a whole by the numeral 12. The rocking member 12 has the two oppositely disposed side portions 13—13 provided with the slots 14—14, the upstruck fingers 11—11 of the stationary plate 10 being adapted to ride within said slots 14—14. The under sides of said side portions 13—13 are adapted to rest upon shoulders 15—15 of the upstruck fingers 11—11. Disposed intermediate of the two side portions 13—13 is the trough 16 bounded at its two ends by the walls 17—17. The rocking member 12, which is of electrical conducting material, is adapted to engage with the inner end of the portion 8

of terminal 5. When said rocking member 12 is in engaging relationship with said portion 8 of the terminal 5, an electrical connection is, of course, provided between the terminals 4 and 5.

The means for rocking the member 12 will now be described. The cup-shaped member 1 is provided with an aperture 18, which may be bounded by the rivet member 19. The center of said rivet and the fingers 11—11 preferably lie in substantially the same plane. Said rivet member 19 encircles the swinging operating member indicated as a whole by the numeral 20. The operating member 20 is an elongated member having a ball-shaped portion 21 intermediate of its length, which ball-shaped portion has bearing engagement with the rivet member 19. The operating member 20 is provided with an axial hole 22, which carries the pin 23 of insulating material. A spring is provided for urging the pin 23 outwardly. The operating member 20 is provided with the handle portion 25 projecting outwardly from the cup-shaped member 1, whereby the operating member 20 may be conveniently swung through its range of movement. The dimensions of the parts are so chosen that the insulating pin 23 will be forced into engagement with the rocking member 12 and will yieldingly hold said rocking member 12 in tilted position. It will be clear that when the operating member 20 is swung to a position wherein its axis coincides with the plane defined by the upstruck fingers 11—11 forming the pivotal mounting of the rocking member 12, said operating member 20 will be in a state of unstable equalibrium. Any slight movement to one side or the other of said position will result in the snap movement of the rocking member 12 to one or the other of its tilted positions corresponding to the movement of the operating member 20. The spring 24 housed within the operating member 20 will positively hold the rocking member in either of its tilted positions, whereby said rocking member 12 will be biased either in circuit closing or in circuit opening position.

A strap member 26 may be provided, which may be welded or otherwise secured to the cup-shaped member 1. Said strap member 26 may have its extremities perforated, as indicated by the numerals 27—27, for the reception of holding means, such as screws, whereby the switch may be readily attached to a conveniently positioned supporting member.

The present invention provides a construction which is simple, easy to assemble and consequently cheap to manufacture. It involves a minimum of parts and is very unlikely to get out of order.

Though a preferred embodiment of the present invention has been described in detail, it will be clear that 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. A switch comprising a cup-shaped member having an aperture, an operating member extending through said aperture and having a bearing on the inner wall of said cup-shaped member, an insulating closure for said cup-shaped member, said closure providing mounting means for two terminal members, a rocking member within said cup-shaped member loosely carried by one of said terminal members, and spring projected means carried by said operating member for performing the double function of holding said rocking member upon said one terminal member and for selectively biasing said rocking member to open circuit or closed circuit relationship with the other of said terminal members.

2. A switch comprising a cup-shaped member having an aperture, an operating member extending through said aperture and having a bearing on the inner wall of said cup-shaped member, an insulating closure for said cup-shaped member, said closure providing mounting means for two terminal members, a rocking member within said cup-shaped member loosely carried by one of said terminal members, and spring projected means carried by said operating member for performing the double function of holding said rocking member upon said one terminal member and for selectively biasing said rocking member to open circuit or closed circuit relationship with the other of said terminal members, said cup-shaped member having ears adapted to be bent over upon said insulating closure member to hold said parts together as a unit.

3. A switch comprising a plurality of sheet metal members, insulating members, a spring, and an operating member, said spring being mounted in said operating member, one of said insulating members being mounted in said operating member and being projected by said spring, one of said sheet metal members being swedged to form a housing, other of said sheet metal members providing terminal members, one of said terminal members having operatively associated therewith fulcrum means and another of said sheet metal members comprising a rocking member, said spring projected insulating member being positioned to hold said rocking member in place upon said fulcrum means and to selectively bias said rocking member into open circuiting or closed circuiting relationship with said terminal members.

4. A switch including a housing having an aperture, an operating member extending through said aperture, said operating mem-

ber having a ball-shaped portion having bearing relationship with said housing, a closure for said housing, said closure providing mounting means for a pair of electric terminal members, a rocking member carried by one of said terminal members and adapted to have electrical contact with the other of said terminal members, and spring-pressed means carried by said operating member for biasing said rocking member.

Signed at Chicago, Illinois, this 13th day of April, 1925.

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