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3,099,735

ADJUSTABLE SWITCH BLOCK ASSEMBLY

Filed Dec. 20, 1961

Fig. 2

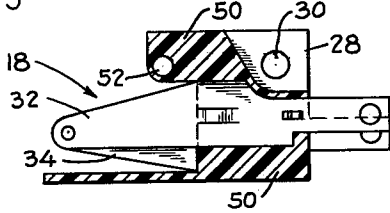
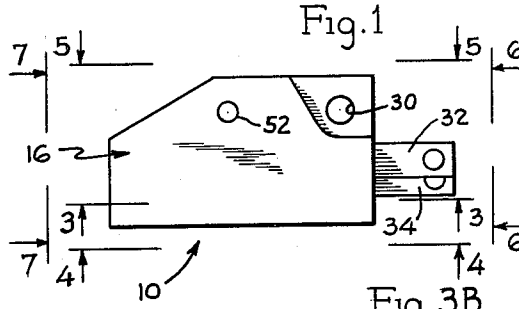


Fig. 3A

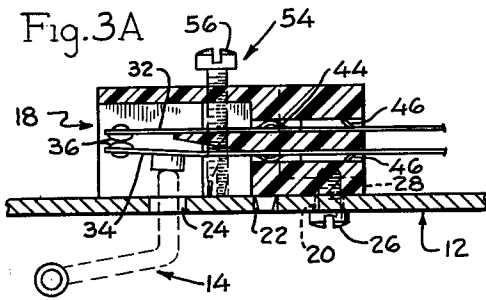


Fig. 3B

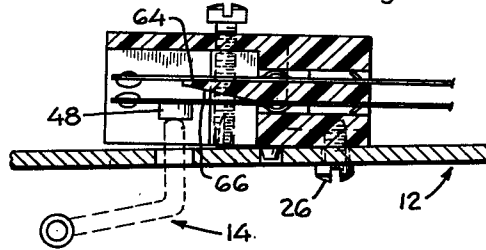


Fig. 4

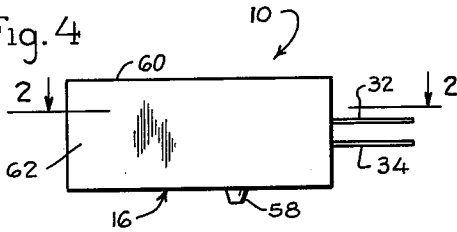


Fig. 5

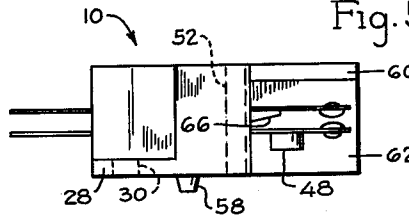


Fig. 6

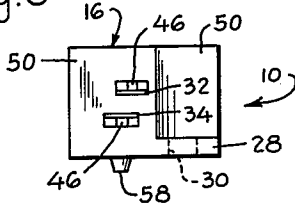


Fig. 7

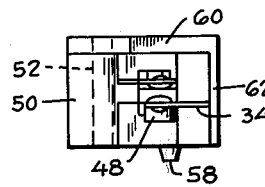
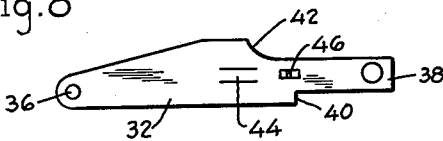


Fig. 8



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1

3,099,735

ADJUSTABLE SWITCH BLOCK ASSEMBLY

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This invention relates in general to adjustable switch block assemblies, and more particularly, relates to an adjustable switch block assembly wherein the switch block is made of a tough insulating material which is relatively flexible in thin section and relatively rigid in thick section.

There are many applications wherein it is desired to adjustably mount a switch block so that its position may be easily changed to accommodate production tolerances of associated parts such as actuators. Heretofore, it has been necessary to provide rather elaborate and expensive ways of accomplishing this desired result.

It is a general object of this invention to provide an adjustable switch block assembly which utilizes a molded one piece switch body and two common commercially available screws to provide adjustment.

It is a further object of this invention to provide a one piece molded switch block which is easy to manufacture in mass production techniques and has exceedingly simple assembly of the contact means thereto.

It is a further object of this invention to provide an adjustable switch block which may be easily mounted to a support panel by unskilled workmen and quickly adjusted to its desired position.

The novel features that are characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood by the following description of specific embodiments when read in connection with the accompanying drawings in which:

FIG. 1 is a top plan view of the switch block;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 4;

FIGS. 3A and 3B are sectional views along lines 3—3 of FIG. 1, said figures showing the assembly of the switch block to the support panel for actuation by an actuator shown semidiagrammatically;

FIG. 4 is a side elevational view along lines 4—4 of FIG. 1;

FIG. 5 is a side elevational view opposite to FIG. 4 taken along lines 5—5 of FIG. 1;

FIG. 6 is an end elevational view taken along lines 6—6 of FIG. 1;

FIG. 7 is an end elevational view opposite to the end shown in FIG. 6 taken along lines 7—7 of FIG. 1; and

FIG. 8 is a detached view of the contact blade means shown in the foregoing figures.

The switch 10 is adapted to be mounted on a support plate 12 for actuation by an actuator 14. The switch body means 16 is preferably formed of a tough, durable, moldable thermoplastic which has insulating characteristics and which is relatively rigid in relatively thick section and is relatively flexible in relatively thin section. One material suitable for this purpose is a polycarbonate plastic manufactured by General Electric Co. and sold under the trademark Lexan. It has been found that this material is well adapted to rather complex and sophisticated molding, does not have deleterious cold flow characteristics, and is well adapted for the purposes of the instant invention. Switch contact means 18 is adapted to be quickly mounted on the body means 16 for actuation by the actuator means 14 and the switch body is mounted to the support plate 12 as shall now be described.

2

The support plate 12 is formed with three through apertures 20, 22 and 24. A screw fastener 26 is disposed in a thin web section 28 of the body means 16 having a through aperture 30 to mount the switch block to aperture 20 of the plate 12 as shown in FIGS. 3A—3B. The fastener 26 may be a bolt with a suitable nut (not shown) or preferably a thread cutting screw having a crest diameter larger than aperture 30.

A pair of contact blades 32 and 34 are mounted in the switch block for actuation by the actuator means 14. The individual blades 32 and 34 are mirror images of each other and each have a contact 36 at one end and a terminal tab 38 with an aperture therein at the other end. The switch body is slotted to receive the elongated blades 32 and 34 and the individual blades each have a central upset spacer portion 44 and a struck out tab 46 which permits one way insertion into the appropriate slots in the switch body but prevents removal thereof. The switch body slots are configured as shown in FIG. 2 such that blade shoulders 40 and 42 limit the movement in the insertable direction of the blades and the tabs 46 prevents reverse movement thereof upon assembly to the switch body. The lower contact blade 34 may have a small insulating pad 48 attached to the bottom thereof over the support plate aperture 24 so that the pad 48 may be engaged by the end of the actuator means 14. It is, of course, possible to have the actuator means 14 made of insulating material to obviate the pad 48. As can be perceived from the drawings, the major portion of the switch block body 16 is of relatively thick cross-section and thus is relatively rigid and is identified with the reference numeral 50. A through unthreaded aperture 52 is disposed in the relatively rigid portion of the switch body at 52 as shown, the axis of apertures 52 and 30 being substantially parallel. Adjustment means 54 in the form of a thread cutting fastener 56 (a conventional thread cutting screw is very acceptable for this), which is of sufficient length to extend through aperture 52 while cutting threads as it is initially inserted is preferred. The terminal end of the screw 56 is adapted to engage the plate 12 to cause the switch block portion 50 to pivot about the fastener means 30 and the thin web section 28 as shown in FIG. 3B. As the screw 56 is advanced, the major portion of the switch block body is lifted off the support plate 12 to thereby cause pad 48 on the lower contact blade 34 to change its position relative to the end of the actuator means 14. It will be noted that the movement of switch block portion 50 will cause movement of the contact means 18 which are fixed thereto.

Alignment means in the form of an integral switch body lug 58 is disposed in panel aperture 22 to permit movement of the switch block body portion 50 in a vertical plane as shown in FIGS. 3A and 3B but prevents movement of the switch body block in the plane of the plate itself. This prevents lateral shifting of the switch block during adjustment.

The contact means 18 may be protected by relatively thin cover means 60 and 62 which are integral with the top and sides of the switch block portions 50 as best perceived in FIGS. 3A, 3B and 7. The switch block may be provided with an integral tongue 64 having a cam surface 66 for positioning the contacts and limiting movement thereof within predetermined limits.

Although a specific embodiment of the invention has been shown and described, it is with full awareness that many modifications thereof are possible. The invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

What is claimed as the invention is:

1. A switch comprising integral body means formed of

3

tough moldable insulating material, said body means having a rigid portion and a relatively flexible portion integral therewith, electrical contact means mounted on said rigid portion of said body means and adapted to be spaced a predetermined distance from an actuator, means for fixedly mounting said flexible portion to a support, and means for adjusting the relative position of said rigid body portions as a unit relative to said support whereby adjustment of said rigid body portion changes the predetermined spacing of said contact means relative to said support.

2. A switch assembly comprising a support, integral body means formed of tough moldable insulating material having a rigid portion and a relatively flexible portion, electrical contact means mounted on said rigid portion of said body means and adapted to be spaced a predetermined distance from an actuator, means for fixedly mounting said flexible portion to said support, and adjustment means cooperating with said relatively rigid portion of said body means and with said support to adjust the relative position of said rigid body portion as a unit relative to said support and thereby to an actuator whereby adjustment of said rigid body portion changes the predetermined spacing of said contact means relative to said actuator.

3. A switch comprising integral body means formed of tough moldable insulating material having a rigid portion and a relatively flexible portion, electrical contact means mounted on said rigid portion of said body means, means associated with said relatively flexible portion of said body means for fixedly mounting said flexible portion to a support, alignment means integral with said relatively rigid portion of said body means permitting movement of the body means in one plane and preventing movement in another plane, and means for adjusting the relative position of said rigid body portion as a unit in said one plane and relative to said support whereby adjustment of said rigid body portion changes the spacing of said contact means relative to said support.

4. A switch assembly comprising a support, integral body means having a rigid portion and a relatively flexible portion, electrically conductive flexible blade means having contact means thereon mounted on said rigid portion of said body means and adapted to be spaced a predetermined distance from said support, fastener means cooperating with said relatively flexible portion of said body means for fixedly mounting said flexible portion to said support, said rigid portion being formed with a through aperture, and adjustment means mounted in said through aperture in said rigid portion of said body means and engageable with said support to move and change the relative position of said rigid body portion as a unit about said fastener means and relative to said support whereby adjustment of said rigid body portion

4

changes the predetermined spacing of said contact means relative to said support and thus to an actuator mounted remote to said contacts.

5. A switch assembly comprising a support, an actuator movable relative to said support, integral switch body means formed of tough moldable insulating plastic material having a rigid portion and a relatively flexible portion, electrically conductive flexible blade means having contact means thereon mounted on said rigid portion of said body means and adapted to be spaced a predetermined distance from said actuator for movement thereby, fastener means associated with said relatively flexible portion of said body means for fixedly mounting said flexible portion to said support, said rigid portion having alignment means permitting movement of said relatively rigid body means in a first plane and preventing movement in a second plane, and adjustment means mounted in said through aperture in said rigid portion of said body means and engageable with said support to move and change the relative position of said rigid body portion in said first plane as a unit about said fastener means and relative to said support and thereby to said actuator whereby adjustment of said rigid body portion changes the predetermined spacing of said contact means relative to said actuator.

6. The switch assembly set forth in claim 5 wherein said support is formed with first, second and third spaced apertures, said fastener means extends through said first aperture, said alignment means extends through said second aperture, and said actuator extends through said third aperture.

7. The switch assembly set forth in claim 5 wherein said through aperture in said relatively rigid portion of said body means is unthreaded and said adjustment means is a threaded thread cutting screw the end of which is engageable with said support.

8. The switch set forth in claim 1 wherein said contact means comprises blade means in the form of a pair of relatively long flexible sheet metal stampings extending through said relatively rigid body portion in spaced relation, said blade means having contacts on one end and terminal apertures on the other end, each of said blade means being upset in the portion thereof intermediate the ends thereof to provide struck out tabs permitting easy assembly to said body and preventing disassembly thereof.

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