The terminal-blade 20 is specifically shown in FIG. 4 where it is illustrated in its structural relationship with respect to the other elements of the switch. This terminal-blade is constructed from a substantially flat blank of electrically conductive material; therefore, all of the specific structural elements of such member 20 as herein described, are integral.

Thus the terminal-blade member 20 is formed to provide an exposed end 21 which extends out of the crimping slot 26 formed in the end walls of the sections 11 and 12, and which end 21 is constructed to readily receive either a solder connection or female quick connector (not shown). Projecting laterally from this exposed end 21 are the crimping arms 17, the purpose and function of which are more fully described and claimed in the aforementioned patent application.

The terminal-blade member 20 is provided with substantially rectangularly shaped laterally projecting, oppositely extending locating lugs 22, which are adapted to be projected into locating recesses (not shown) formed in the inner surfaces of the opposite side walls of the sections 11 and 12 which define the confronting cavities 23, in a manner described and claimed in United States Letters Patent 3,073,925, dated January 15, 1963.

An elongated medial portion is removed from the blank or material from which the terminal-blade 20 is constructed so as to form therein an elongated center opening 25, with such opening 25 being offset longitudinally of the length of the blank of material so as to lie completely within the cavities 23 formed in the housing 10. Certain portions of the sides, formed from the material adjacent to and defining one end of the center opening 25, are reduced in width and have their surfaces coined so as to be reduced in thickness so as to form spaced parallelly extending, horizontally disposed, flexing elements 26. The remaining side portions defining the opening 25 are bent downwardly to form spaced apart parallel base legs 27 which lie in a vertical plane common to the outer edges of the spaced flexing elements 26 as shown in FIG. 4.

During the removal of the medial portion of material from the blank so as to form the center opening 25, two oppositely extending diagonal pieces remained. When the base legs 27 are bent into their vertical position, these diagonal pieces are caused to be elevated into a vertical plane and become inclined pivotal posts 28. The base legs 27 are oppositely notched as at 29 adjacent the lower ends of each of the pivot posts 28 so as to provide a pair of horizontally aligned angled seats for the notched ends 30 of the arms 31 of an actuating link 32.

As seen in FIG. 4, the arms 31 of the actuating link 32 intermediate their ends are reversely angled and terminate in a bight portion that in turn supports a pair of oppositely extending arms 33.

The arms 31 are adapted to be placed in pivotal contact with the angled seats formed in the pivot posts 28 while the oppositely extending arms 33 are adapted to extend upwardly through the center opening 25 formed in the terminal-blade member 20 as shown in FIGS. 2 and 3.

The inner end of the terminal-blade 20 provides a substantially rectangularly shaped flat surface 34 which lies in the same horizontal plane with respect to the flexing members 25 and exposed end 21 of the terminal-blade member 20 as shown in FIGS. 2, 3, and 4. This flat surface 34 carries a contact 35 which is adapted to be moved between spaced apart contacts 36 and 37 carried by the enlarged inner ends of the fixed terminals 18 and 19.

At the junction of the flexing elements 26 with the corresponding locating lugs 22, there is provided a diagonally disposed lug 38 which is provided with an aperture 39 for readily receiving the hooked end 40 of a coil spring 41. The opposite end of the coil spring 41 extends between the inclined pivot posts 28, and the arms 31 of the...
actuating link 32, and is hooked into an aperture 42 formed in the actuating link 32 adjacent to the base of the arms 33. The switch actuator 15 is shown as comprising the enlarged circular head 14 which has formed on the bottom surface thereof a substantially T-shaped plunger 43. The opposite edge surfaces 44 and 45 of the cross arm of the T-shaped plunger 43 are adapted to be received in elongated guiding slots formed in the inner surfaces of the opposite side walls which define the cavities 23 formed in the sections 11 and 12. (Shown in dotted lines in FIGS. 2 and 3.) The depending leg 46 of the T-shaped plunger 43 is slotted as at 47 so as to receive therein a portion of the coil spring 41 as shown in FIGS. 2 and 3. Referring to FIG. 2, wherein we show the components of our improved snap-action switch in an assembled conditions and in their normal unactuated position, it is readily seen that the tension member, which is the coil spring 41, has one end connected to the lug 38 struck from the terminal blade 20, and its opposite end connected to the actuating link 32 adjacent the arms 33 thereof. The coil spring 41 lies in a substantially horizontal plane above the pivotal point of connection of the notched ends of the arms 31 of the actuating link 32 and the angled seats 29 provided by the pivot posts 28. In such a position, the actuating link 32 is held under compression. This compression is created by having the upward pivotal movement of the link 32 arrested by the free ends of the arms 33 engaging the upper wall 48 which defines the cavity within the housing 10. The terminal end 21 is held in a fixed position with respect to the housing 10 by the crimping arms 17 and the locating lugs 22. The compression force within the actuating link 32 bears against the angled seats provided by the pivot posts 28 and causes the switch blade end 34 to be flexed through the flexing members 26 out of the normal longitudinal plane of the terminal-blade member 20 and into contact with the contact 37 of the lower fixed contact bearing terminal 19. The slotted end 47 of the plunger 43 of the actuator 15 rests upon the coil spring 41 at a point adjacent to the pivotal contact between the actuating link 32 and the pivot posts 28. When the actuator 15 is depressed into the cavity formed in the housing 10, the coil spring 41 is deformed out of its normal longitudinal plane, as shown in FIG. 2, until it passes through the horizontal plane of the pivotal connection between the actuating link 32 and the pivot posts 28 at which time the coil spring 41 will cause the free end of the actuating link to pivot downwardly until the eight portion thereof engages the bottom wall surface 49, as seen in FIG. 3. In this position the compression forces within the actuating link 32 will exert an upward pressure against the pivot posts 28 causing the switch blade end 34 of the terminal-blade member 20 to move with a snap action upwardly into engagement with the contact 36 carried by the upper fixed contact bearing terminal 18. The required operating force of the actuator 15 upon the tension member 41 and the resulting compression created within the actuating link 32 will result in a positive movement of the switch blade end 34 between the contacts of the fixed terminals 18 and 19. These forces and the specific construction and arrangement of parts as hereinbefore described create a snap-action switch that is tamper-proof. Upon release of the actuating force upon the actuator 15, the parts will return to their original unactuated positions, as shown in FIG. 2. By constructing an integral terminal-blade member from a substantially flat blank of highly conductive material, we have provided a snap-action switch which is capable of carrying a greater current conductive capacity than snap-action switches heretofore manufactured. By removing the necessity of having a separate switch blade which has the electrical current passing through it and its point of pivotal connection with a separate fixed terminal, we have overcome the structure which creates a heat generating condition which is normally found in switches of that construction, and which condition greatly reduces the current conductive capacity of the parts thereof. 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. Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. A snap-action switch having a movable switch actuator, (a) a current conductive element providing a fixed terminal end and a movable switch blade end, (b) said element made from a substantially flat blank of electrically conductive material and having formed therein a flexing area between said fixed terminal end and said movable switch blade end, (c) a coil spring member having one end connected to said element adjacent the fixed terminal end and extending above and in parallel relation to said element and in the path of movement of said switch actuator, and (d) an actuating piece connected to one end of said coil spring and pivotally engaging said element and suspended between said terminal end and said switch blade end of said element in a plane beneath said coil spring,

2. A snap-action switch having a movable switch actuator, (a) a current conductive element formed from a substantially flat blank of elongated material so as to provide a terminal end and a switch blade end, (b) said element having a portion removed therefrom to provide a center opening extending longitudinally of the length of said element, (c) certain portions of the sides of the element defining said center opening being reduced in width and thickness to provide flexing members connecting the terminal end to said movable switch blade end, (d) said coil spring having one end connected to said element adjacent the terminal end and extending above and in parallel relation to said element and in the path of movement of said actuator, and (e) an actuating piece connected to one end of said coil spring and pivotally engaging said element and suspended between said terminal end and said switch blade end of said element in a plane beneath said coil spring,

(f) said actuating piece held against said element under compression by said coil spring and movable against said element when said switch actuator is moved against said coil spring to flex said flexing members so as to move with a snap action said switch blade end of said element out of its normal longitudinal plane and into an actuated position.

3. A snap-action switch as defined by claim 2 wherein said actuating piece is a pivot link having a pair of spaced apart parallelly extending legs at one end with the ends of said legs greater than a pivot contact with the sides of said element which define said center opening at a point between the flexing arms and said movable switch blade end.

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