

April 15, 1958

W. C. MOODIE, SR
BUTTON ACTUATED SWITCH

2,831,092

Filed Oct. 12, 1956

2 Sheets-Sheet 1

Fig. 1.

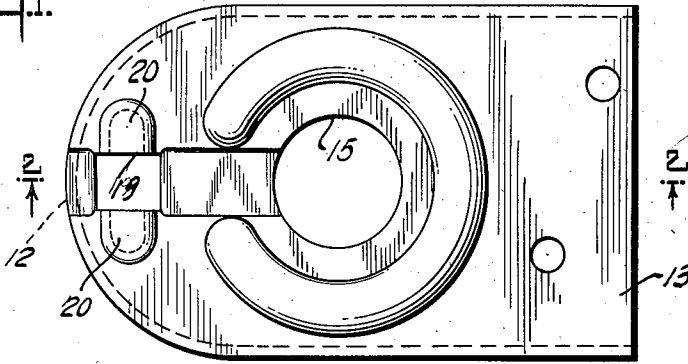


Fig. 2.

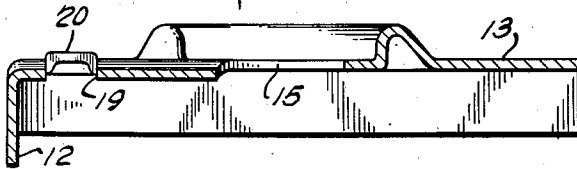


Fig. 3.

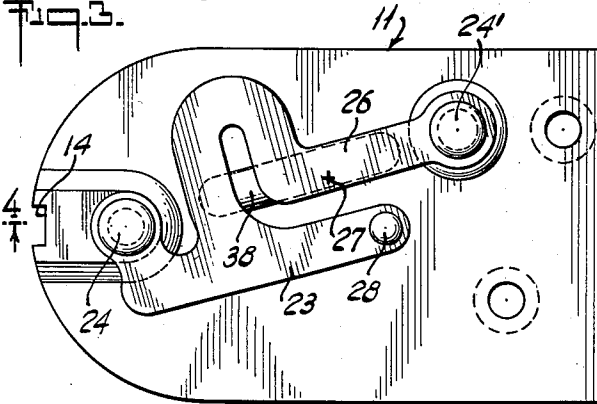


Fig. 4.

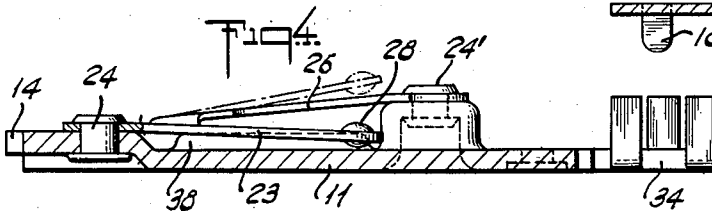
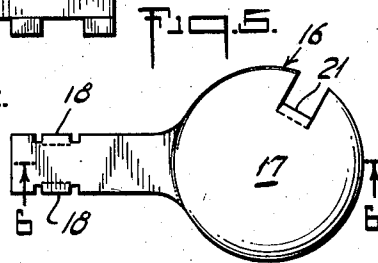
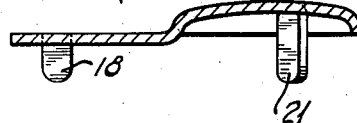


Fig. 6.



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2 Sheets-Sheet 2

Fig. 7.

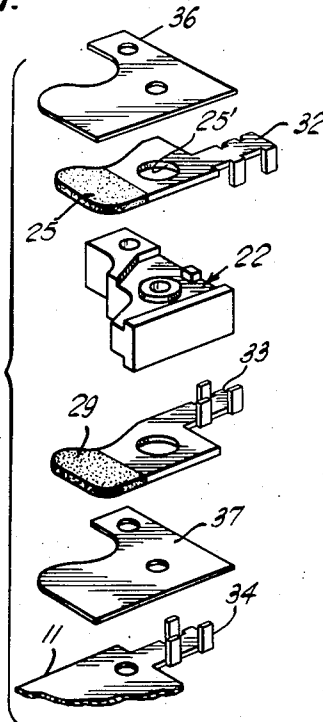


Fig. 8.

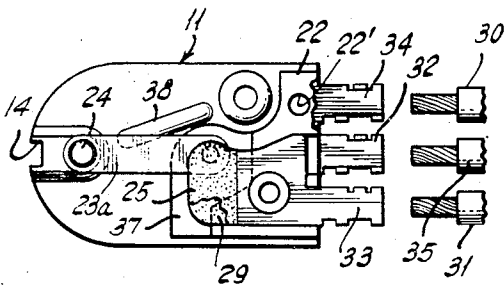
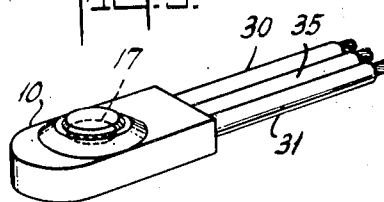


Fig. 9.



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1

2,831,092

BUTTON ACTUATED SWITCH

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Application October 12, 1956, Serial No. 615,643

7 Claims. (Cl. 200—159)

This invention relates to switches, and more particularly to a self-contained button actuated switch of novel structural features.

Features of the invention include the provision of novel means for so mounting the button in the switch as to limit the extent to which it may be depressed to actuate the switch, and to obviate the danger of excess stress and strain of the parts in use.

The invention may be utilized for the control of a single circuit, or to selectively actuate one of two or more circuits, or for any other use to which switches may be put. The switch unit of this invention may be readily manufactured of the relative size shown in Fig. 9 of the original drawings of this application, so that it may be held in the palm of a hand for actuation by the thumb.

These and other advantageous objects, which will appear from the drawings and from the description hereinafter, are accomplished by the structure of my invention, of which an embodiment is illustrated in the drawings. It will be apparent, from a consideration of said drawings and the following description, that the invention may be embodied in other forms suggested thereby, and such other forms as come within the scope of the appended claims are to be considered within the scope and purview of the instant invention.

In the drawings:

Fig. 1 is a top plan view of the top member of a switch casing embodying the invention,

Fig. 2 is a vertical sectional view thereof, taken on line 2—2 of Fig. 1,

Fig. 3 is a top plan view of the body member of a casing embodying the invention,

Fig. 4 is a vertical sectional view thereof, taken on line 4—4 of Fig. 3,

Fig. 5 is a top plan view of the switch button member,

Fig. 6 is a vertical, sectional view thereof, taken on line 6—6 of Fig. 5,

Fig. 7 is an exploded, perspective view of one form of convenient means for mounting contact members in the switch,

Fig. 8 is a top plan view of a body member embodying the invention, shown partly broken away, and with the contact mounting means disposed thereon, and

Fig. 9 is a perspective view of a completed switch embodying the invention.

As shown in the drawings, the switch 10 of this invention (Fig. 9) comprises a casing having a body member 11 (Figs. 3 and 4) and a top member 13 connected thereto in any convenient or desired manner as, for example, by passing rivets therethrough or by other means such as by a depending tab member 12 on one part, such as top member 13, of the casing adapted to be clinched over a recessed part 14 in body member 11. The securing means may, it will be apparent, be any one of an infinite variety of other suitable means for the purpose.

The top member 13 is provided with an opening 15 of given dimensions. The button 16 has a main plate portion 17 of greater dimension than said opening 15

2

and is movably mounted on the casing in line with opening 15 by means such as a depending lug (or lugs) 18 on button 16 passed through opening 19 in the top 13 clinched over the underside of the cover 13 within the bosses 20 adjacent opening 19. Thus the main plate portion 17 of the button (Fig. 9) is normally disposed in line with the aperture 15 of cover member 13, but the button cannot be depressed past its point of abutment with the portion of the top member 13 of the casing surrounding the aperture 15. The switch parts are thus protected from damage which might otherwise result.

Contact means are provided in the casing in a given position in registry with the depending finger 21 of button 16 (which passes through opening 15). Said contact means may comprise a first contact element 25 (Fig. 7) provided in the casing and mounted as on an insulation block 22 by rivet or other means passing through openings 25', 22' in the block and contact element 25.

A contact arm is provided (which may be of any desired suitable configuration, that shown in Fig. 8 as 23a being simply a spring leaf fixed at one end 24 to the casing and at its other end being free for movement by button 16). In Fig. 3 by way of further example, the arm is shown at 23 and is secured at 24, 24' to the casing in registry with the depending finger 21 of the button normally urged to one position relative to the contact element 25.

In the example shown in Fig. 3, the arm 23 is of spring material, and when a portion such as 26 thereof is engaged by button 21 as at 27, another point, such as 28 is moved due to reflex, resultant stress or other action ensuing from contact of the button finger 21 therewith. To assist in attaining that objective, longitudinal or transverse stresses or both may be imposed on the arm 23 as by forming one or both of the securing means 24, 24' thereof as eccentrics mountings which may be rotated or otherwise set to so stress the arm 23.

A second contact element 29 (Fig. 7) may be provided spaced from the first contact element so that the contact arm 23 may have selective contact with said elements—for example, normal spring contact with one element and contact with the other only as long as button 17 is held in its "down" position. The normal position of the arm 23 may be to one position (for example, with portion 28 down as shown in full lines, Fig. 4) out of contact with the first contact element 25. In such case, when the button finger is depressed, into contact with arm 23 it will move the portion 28 thereof to the "up" or dotted line position of Fig. 4 (and into contact with element 25) while the button is depressed. The invention may be used to normally close end portion 28 of arm 23 on a contact, or off such contact, or, in the case of two contact elements (Fig. 7) on one of such contact elements, to control two circuits (Fig. 9) whose wires 30, 31, would be connected to terminals 32, 33 of first and second contact elements 25, 29. Terminal 34 of casing 11 to which contact arm 23 is fixed is connected to wire 35. Suitable insulation plates 36, 37 may be provided. A spacer rib 38 may be provided in the switch body 11 in line with contact arm 23 to provide a limiting stop preventing excessive downward movement of said contact arm.

I claim:

1. In a button-actuated switch, a casing having a body member and a top member secured to said body member, said top member having an opening of given dimensions, a button having a plate of greater dimensions than said opening, a marginal portion of said plate slitted and downwardly bent to define a finger on said button depending from the plate for disposition through the opening intermediate the body member and top member, means to movably mount the button on the casing to dis-

3

pose the finger in line with the opening and means to secure contact means in said casing in a given position and in registry with the button finger for displacement from said given position on depression of the button and, movement of the depending finger thereof against said contact means.

2. In a button-actuated switch as set forth in claim 1, said casing top member having a generally planar surface provided with said opening over which the button is disposed, and a ridge on said surface concentric with the button and surrounding the opening so that the button will be thus disposed on the casing within the ridge and protected thereby.

3. In a button-actuated switch as set forth in claim 1, a pair of contact elements disposed in said casing in spaced relation, said contact means comprising a contact arm movably mounted in said casing in registry with the button finger and normally yieldably urged against one of a pair of contact elements, whereby, when the button is depressed, the finger thereof will move the contact arm away from the said one of said pair of contact elements and against the other.

4. In a button-actuated switch as set forth in claim 1, a spacer block positioned in said casing, a contact plate having one end positioned on said block and extending therebeyond in registry with the plane of movement of the depending finger, and a contact arm movably mounted in said casing, disposed in registry with the plane of movement of the depending finger of the button and normally movably urged against said contact plate, whereby, when the button is depressed, the finger thereof will engage the

4

contact arm and move it away from the contact plate.

5. In a button-actuated switch as set forth in claim 4, a further contact element in said casing against which the contact arm is moved when the button is depressed.

6. In a button-actuated switch as set forth in claim 1, a stop member extending upwardly of the body member of the casing in line with the plane of movement of the finger of the button, said contact means being movably disposed in the casing intermediate the stop member and finger.

7. A button actuated switch comprising a casing having a body member and a top member secured to said body member, said top member having an opening of given dimensions, a button having a main plate portion of greater dimensions than said opening, a finger on said button depending from the main plate portion of the button and through the opening, said casing being provided with aperture, and depending lugs on the button passing through said aperture and displaced therebeyond, to movably mount the button on the casing in line with the opening, and means to secure contact means in said casing in a given position and in registry with the button finger for displacement from said given position on depression of the button and movement of the depending finger thereof against said contact means.

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