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MANUALLY OPERABLE SWITCHES SUCH AS ALTERNATING CURRENT
SWITCHES SUITABLE FOR DOMESTIC INSTALLATIONS
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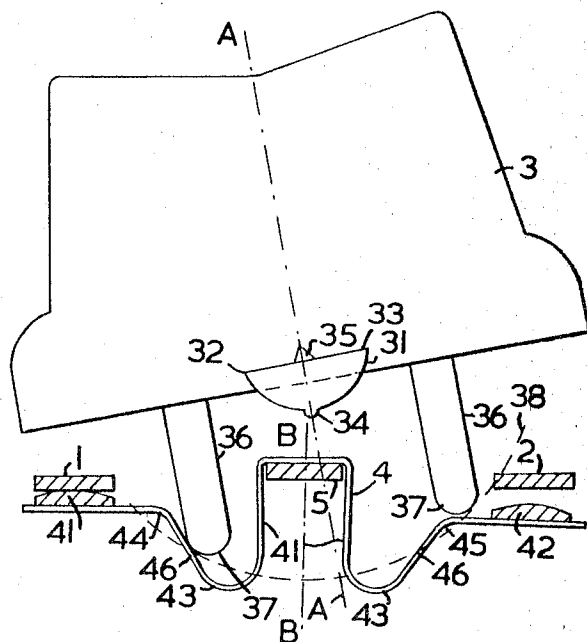


FIG. 1

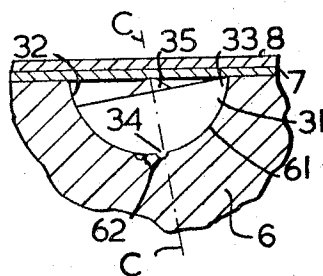


FIG. 2

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MANUALLY OPERABLE SWITCHES SUCH AS ALTERNATING CURRENT SWITCHES SUITABLE FOR DOMESTIC INSTALLATIONS

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3 Claims. (Cl. 200—67)

This invention relates to manually operable switches and particularly to the class alternating current switches suitable for domestic installations.

Prior switches of the above-mentioned class of switches usually contain a toggle action device and as such employ a coil spring used either compressively or expansively. A major disadvantage of such switches exists in the difficulty of assembling and testing the operation of the contacts before enclosing the switches, and to the excessive number of parts required.

The object of this invention is to provide an electrical switch having a minimum number of parts.

In accordance with the foregoing object, the invention provides an electrical switch comprising a fixed contact, a movable contact resiliently urged normally into electrical engagement with said fixed contact and secured to a member having first and second relatively spaced bearing portions with a protuberance therebetween, actuating means movable between a first and second position and co-operating respectively with said bearing portions to separate said contacts and to permit said contacts to remain in electrical engagement, said protuberance restraining said actuating means from movement between said positions.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

FIG. 1 is a side view of the active elements of a single pole double throw switch.

FIG. 2 is a side view of the rocker trunnion shown in FIG. 1 but to a larger scale.

Referring now to FIG. 1, the active elements of the switch comprise a first fixed contact 1, a second fixed contact 2, and a rocker 3 and a contact spring 4 having secured thereto a first moving contact 41 and a second moving contact 42.

The rocker 3, which is symmetrical about a line AA, includes a pair of trunnions, the front one of which is shown at 31. The trunnions 31 are segmental in cross-section and have a substantially flat top surface which intercepts the segmental curve at 32 and 33. On the underside of each trunnion there is disposed on the axis of symmetry AA a substantially semi-circular ridge 34. Extending upwardly from each trunnion is a knife edge 35 forming a pivot about which the rocker may move as will be described. Extending downwardly from the rocker are a pair of actuators 36 having rounded ends 37.

The contact spring 4 is a symmetrical about line BB and includes an inverted U-shaped portion 41 which is fastened to a rigid centre contact member, part of which is shown at 5. The contact spring 4 is bent outwardly and upwardly as regions 43 and bent again outwardly at regions 44, the bends at 44 forming protuberances, each side of which, bearing portions 45 and 46 are defined.

Referring now to FIG. 2, there are shown, in section, portions of a base molding 6, a sheet of fibre insulator 7, and a yoke 8, with a trunnion 31 received therein. The base 6 includes a semi-circular recess 61 to receive said trunnion 31 the recess being symmetrical about centre line

CC. A pair of semi-circular slots 62 are disposed symmetrically about the centre line CC.

The trunnions 31 are retained and adapted for partial rotation in the recess 61 by insulator 7 which bears down on the knife edge 35 and by the yoke 8. The yoke 8 is fastened to the base molding 6 at regions remote from centre line CC by standard fastenings familiar to those skilled in the art. The inherent resilience of the yoke 8 is sufficient to cause the ridge 34 to resiliently engage one or other of the slots 62. The rocker may be manually moved between one or other of two discrete positions terminated by the positions of the recesses 62 and/or by interaction between the trunnion 31 at points 32 and 33 with the insulator 7.

In operation, the switch is assumed to be in the position shown in FIG. 1, that is with the left-hand contacts 1 and 41 closed and the right-hand contacts 2 and 42 open. In this position an electrical circuit is made through the centre contact 5, the contact spring 4 and the left-hand contacts 1 and 41.

To reverse the switch, the right-hand side of the rocker 3 is pushed downwardly and the rounded ends 37 of the actuators 36 move around an arc shown dotted at 38. The left-hand actuator 36 reacts with portion 43 of the contact spring 4 and opens contacts 1 and 41 simultaneously with ridge 34 moving out of the right-hand recess 62 into the left-hand recess 62. During the same movement actuator 36 moves past region 43 of the contact spring 4 allowing contacts 2 and 42 to close, simultaneously with point 33 moving away from the insulator 7 and point 32 moving against the insulator 7.

It will be appreciated that both regions 43 on the contact spring 4 extend inwardly of the dotted curve 38 so that contact spring 4 urges the rocker 3 into one or other of its extreme positions.

During assembly the alignment of the contacts may be checked or adjusted with great ease since the fixed contacts 1 and 2 obviously require no setting and the contact spring 4 is rigidly fastened at its centre to centre contact 5. Should the height of either or both moving contacts 41 and 42 require adjustment suitable modifications to one or more of the bent regions 42 or 43 may be made conveniently.

The action of the rocker may be fully checked without enclosing the switch with the insulator 7 or yoke 8. It is only necessary that slight downward pressure be exerted whilst testing the rocker action, such pressure being just enough to retain the trunnions 31 and the recesses 61.

In the preferred embodiment, two fixed contacts, 1 and 2, were shown. Should a single pole, single throw switch be required, one or other of the fixed contacts may be dispensed with, together with its associated actuator.

The present invention provides a switch having a minimum number of components and which may be easily converted from a single pole single throw to a single pole double throw switch. It would be obvious to one skilled in the art to duplicate the pair of actuators, the fixed contacts and spring contact thereby to provide a double pole double throw switch.

Of the several advantages exhibited by the present invention, that of providing a switch capable of each assembly, checking, and testing prior to enclosing is significant.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An electrical switch comprising:
 - a fixed contact,
 - a movable contact resiliently urged normally into electrical contact with said fixed contact and secured to a member having a bend therein forming a lobe,
 - actuating means movable between a first discrete position and cooperating with said lobe to separate said fixed contact and said movable contact and a second

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discrete position and cooperating with said lobe to bring said fixed contact and said movable contact into electrical engagement,
 a rocker member having trunnions thereon, said actuator being integral with said rocker,
 a base including bearing means for receiving said trunnions, said bearing means being recesses and further including retaining means over said recesses for retaining said trunnions therein, at least one of said recesses including a pair of spaced apart slots, and
 a ridge on at least one of said trunnions for selective engagement with said slots according to the position of said rocker.

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2. A switch as defined in claim 1 wherein said retaining means is a portion of a cover for said base.

3. A switch as defined in claim 2 including a layer of insulating material between said cover and said base.

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