United States Patent

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[54] **SNAP ACTION SWITCH**
1 Claim, 4 Drawing Figs.

[52] **U.S. Cl.** **200/67,** 200/168
[51] **Int. Cl.** **H01h 13/28**
[50] **Field of Search** ..... 200/67, 67 (B), 67 (D), 67 (A)(Cursory), 172 (A), 168 (L)

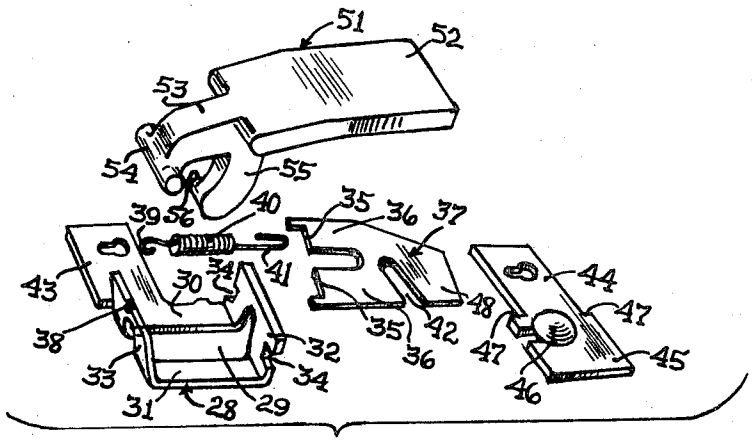
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ABSTRACT: A switch of the snap action type wherein a switch blade is pivotally carried by a combined bracket and terminal member which constitutes a part of the switch actuating overcentering mechanism, all of which has a construction whereby it may be easily and economically assembled within the switch housing. The combination bracket and terminal member is generally formed to provide spaced parallel base sections, with one of the base sections including a terminal portion disposed in coplanar relationship and extending laterally therefrom through one sidewall of the switch housing. The sidewalls of the switch housing each provide shelf members and retaining ribs positioned about the laterally disposed terminal portion as well as the medial portions of the terminal member for mounting the same thereto.



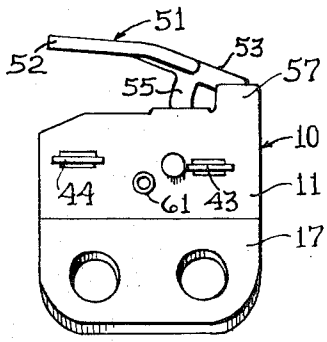


Fig. 1.

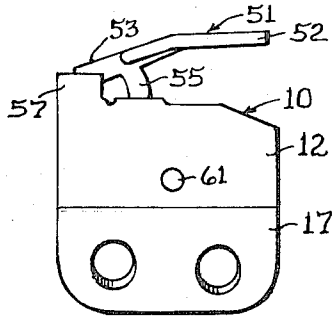


Fig. 2.

Fig. 3.

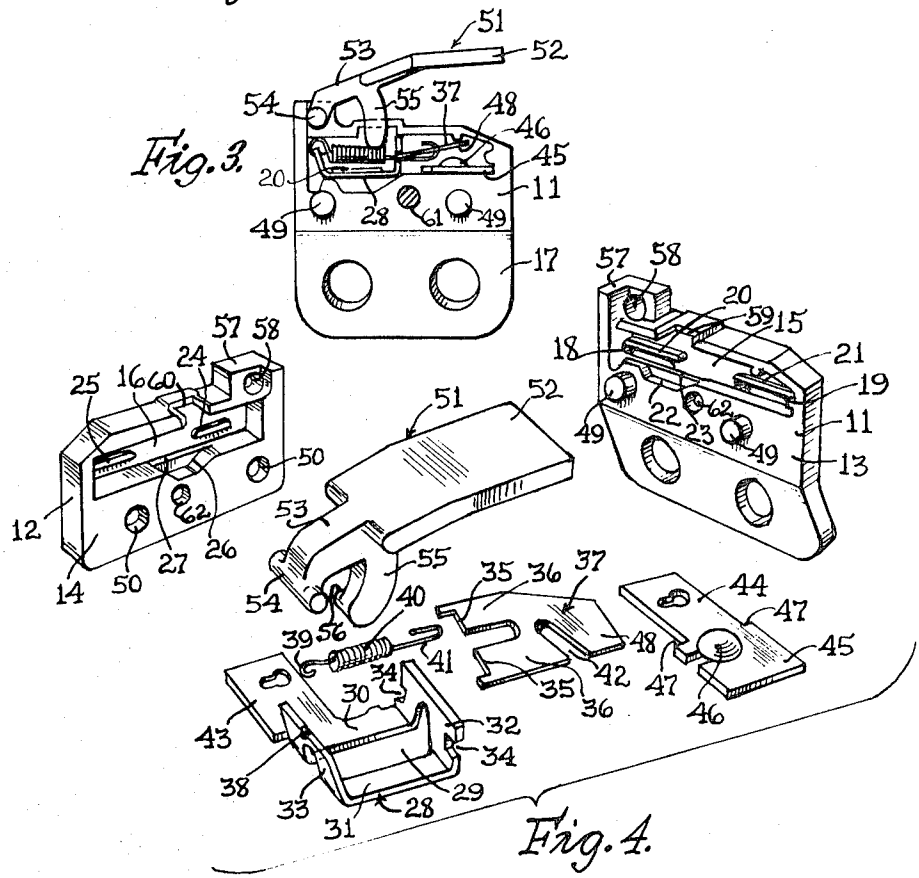


Fig. 4.

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SNAP ACTION SWITCH

SUMMARY OF THE INVENTION

An electrical switch having a housing consisting of a case and mating cover that provide internal cavities containing supporting members and retaining elements which conveniently receive and securely hold the fixed and movable switch components within prescribed relationships within the switch housing. The case is so constructed that all of the switch components may be positioned therein while such case is held in an assembler's fixture with the components having certain designed portions thereof projected through slots located in a predetermined position with respect each other as well as being positioned upon and between retaining elements provided by the case as well as the cover when the latter is mated thereto.

GENERAL DESCRIPTION

The invention will be best understood by reference to the accompanying drawing which shows a preferred form of construction and in which:

FIG. 1 is a side elevational view of the assembled snap action switch;

FIG. 2 is an opposite side elevational view of the assembled snap action switch;

FIG. 3 is a side elevational view similar to FIG. 2 with the switch cover removed; and

FIG. 4 is a perspective view of the housing and switch components all in an exploded relationship.

Referring to the drawings a snap action switch is generally indicated as at 10 with the housing therefor being composed of a case 11 and cover 12. Both the case 11 and cover 12 have their confronting walls 13 and 14, respectively, recessed to provide complementary cavities 15 and 16. The case 11 also provides as an integral part thereof a mounting flange 17 which in the present instance depends diagonally from the bottom edge of the case 11.

The rear wall of the cavity 15 of the case 11 has formed therein aligned slots 18 and 19 as well as inwardly protruding elongated ribs 20 and 21 located immediately above the slots 18 and 19 as seen in FIG. 4. The bottom edge of the cavity 15 is relieved as at 22 partially throughout its length and width such that a supporting shelf 23 is provided beneath the slot 18 and rib 20.

The corresponding cavity 16 formed in the cover 12 provides on its backwall a pair of like ribs 24 and 25. The bottom edge of the cavity 16 like the bottom edge of the cavity 15 is relieved as at 26 partially through its length and width to define a second supporting shelf 27 disposed parallel to and spaced beneath the rib 24, the purpose of which will be hereinafter explained.

Within the cavities 15 and 16 is positioned a generally U-shaped bracket 28 that has a segment of its medial portion removed to form a center opening 29 between the remaining base medial sections 30 and 31, with the center opening 29 extending partially through the upright arms 32 and 33 of the bracket 28 as seen in FIG. 4.

The upright arm 32 of the bracket 28 has its opposite vertical edges notched as at 34 to provide seats for the connecting notched ends 35 of a pair of parallel legs 36 of a switch blade 37.

The remaining upright arm 33 of the bracket 28 has its free end edge notched and punched as at 38 so as to cooperate with a portion of the center opening 29 to receive and retain one hooked end 39 of a coil spring 40 that has its opposite hooked end 41 connected to the switch blade 37 through a slot 42 formed therein.

Extending laterally from one side edge of the medial section 30 of the bracket 28 is a terminal post 43. This terminal post 43 is adapted to be projected through the slot 18 formed in the rear wall of the cavity 15 until one edge portion of the base medial section 30 of the bracket 28 is positioned on the shelf 23 beneath the rib 20.

Also positioned within the cavity 15 is a terminal member 44 that comprises an elongated body portion that terminates at one end into an enlarged generally rectangularly shaped head portion 45 which bears a contact 46. The elongated body portion of the terminal member 45 is adapted to be projected through the slot 19 until shoulders 47, formed at the line of junction between the elongated body portion and the head portion 45, abut the wall about the slot 19, with the shoulders 47 positioned between the bottom wall of the cavity 15 and rib 21.

In assembling the switch components the switch blade 37, through the coil spring 40, is pivotally connected to the arm 32 of the bracket 28. The bracket 28 together with the switch blade 37 is then mounted in the cavity 15 of the case 11 by having the terminal 43 of the bracket 28 projected through the slot 18 until the outer edge of the base medial section 30 sits on the shelf 23 beneath the rib 20.

The terminal 44 is mounted in the cavity 15 of case 11 by having its elongated body portion projected through slot 19 until the shoulders 47 engage the wall surface around such slot 19. In such position one edge of the head 45 will lie beneath the rib 21. When the cover 12 is placed in mating position upon the case 11 the opposite outer edge of the base medial section 31 of bracket 28 will sit upon the supporting shelf 27 beneath the rib 24. The outer edge of the head 45 of terminal 44 will lie beneath rib 25 such that both the bracket 28 and the terminal 44 will be firmly and fixedly positioned within the housing. In such fixed position the bracket 28 will have its arm 32 extending transversely between the ribs 20, 21 and 24, 25 with the center opening 29 of the bracket 28 directly above the relieved bottom edges 22 and 26 of the cavities 15 and 16 formed in the confronting walls 13 and 14 of case 11 and cover 12. The switch blade 37 will extend laterally to one side of the arm 32 and have its free contact engaging end 48 positioned above and spaced from the contact 46 of terminal 44 as seen in FIG. 3.

The wall 13 of the case 11 provides a pair of laterally projecting mounting lugs 49 which, when the cover 12 is mounted on the case 11 with the switch components within the cavities 15 and 16, will be projected into circular bosses 50 formed in the confronting wall 14 of the cover 12.

Associated with the heretofore described switch components is a one-piece moulded combination actuating lever and actuator 51. This actuator comprises an enlarged rectangular body 52 having extending from one edge thereof a slightly depending tail section 53 which terminates into a transversely extending circular bearing 54 which has a length greater than the width of the tail section 53. Depending from the underside of the tail section 53 is an arcuated arm 55 which at its free end projects a laterally extending stop pin 56.

Both the case 11 and cover 12 provide on their top walls adjacent the rear edge thereof an upstanding L-shaped wall sections 57 which has on one inner confronting face a circular indentation 58. Each of the top wall portions of the case 11 and cover 12 provide confronting three-sided openings 59 and 60, which when the case 11 and cover 12 are mated, form an opening that has open communication with the interior cavities 15 and 16 and through which the arcuated arm 55 of the actuator 51 projects. The circular bearing 54 at the end of the tail 53 will have its opposite ends pivotally positioned within the confronting indentations 58 in such a manner to pivotally mount the combination actuating lever and actuator to the switch housing as shown in FIGS. 1, 2 and 3.

The inward travel of the arm 55 due to pivotal movement of the actuator 51 against the coils of the spring 40 which are disposed between the arms 32 and 33 is permitted to continue or overtravel beyond the point of overcentering the spring 40 and blade 37 so that the latter moves with a snap action into contact with the contact 46 carried by the terminal 44, by reason of the clearance afforded by the opening 29 in the medial portion of the bracket 28 as well as the relieved bottom edges 22 and 26 of the cavities 15 and 16. At the same time, however, the bracket 28 is secured against movement by being

seated upon the shelves 23 and 27 disposed to either side of the relieved bottom edges 22 and 26 as well as beneath the ribs 20 and 24.

The case 11 and cover 12 when assembled as hereinbefore noted may be connected together by means of a rivet 61 or the like projected through aligned openings 62 formed in the case 11 and cover 12.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

We claim:

1. A snap-action switch including the combination of a housing consisting of an interlocking case and cover, both of which have internally excavated confronting side walls and a switch actuating overcentering mechanism consisting of a movable switch blade and a coil spring, wherein the improvement comprises:

a. a substantially U-shaped switch blade and coil spring supporting bracket having a center opening formed in its medial portion to provide spaced parallel base sections;

b. a terminal member carried by said bracket and disposed in coplanar relationship and extending laterally from one of said base sections of said bracket;

c. complementary shelf members provided by the spaced-apart confronting sidewalls of the case and cover supporting said spaced parallel base sections of said bracket within the internal cavities thereof;

d. a confronting sidewall of said case having formed therein an elongated slot above and in horizontal alignment with said shelf member provided by the sidewall through which said terminal member of said bracket is adapted to project; and

e. retaining ribs provided by the confronting sidewalls of the case and cover in vertical alignment with said shelf members and said slot for securing said base sections of said racket upon said shelf members and said terminal member in said slot so as to fixedly mount the same within the housing.