

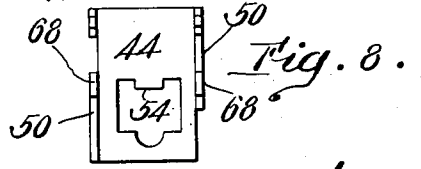
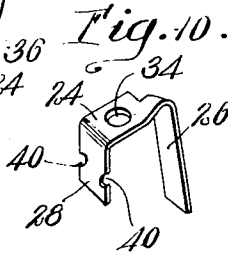
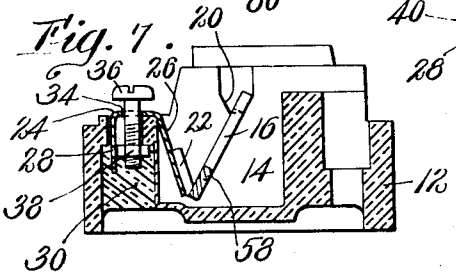
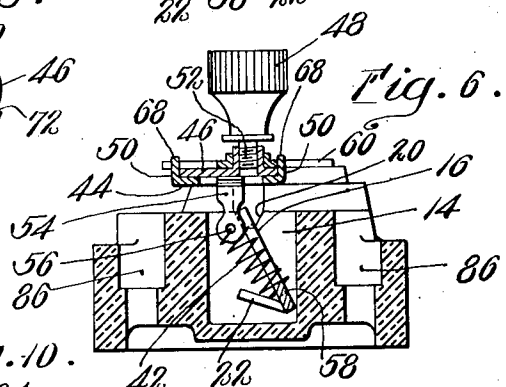
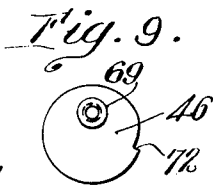
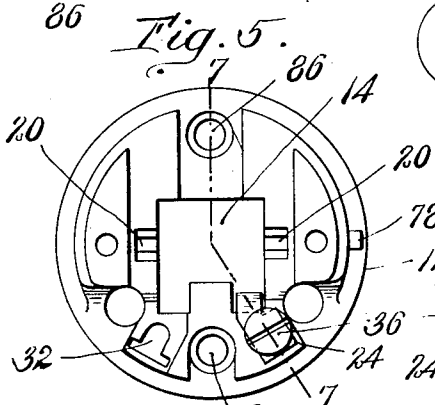
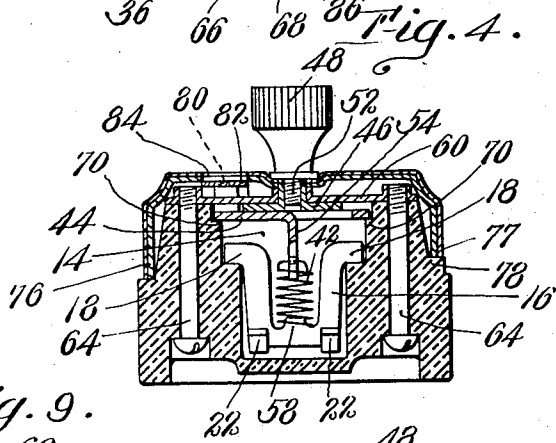
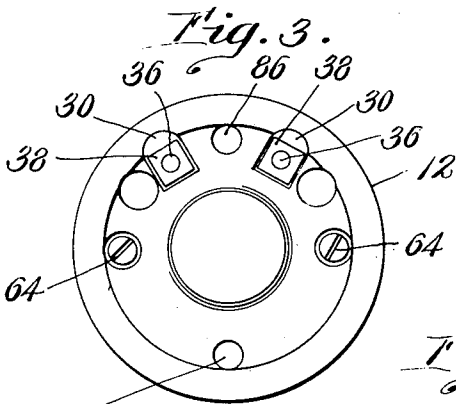
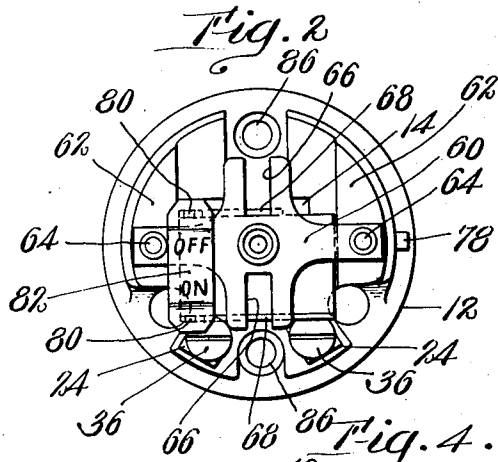
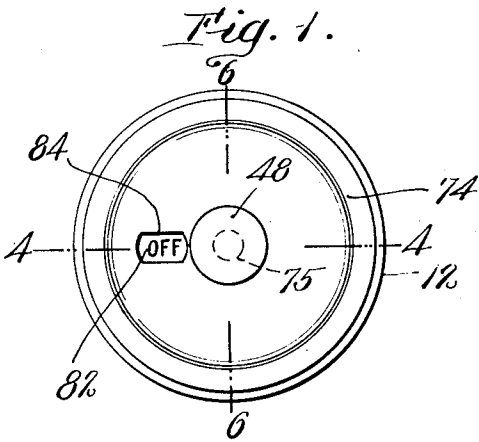
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ELECTRIC SWITCH

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ELECTRIC SWITCH

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5 Claims. (Cl. 200—67)

This invention relates to an electric switch and more particularly to a snap switch adapted to be operated by turning a button.

One of the important objects of the invention is the provision of a switch of the character described which is of such compact and simplified construction that it can be made and assembled at a very low cost.

Another important object is the provision of a switch in which the actuating spring is operated by a cam action effected by turning a button.

Other objects of the invention will be more specifically pointed out and described hereinafter.

In the accompanying drawing illustrating one form of the invention, Figure 1 is a front elevation of a switch constructed and adapted to be operated in accordance with my invention; Fig. 2 is a front elevation of the same with the operating button and cover removed; Fig. 3 is a rear elevation; Fig. 4 is a central sectional view on line 4—4 in Fig. 1; Fig. 5 is a front elevation of the insulating body showing one fixed contact mounted therein; Fig. 6 is a central sectional view on line 6—6 in Fig. 1 with the cover removed; Fig. 7 is a sectional view on line 7—7 in Fig. 5; Fig. 8 is a plan view of the cam slide; Fig. 9 is a plan view of the cam and Fig. 10 is a view in perspective of a terminal contact.

In the illustrated embodiment of the invention 12 designates an insulating body of any suitable form for holding the switch parts. As shown, however, the body is circular in plan and is provided in its front face with a deep recess or chamber 14 within which is loosely mounted a rocker member 16 of any suitable form, but preferably U-shaped in plan and adapted to be stamped out of sheet material. The two ends 18 of the rocker member are turned outwardly to form journal portions to fit in V-shaped grooves 20 formed in the side walls of the recess 14 which grooves act as bearings for said member. The end walls of said recess serve as stops to limit the movement of the rocker member. On the base portion of said member are formed two separated extension or contact portions 22 which are turned up on one side in angular relation to the main body of said member (Fig. 4) for engaging and bridging a pair of fixed separated contact terminals 24 fastened to the rear face of the insulating body.

The form of the contact terminals and the method of fastening them to the insulating body constitute one important feature of the invention. Each of the terminals 24 is substantially U-shaped (Fig. 10) one leg 26 serving as a contact to be engaged by one of the contact portions

22 of the rocker member and the other leg 28 for anchoring the terminal on the insulating body. The latter is provided with a pair of bores 30 in its rear face each of which is connected to the front face by a T-shaped opening or slot 32 (Fig. 5) the head of each slot being adapted to receive and hold the leg 28 of one of the terminals. A hole 34 is punched in the head of the terminal for receiving loosely a binding screw 36 which is held therein by a square nut in the bore 30 (Fig. 3). After each terminal has been mounted in place (Fig. 7) and the binding screw turned down, the bore 30 in each case is filled with the insulating wax which flows around the square nut and leg 28 and when hardened locks them in position. To insure further the locking of the leg 28, it may be cut out at the side points 40. After the insulating wax has hardened the turning up of the binding screw will not disturb the nut which will be held in position between the wax and the inner end of the bore.

This form of terminal has a number of advantages. It combines a fixed contact and terminal in one piece which can be stamped out of sheet material and shaped in one operation. It obviates tapping and threading two holes, which are generally required, one for the fastening screw and the other for the binding screw, and which are expensive operations. It also facilitates the assembling operation by eliminating the fastening of the terminals to the insulating body by the use of screws or equivalent devices.

It will be observed that the bases of the grooves 20 are flat which permits of a slight movement in a lateral direction of the rocker member in its bearings in order to insure a positive contact between the rocker member and the fixed contacts in case the latter are slightly out of alignment. In such case the pressure of the actuating spring twists the rocker member in its bearings sufficiently to hold it against both fixed contacts.

For actuating the rocker member to open or to close the circuit a spring 42 is provided which is operated by a slide 44 reciprocated by a cam 46 mounted on a turn button 48. The slide 44 (Fig. 8) is in the form of a rectangular plate having upwardly turned end flanges 50 for engagement by the cam 46 which is eccentrically mounted on the threaded stem 52 of the turn button 48. Stamped out of the body of the slide and turned downwardly is a tongue 54 having an end hold 56 through which one end of the actuating helical spring 42 is passed and locked, the other end of which encloses loosely an upwardly projecting lug 58 on the base of the rocker member. Since

the spring is under compression at all times its lower end remains on the lug and holds the rocker member downwardly in its bearings.

For holding and guiding the cam slide, a guide plate 60 is fastened to projecting portions 62 of the front face of the body 12 which plate may be of any suitable form but as shown simulates a cross (Fig. 2). It is secured to the body by two screws 64 mounted from the inner face of the body in suitable bores and threaded into the ends of two opposite arms of the plate. The other two opposite arms are provided each with a longitudinal open slot 66 into which projects a lug 68 formed on one of the end flanges of the cam slide and the slots and lugs act to guide the cam slide in its reciprocating movement.

Between the cam slide and guide plate is arranged the cam 46 preferably a circular disk in form, having a threaded hub 69 eccentrically located (Fig. 9) for receiving the threaded stem of the button 43. The guide plate is provided with a central hole for receiving the hub 69 of the cam and the latter is rotated eccentrically by the turn button in a clockwise direction. The cam slide is supported and slides on shoulders 70 formed in the insulating body. On its periphery the cam may have a tooth 72 formed to facilitate the removal of the turn button from the cam by turning the button contra-clockwise. If the button sticks when thus turned and tends to carry the cam in the latter direction the tooth will engage one end of a flange 50 and lock the cam against further movement in that direction and the turn button can then be unscrewed from the cam.

For concealing the switch mechanism a cover 74 of any suitable form is provided having a central hole 75 for the insertion of the turn button in the cam after the cover has been mounted in place. To remove the cover it is of course necessary to first remove the turn button which frees the cover. The flange 76 of the cover is provided with an edge notch 77 to receive a projection 78 formed in the rim of the body 12 to prevent rotary movement of the cover.

To indicate the position of the switch mechanism and whether the current is off or on, the cam slide on one side is provided with two upstanding lugs 80 upon which is inserted a light plate 82 having marked thereon any suitable designations to indicate the two positions of the switch such as "Off" and "On", and the cover has an opening 84 which exposes the proper designation to indicate the position of the switch. For installing the switch the insulating body is provided with a pair of shouldered bores 86 to receive screws inserted from the front face for fastening it to any suitable support.

The operation of a switch constructed in accordance with my invention is extremely simple. Turning the button in a clockwise direction turns the cam and moves the cam slide which carries the upper end of the actuating spring across the plane of the rocker member. As soon as the upper end of the spring passes through said plane, the spring throws the rocker member over and completes the movement of the cam slide as far as it can go and holds the parts in that position until the button is again turned to reverse the action.

It will be observed that my invention greatly reduces the number of parts of the switch by utilizing the insulating body for bearings thereby eliminating separate bearing parts and fastening means therefor. The assembling and mounting of the switch mechanism in the insulating body

is greatly simplified since it requires but the two screws for fastening the guide plate in place which holds all the parts in operative position.

It will be apparent that switches constructed in accordance with my invention can be produced and assembled with great rapidity and at a very low cost. Not only does the simplicity of construction contribute to compactness and cheapness but also to efficiency and durability.

It is to be understood that the foregoing described embodiment of the invention is merely to illustrate the one application of the invention which may be embodied in various other forms all within the scope of the following claims.

What I claim is:

1. An electric switch having, in combination, a recessed insulating body, a pair of fixed contacts mounted in said recess in separated relation, a U-shaped rocker member pivotally mounted in flat-bottomed grooves in the side walls of said recess for bridging said contacts, said member having a pair of upwardly extending extensions for engaging flatwise said fixed contacts, a spring for actuating said rocker member to open and close the circuit through said fixed contacts, a cam-slide connected to one end of said spring and movable on shoulders formed on the insulating body, a cam for reciprocating said cam-slide to operate said spring, a guide plate fastened to said insulating body for controlling the movement of said cam-slide and for holding said cam in operative position and means for operating said cam.

2. In an electric switch, the combination of a recessed insulating body, a pair of fixed contacts in separated relation, a U-shaped rocker member mounted in said recess for bridging said contacts and provided with upturned extensions for engaging said contacts flatwise, a spring for actuating said rocker member, a slide connected to one end of said spring, said slide having upturned end flanges, and a button operated cam mounted between said end flanges for reciprocating said slide, to actuate said rocker member.

3. An electric switch having, in combination, a recessed insulating body, a cam slide adapted for reciprocatory movement on shoulders formed in said body, a guide plate fastened to said insulating body for guiding said cam-slide, a cam intermediate said plate and said slide for reciprocating said slide and a switch member connected to and adapted to be operated by said cam slide.

4. An electric switch having, in combination, a pair of fixed contacts, a U-shaped rocker member for bridging said contacts, said member having upturned extensions for engagement flatwise with said contacts, a spring for actuating said rocker member, a cam slide provided with upturned end flanges and attached to one end of said spring, guiding means for said cam slide, a cam for reciprocating said cam slide by engagement with said end flanges to operate said spring and a button eccentrically mounted in said cam for operating the same.

5. In an electric switch, the combination of a pair of fixed contacts, a rocker member for bridging said contacts, a spring for actuating said rocker member, a cam slide attached to one end of said spring, a cam for reciprocating said cam slide to operate said spring and a button for turning said cam in one direction to reciprocate said slide, said cam being provided with a tooth to prevent rotation in the opposite direction.

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