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ELECTRICAL SWITCH

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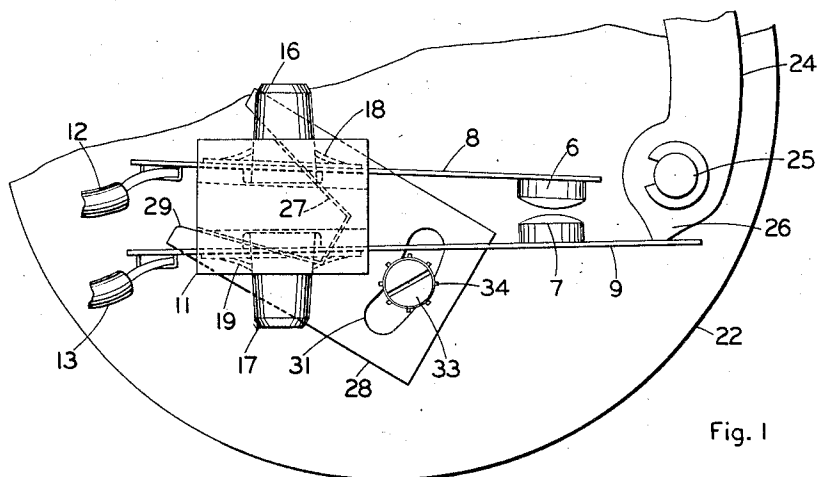


Fig. 1

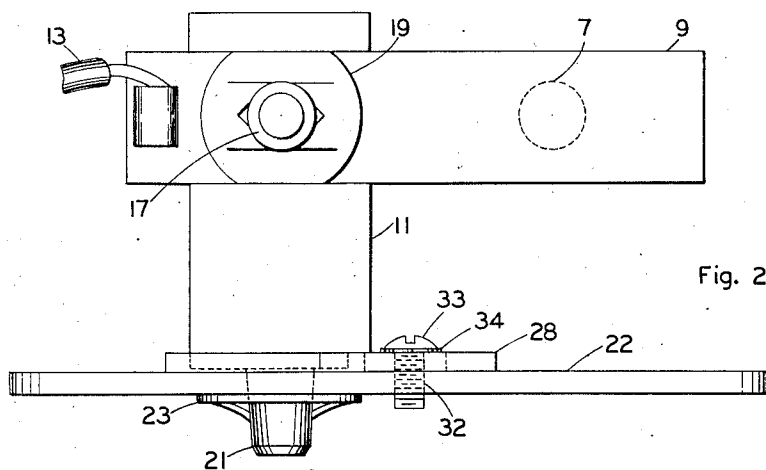


Fig. 2

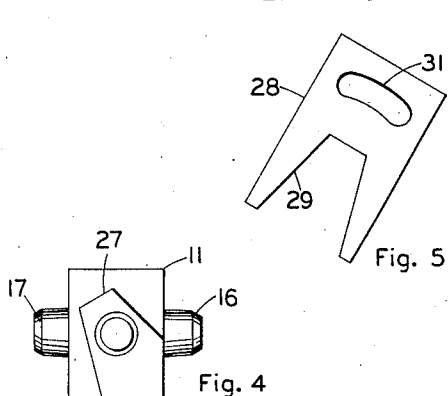


Fig. 5

Fig. 4

Fig. 3

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ELECTRICAL SWITCH

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2 Claims. (Cl. 200—166)

This invention relates to electrical switches and has for its objects the provision of a simple, reliable, low-cost switch having an improved arrangement for adjusting the separation of the contacts which form a part of the switch.

The invention, together with its objects and advantages, will be readily understood upon reference to the drawing annexed hereto, in which:

Figure 1 is an end view, taken in elevation, of the switch forming the invention showing also a portion of a switch actuator together with a portion of a support plate on which the switch is mounted, and;

Figure 2 is a view from the bottom of the arrangement shown in Figure 1, and;

Figure 3 is a side view of the contact supporting block shown in Figure 1, looking to the left of the drawing, and;

Figure 4 is an end view of the block shown in Figure 3, and;

Figure 5 is a view of the adjusting arm used for adjusting the separation of the switch contacts.

Referring first to Figure 1, there is shown a pair of spaced electrical contacts 6, 7 mounted on corresponding spaced resilient switch blades 8, 9, both of which are secured to a first support member in the form of the molded plastic block 11, with circuit connections to the blades being provided by the leads 12, 13 suitably affixed thereto.

As is best shown in Figures 1, 2 and 3, the blades 8, 9 are mounted on opposite sides of the block 11, each blade being provided with an aperture which allows the blades to be positioned within the channels 14, 15 formed in the block 11, the slightly tapered projections 16, 17 extending outwardly from the center of each channel passing through the blade apertures when the blades are positioned on the block. Conventional self-locking fasteners 18, 19 may be pushed on the projections 16, 17 to bear firmly against the blades and hold them securely in place.

Block 11 has a mounting post 21 molded at one end thereof to enable the block to be mounted on a second support member in the form of a metallic plate 22, the plate 22 having a suitable aperture through which the post 21 may extend. Another self-locking fastener 23 may be pushed on the post 21 to bear firmly against plate 22 to thus hold the block 11 securely in place in plate 22.

From the above, it is seen that the switch blades may be easily and inexpensively mounted on the block 11, with the block in turn being easily and inexpensively mounted on the support plate 22. The block is molded of a suitable plastic insulating material, so that it both supports the switch blades and insulates them from each other and from the mounting plate 22.

The aforesaid arrangement allows the blades 8, 9 to be mounted on block 11 prior to mounting on plate 22, which has the advantage of allowing the blades to be

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readily and easily adjusted for proper contact pressure prior to final assembly. Blade 8 is a relatively fixed blade, being only slightly biased toward blade 9 for contact wiping purposes, whereas blade 9 is a relatively movable blade, being rather strongly biased toward blade 8. The biasing is such that the contacts are normally closed prior to final assembly, in which condition proper contact pressure may be obtained by bending the blades as required.

Thus far, then, there has been described a very simple, reliable and practical arrangement of switch parts, and in order to retain these desirable characteristics in the overall switch combination, a simple form of switch actuator has been provided along with a specially devised arrangement for adjusting contact separation. The actuator is shown as a pivoted member, a portion of which is shown in Figure 1 at 24, being pivoted at 25 and including the blade engaging portion 26. The actuator is shown biased against blade 9 to separate the contacts 6, 7—i. e., the "off" position of the switch is illustrated. Since the blade 9 is initially biased toward blade 8, removal of the restraining influence of actuator 24 will allow the blade 9 to move toward blade 8 a sufficient amount to make the contacts—i. e., change the switch to the "on" position. To effect this change in switch position, it is only necessary to move the actuator 24 in a clockwise direction about its pivot 25 to allow the blade engaging portion 26 to move upwardly and away from blade 9. Any suitable external means may be utilized to so move actuator 24, such as a timing motor or the like.

To adjust contact separation, the block 11 has a wedge-shaped section 27 molded as a part thereof on which may be mounted the metallic adjusting arm 28, arm 28 having a notch 29 in one of its ends fitting onto said wedge-shaped section 27. The arm 28 may thus be wedged onto block 11 after which the block is mounted on plate 22 and held therein by the push-on fasteners 23. An arcuate slot 31 is formed in arm 28, and when the block 11 is properly mounted in the plate 22, this slot will be aligned with an aperture 32 formed in the plate. A sheet metal screw 33, with associated lock-washer 34, is then inserted through the arcuate slot 31 and into aperture 32.

With all the parts assembled as described above, the arm 28 may then be moved to turn the block 11 about the axis of its mounting post 21 to obtain optimum contact separation. When the block is turned, blade 8 will be moved relative to blade 9 until proper separation is established, after which the screw 33 is driven in tightly to clamp the arm 28 to the plate 22 to hold the parts in the established position. Any further adjustment of contact spacing may be easily accomplished simply by loosening screw 33 and moving arm 28 as required.

Adjustment of contact separation is thus seen to be substantially independent of any adjustments necessary for obtaining proper contact pressures, and the two-part design for the block 11 and its adjusting arm 28 together with the wedging relationship therebetween, allows this independence of adjusting action to be achieved with maximum facility at minimum costs.

Therefore, while a particular embodiment of the subject invention has been shown and described herein, it is in the nature of description rather than limitation, and it will occur to those skilled in the art that various changes, modifications, and combinations may be made within the province of the appended claims, and without departing either in spirit or scope from this invention in its broader aspects.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. An electrical switch comprising, in combination: first and second spaced, resilient, relatively movable switch blades, first and second electrical contacts mounted on corresponding switch blades, a molded plastic block having a wedge-shaped section molded as a part thereof and a mounting post formed on one end thereof, support means on which said block is mounted including a metallic plate having an opening through which said mounting post extends, means for clamping said block to said plate, said clamping means permitting limited turning of said block about the axis of said mounting post, means for mounting said switch blades on the other end of said block, said blades extending at right angles to the axis of said mounting post, switch actuating means for selectively changing the spacing of said switch blades to make and break said contacts, said actuating means including a member bearing against one of said blades

to normally separate said contacts, a metallic adjusting arm wedged on said block for turning said block about the axis of said mounting post to adjust the normal separation of said contacts, said adjusting arm having one end thereof notched to receive said wedge-shaped section whereby the two parts are wedged securely together, and means for clamping said adjusting arm in a fixed position upon adjustment of said contact separation.

2. The combination defined by claim 1 wherein the other end of said adjusting arm is provided with an arcuate slot, said support plate is provided with an aperture aligned with said slot, and a clamping screw extends through said slot and said aperture.

References Cited in the file of this patent

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