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Lewis

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[54] ELECTRICAL SWITCH

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[51] Int. Cl. H01h 5/18

[58] Field of Search 200/67 DA, 67 G, 153 L

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Primary Examiner—Roy N. Envall, Jr.

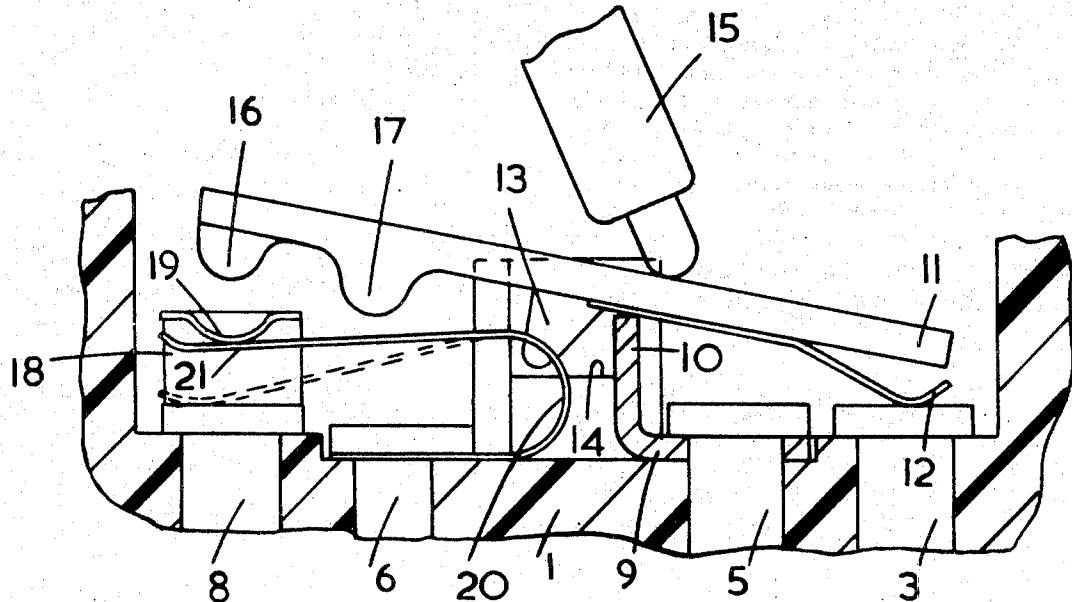
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[57]

ABSTRACT

An electrical switch comprises a plurality of fixed contacts and a movable contact mounted on a carrier. There is provided an operating member which effects movement of the carrier between a first position in which the movable contact electrically interconnects the fixed contacts and a second position in which the movable contact is spaced from the fixed contacts. The switch also includes further fixed contacts which are associated with a resilient conducting member. The resilient conducting member is electrically connected to a first of the further fixed contacts and is biased to be connected electrically with a second of the further fixed contacts when the carrier is in one of its positions. The carrier includes a projection which, when the carrier is in its other position, engages the resilient member, and urges it out of connection with the second of the further fixed contacts and into electrical connection with a third of the further fixed contacts.

5 Claims, 2 Drawing Figures



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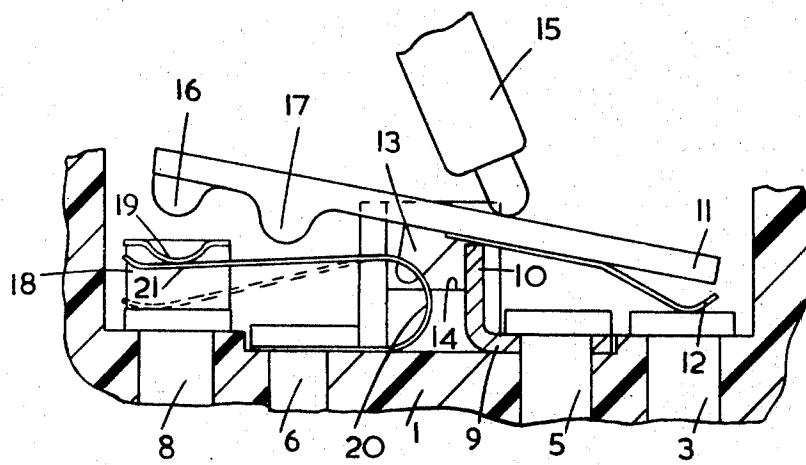


FIG.1

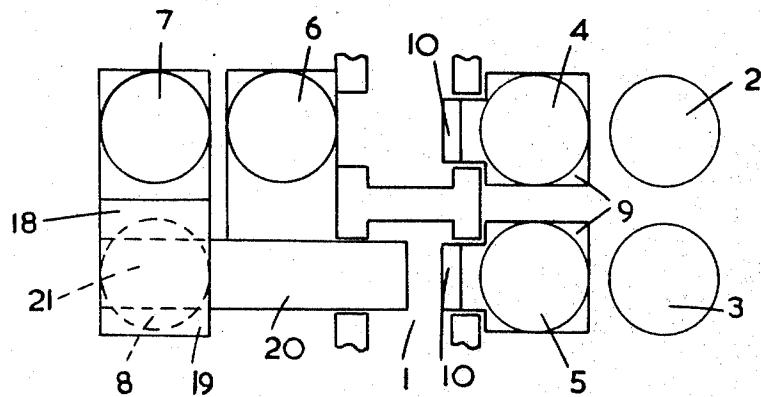


FIG.2

ELECTRICAL SWITCH

This invention relates to electrical switches.

According to the present invention, there is provided an electrical switch comprising a plurality of fixed contacts, a movable contact mounted on a carrier, an operating member for effecting movement of the carrier between a first position in which the movable contact electrically interconnects the fixed contacts and a second position in which the movable contact is spaced from the fixed contacts, a set of further fixed contacts, a resilient, conducting member connected to a first of the further fixed contacts and biassed to be connected electrically with a second of the further fixed contacts when the carrier is in one of its two positions, and means on the carrier, when in its other position, for urging the resilient member out of electrical connection with the second of the first fixed contacts and into electrical connection with a third of the further fixed contacts.

Preferably, means are provided for limiting the contact pressure between the resilient member and the third of the further fixed contacts. Such means may be provided by a projection on the carrier which engages against a stop when the carrier is in its said other position.

Most advantageously, the said other position of the carrier is the aforementioned second position of the carrier.

Preferably also, a conducting blade spaced at one end from the third of the further fixed contacts and attached to the second of the further fixed contacts engages the resilient member when the latter is in its biassed position so as to provide the electrical connection between the resilient member and the second of the further fixed contacts.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawing, in which:

FIG. 1, is a cut-away sectional view of part of an electrical switch according to the present invention, and

FIG. 2 is a plan view of part of the switch shown in FIG. 1, in which the fixed contact layout is illustrated.

Referring to the drawing, the electrical switch comprises a body 1 in which are mounted a set of four fixed contacts 2, 3, 4 and 5 and a further set of three fixed contacts 6, 7 and 8. Attached to each of the fixed contacts 4 and 5 is a plate 9 having an upstanding pivot portion 10. The plates 9 are electrically conductive. A carrier 11 is mounted on the pivot portions 10 so as to be pivotal relative thereto and has on its undersurface a contact blade 12 which extends between a portion of the carrier adjacent the pivot portions 10 and a location at which it can engage fixed contacts 2 and 3. In the position shown in FIG. 1, the contact carrier 11 is in a first position in which the contact blade 12 provides electrical connection between all of the fixed contacts 2, 3, 4 and 5. The carrier 11 is provided with a pivot projection 13 disposed adjacent a pivot surface 14 on the body 1. A pivotal operating member 15 engages the carrier 11 and can be manually moved over the surface of carrier 11 to effect movement of the latter away from its first position to a second position in which the carrier 11 has pivoted about pivot projection 13 on pivot surface 14. In the second position of the carrier 11, it is no longer resting on pivot portions 10

so that the contact blade 12 is no longer in contact with the pivot portions 12 or with the fixed contacts 2 and 3. It is to be appreciated that the pivot projection 13 is not in contact with the pivot surface 14 but is spaced slightly above the latter when the carrier is in its first position.

The end of the carrier remote from the end at which lies the contact blade 12 is provided with a projection 16, and a further projection 17, which is rather deeper than projection 16, is provided between pivot projection 13 and projection 16. The purpose of these two projections 16 and 17 will be described hereinafter.

Attached to fixed contact 7 is one arm of an L-shaped conducting blade 18 whose other arm terminates in a contact 19 which is spaced vertically above fixed contact 8. An electrically conducting blade spring 20 is secured to fixed contact 6 and has a movable contact portion 21 which is resiliently biassed into a position in which it is in electrical engagement with contact 19. Thus, the fixed contact 6 is normally in electrical connection with fixed contact 7 through blade spring 20 and conducting blade 18.

In operation, when the carrier 11 is moved by means of the operating member 15 into its second position, i.e., that position in which the contact blade 12 is spaced from fixed contacts 2, 3, 4 and 5, the further projection 17 on the carrier 11 engages the blade spring 20 and urges the contact 21 thereon away from contact 19 and into electrical connection with fixed contact 8. During this movement, the projection 16 on the carrier 11 moves towards fixed contact 7 and abuts thereagainst so as to limit the amount by which the contact carrier 11 can be pivoted. In this manner, the contact pressure between contact 21 and fixed contact 8 is limited, thereby preventing the blade spring 20 from being overstressed. It is to be appreciated that the contact carrier 11 is moulded from a synthetic plastics material and therefore there is no risk of short circuiting occurring when projection 16 abuts fixed contact 7 or when the further projection 17 engages the blade spring 20.

Thus, in the first position of the carrier 11, electrical connection is made between fixed contacts 2, 3, 4 and 5 and also between fixed contacts 6 and 7 whereas in the second position of the carrier 11, only connection is made between fixed contact 6 and fixed contact 8.

I claim:

1. An electrical switch comprising a plurality of fixed contacts, a movable contact mounted on a carrier, an operating member for effecting movement of the carrier between a first position in which the movable contact electrically interconnects the fixed contacts and a second position in which the movable contact is spaced from the fixed contacts, a set of further fixed contacts, a resilient, conducting member connected to a first of the further fixed contacts and biassed to be connected electrically with a second of the further fixed contacts when the carrier is in one of its two positions, and means on the carrier, when in its other position, for urging the resilient member out of electrical connection with the second of the further fixed contacts and into electrical connection with a third of the further fixed contacts.

2. An electrical switch as claimed in claim 1, wherein means are provided for limiting the contact pressure between the resilient member and the third of the further fixed contacts.

3. An electrical switch as claimed in claim 2, wherein the limiting means is provided by a projection of the carrier which engages against a stop when the carrier is in its other position.

4. An electrical switch as claimed in claim 1, wherein the said other portion of the carrier is the said second position of the carrier.

5. An electrical switch as claimed in claim 1, wherein

a conducting blade spaced at one end from the third of the further fixed contacts and attached to the second of the further fixed contacts engages the resilient member when the latter is in its biassed position so as to provide the electrical connection between the resilient member and the second of the further fixed contacts.

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