Aug. 29, 1939. A. W. KRIEGER 2,171,368

ELECTRIC SNAP SWITCH

Filed June 21, 1937 2 Sheets-Sheet 1

Fig. 1

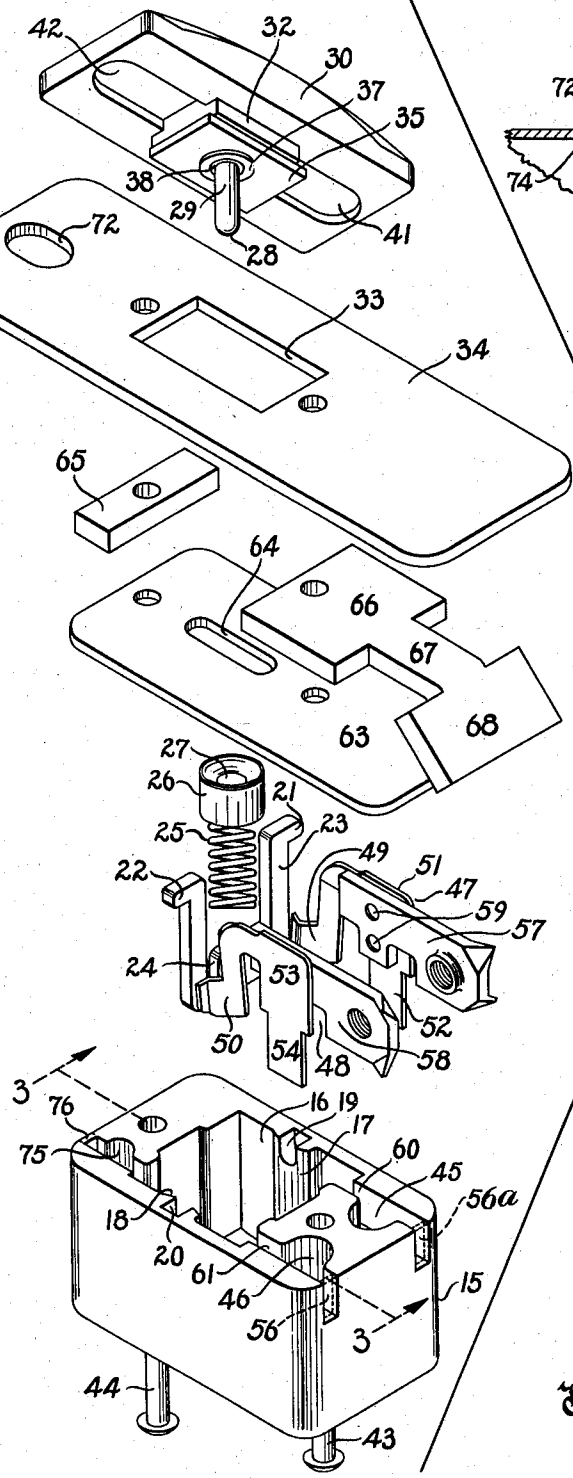


Fig. 2

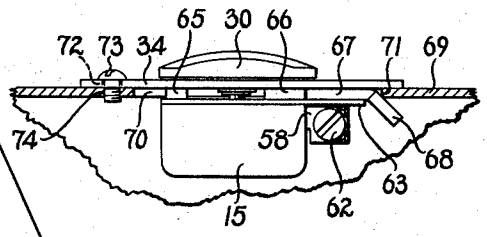


Fig. 3

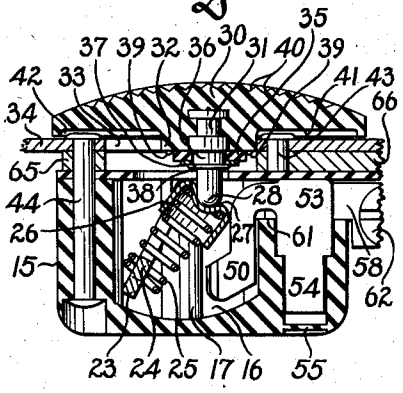
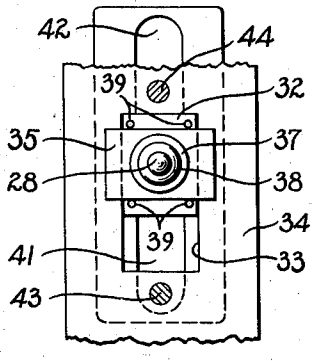


Fig. 4



Inventor
Alvin W. Krieger
By Frank H. Hubbard
Attorney

Aug. 29, 1939. A. W. KRIEGER 2,171,368

ELECTRIC SNAP SWITCH

Filed June 21, 1937 2 Sheets-Sheet 2

Fig. 5

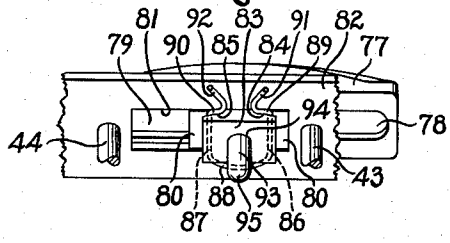


Fig. 6

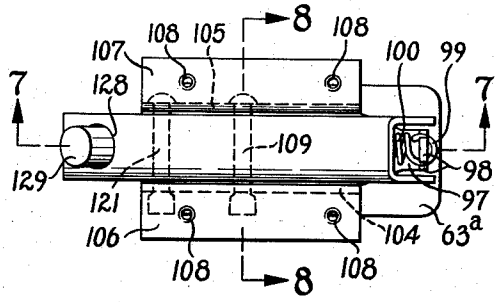


Fig. 7

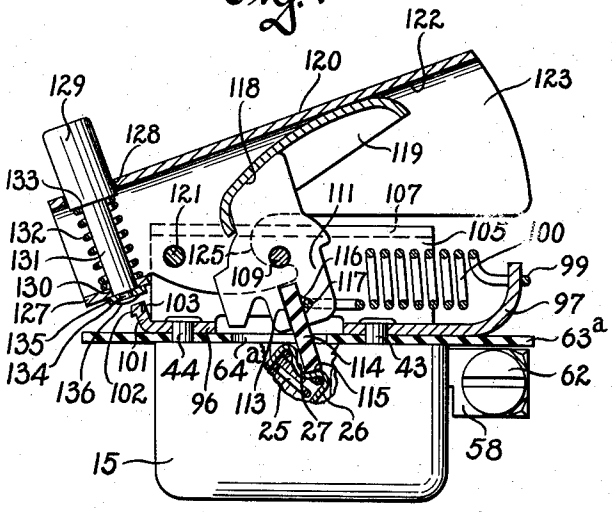


Fig. 8

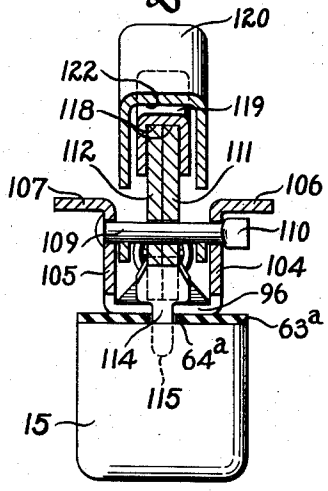


Fig. 9

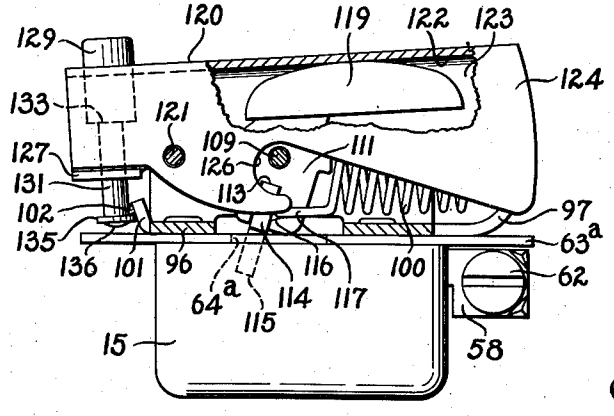
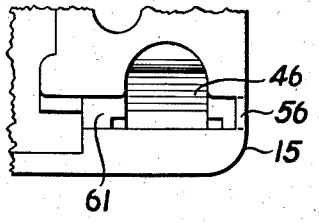


Fig. 10



Inventor
Alvin W. Krieger
By Frank H. Hubbard
Attorney

Patented Aug. 29, 1939

2,171,368

UNITED STATES PATENT OFFICE

2,171,368

ELECTRIC SNAP SWITCH

Alvin W. Krieger, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware

Application June 21, 1937, Serial No. 149,386

3 Claims. (Cl. 200—168)

This invention relates to improvements in electric snap switches.

A primary object of the invention is to increase the life and to generally improve the operating characteristics of switches of the aforementioned type.

Another object is to provide an insulating base adapted for use in production of switches of the end wiring, bottom wiring or concealed wiring type, with means to insure substantial dust-tightness of the switch chamber, regardless of the type of wiring employed.

Another object is to provide improved forms of mounting and operating means for switches of the tool-handle type.

Another and more specific object is to provide a switch having a slide button operator, together with novel means for maintaining the slide button in assembled relationship to the switch.

Another object is to provide a switch assembly having novel means enabling mounting thereof by a single securing screw.

Another object is to provide a switch of the momentary contact type having simple manually operable means for latching the same in circuit making position.

Other objects and advantages of the invention will hereinafter appear.

The accompanying drawings illustrate certain embodiments of my invention which will now be described, it being understood that the embodiments illustrated are susceptible of modification without departing from the scope of the appended claims.

In the drawings, Figure 1 is an exploded perspective view (slightly more than double-scale) of a tool handle switch of the slide button type.

Fig. 2 is a side elevation view (slightly larger than actual size) of a switch like that shown in Fig. 1,—a fragment of a hollow tool-handle being shown, to illustrate the manner of attaching the switch thereto by means of a single screw.

Fig. 3 is a vertical sectional view, on the broken line 3—3 of Fig. 1.

Fig. 4 is a fragmentary bottom plan view of the metal top plate of the switch, illustrating the novel means for retaining the slide button in assembled relation thereto.

Fig. 5 is a fragmentary perspective view of the switch top plate, showing a slightly modified form of slide button and a modified form of device for retaining the same in assembled relation to the top plate.

Fig. 6 is a top plan view of a switch like that shown in Figs. 1 to 3, but having supporting and operating means of modified form.

Fig. 7 is a view, partly in side elevation and partly in vertical section on the line 7—7 of Fig. 6, showing the relative positions of the parts for interruption of the controlled circuit.

Fig. 8 is a view, partly in end elevation and partly in vertical section on the line 8—8 of Fig. 6.

Fig. 9 is a side elevational view, with parts broken away and in section, illustrating the relative positions of the switch parts for completion of the controlled circuit, and

Fig. 10 is an enlarged top plan view of a fragment of the switch base, illustrating in detail the form of the left-hand auxiliary recess of said base.

Certain features of the present switch mechanism are described and claimed in my prior patents, No. 1,905,914, dated April 25, 1933, and No. 1,998,962, dated April 23, 1935.

Referring first to Figs. 1 to 4, inclusive, the numeral 15 designates a base of substantially rectangular contour, said base being molded from a suitable insulating material, such as "Bakelite." Base 15 is provided with a relatively large substantially rectangular main recess 16 opening to the upper surface thereof, the opposite side walls of which are provided with vertical ribs 17 and 18 alined with each other. Ribs 17 and 18 are respectively provided at the upper ends thereof with open pivotal bearings 19 and 20, which are adapted to accommodate the outwardly extending ends 21 and 22 respectively of a substantially U-shaped flat, punched sheet metal contactor 23.

Contactor 23 is provided with an integral abutment 24 onto which is telescoped the lower end of a coiled compression spring 25. Telescoped onto the upper end of spring 25 is an inverted cup-shaped sheet metal member 26 the closed upper end of which is formed to provide a concavity 27. Concavity 27 is cooperatively engaged by the convex lower end 28 of a pin or stud 29 which is positioned centrally within the slide button 30. In the form of slide button operator shown in Figs. 1 to 4, the pin 29 is preferably rigidly attached thereto, as by molding the pin as an insert within the button; the upper end of the pin being provided with a reduced portion 31 (Fig. 3) for anchorage purposes.

Button 30 is provided on its lower surface with a centrally located extension 32 of rectangular contour, said extension being adapted to

freely enter and slide within a rectangular opening 33 provided in the metal top plate 34. As illustrated in Figs. 1, 3 and 4 the opening 33 is of greater length than button extension 32, whereby the ends of the latter are engageable with the respective end walls of said opening to limit the degree of reciprocatory movement of the button in opposite directions.

Positioned upon the lower surface of extension 32 (Fig. 1) is a flat punched plate 35 of relatively hard, but tough and slightly resilient insulating material, such as linen-reinforced "Bakelite". Plate 35 is preferably of substantially the same width but of slightly greater length than extension 32, wherefore said plate, when positioned as shown in Fig. 1, is readily insertable downwardly through top plate opening 33. Plate 35 is provided with an opening to accommodate the shank portion 36 (Fig. 3) of pin 29, and a relatively small metal washer 37 likewise surrounds said shank portion 36 and underlies plate 35. The lower end of shank portion 36 is then upset annularly or spun over the washer 37, as shown at 38 in Figs. 1 and 3, to retain plate 35 in assembled relation to extension 32, while permitting forcible turning of said plate with respect to shank portion 36, to the position of said plate shown in Figs. 2 to 4. Projection 32 is preferably provided on its lower surface with four relatively small cone-shaped bosses 39, arranged as best shown in Fig. 4.

As shown in Figs. 3 and 4, bosses 39 are engaged with the opposed long sides of plate 35 to prevent accidental rotation thereof, whereby the slide button 30 is retained in assembled relation to top plate 34. The top surface of slide button 30 is preferably arched or bowed upwardly in a longitudinal direction, and as shown in Fig. 3 said button is provided intermediate the longitudinal side edges thereof with a series of transverse grooves or serrations 40, which facilitate operation of the button by the hand or finger of an operator. Button 30 is preferably provided in its lower surface, at opposite ends of extension 32, with longitudinally alined grooves or recesses 41 and 42 which afford clearance between said button and the upset ends of a pair of securing rivets 43 and 44.

The switch shown in Figs. 1 to 4 is of the single pole "on" and "off" type, and base 15 is accordingly provided at one end thereof with a pair of auxiliary recesses 45 and 46 which are respectively adapted to receive portions of the right-hand and left-hand combined contact and wiring terminal members designated in general by the numerals 47 and 48. Said members respectively comprise contact portions 49 and 50 which are positioned within recess 16 (as shown in Fig. 3) in spaced relationship to each other, and into and out of bridging engagement with which the contactor 23 is adapted to move with a snap action, according to the bias of spring 25. Formed integrally with contact portions 49 and 50 are terminal portions 51, 52 and 53, 54, the upper portions 51, 53 being relatively wider than the lower portions 52, 54 whereby horizontal shoulders are provided for engagement with corresponding shoulders formed in recesses 45 and 46 (as best illustrated in Fig. 3) to support said members with the upper edges thereof in substantially flush relationship to the upper surface of base 15.

Base 15 is initially molded with thin integral insulating diaphragms (of the character shown at 55 in Fig. 3) at the lower end of each of the recesses 45 and 46,—said diaphragms when broached out or otherwise removed providing openings just sufficiently large to afford clearance for terminal members having downward extensions (not shown) formed integrally with portions 52, 54, and such extensions having perforations exposed below the lower surface of base 15 to provide for attachment of circuit wires. A bottom wiring arrangement of this character is shown in Fig. 2, for instance, of my Patent No. 1,998,962 aforementioned. As shown in Fig. 1, base 15 when initially molded is provided with relatively thin diaphragms shown in dotted lines at 56a and 56, and said diaphragms are permitted to remain intact when a switch of the bottom wiring type is to be provided. This insures substantial dust-tightness of switch chamber 16 when all of the switch parts are in assembled relation.

When a switch of the concealed wiring type is to be provided, the bared ends of the circuit wires are attached by welding, brazing or soldering thereof to the adjacent inner surfaces of portions 51, 53 of members 47 and 48, the insulated portions of the circuit wires being accommodated by the approximately semi-circular wall portions of said recesses (see Fig. 10), and said insulated wires being led outwardly through the slots or notches provided by removal of diaphragms 56a, 56. Such a concealed wiring arrangement is in general similar to that shown in Fig. 5 of my Patent No. 1,998,962.

In Figs. 1 to 4, however, I have shown a switch adapted for end wiring, and I accordingly provide right-hand and left-hand punched and stamped sheet metal terminal members 57 and 58,—said members preferably being extruded, in the manner indicated at 59, Fig. 1, to provide substantially cylindrical bosses (not shown) upon the outer surfaces thereof, which bosses are fused by a well known type of spot-welding operation to provide for rigid and permanent attachment of terminal members 57 and 58 to the adjacent inner surfaces of the aforementioned portions 51 and 53 of members 47 and 48.

The combined thicknesses of portions 51, 57 and 53, 58 are such as to provide for a rather snug fit thereof within the grooves or slots 60, 61 provided at the upper ends of recesses 45 and 46, and within the slots provided upon removal of the thin walls or diaphragms 56a and 56. Members 57 and 58 are provided with the usual binding screws 62 (Figs. 2 and 3) to provide for attachment of circuit wires. Due to the relatively more rigid support for members 57 and 58 with respect to base 15 than is provided for the corresponding wiring terminal elements shown at 57 and 56 in Figs. 7 and 8 of my Patent No. 1,998,962; and because of the relatively greater space between members 57 and 58 of the present switch, I find that an insulating and reinforcing strut, such as shown at 59 in Patent No. 1,998,962, is not required; although such a device may be employed if desired.

Upon assembly of members 47, 48, 23, 25 and 27 with respect to base 15 I superimpose upon the upper surface of the latter the flat punched plate 63 of "Bakelite" fiber or other suitable insulating material. Plate 63 is provided with a slot 64 to provide clearance for the lower end portion 28 of pin 29. Superimposed upon plate 63 at the end thereof remote from the wiring terminal elements is a relatively thick punched sheet metal plate 65 of rectangular contour as illustrated; and superimposed upon plate 63 adjacent to its other end is a punched and stamped sheet metal

plate 66 of a thickness corresponding to that of plate 65. Plate 66 is preferably provided with a narrower extension 67 located in the plane thereof; and bent downwardly at an angle of approximately 45 degrees to extension 67 is a further extension 68, it being noted that insulating plate 63 is of a length to underlie the aforementioned extension 67, to properly insulate the latter from the end-wiring terminal members, one of which is shown at 58 in Fig. 2.

Metal top plate 34 is superimposed upon plates 65 and 66, and the same and plate 63 and base 15 are provided with alined openings to receive the upwardly extending shanks of the aforementioned headed rivets 43 and 44, the upper ends of said shanks being upset over the upper surface of top plate 34, in the manner illustrated in Fig. 3. After attachment of top plate 34 in the manner just described, the slide button 30 (with plate 35 positioned as shown in Fig. 1) is so positioned as to effect engagement of the end portion 28 of pin 29 with the concavity 27 in member 26, whereupon the button is pressed downwardly to effect movement of plate 35 through opening 33 in plate 34 to a plane slightly below the lower surface of the latter.

Slide button 30 is then moved to an intermediate position, so that plate 35 may be forcibly rotated through an angle of approximately 90 degrees, as by means of a screw-driver, or in any other suitable manner, without interference by the aforementioned plates 65 and 66. Plate 35 will then be positioned as shown in Figs. 3 and 4 to positively prevent upward displacement of slide button 30 with respect to top plate 34; and plate 35 will be frictionally held against accidental rotation by the clamping effect thereon of washer 37, and by the restraining action of bosses 39.

With reference to Fig. 3 it will be apparent that upon movement of slide button 30 toward the left, spring 25 will be gradually compressed until the lower end portion 28 passes over the pivotal center of contactor 23, whereupon the latter will be moved by said spring with a snap action into bridging engagement with the resilient stationary contacts of the switch. Spring 25 will thereafter act to retain slide button 30 in its extreme left-hand position pending manual operation of the latter toward the right-hand extreme position thereof; whereupon spring 25 acts to effect snap movement of contactor 23 out of bridging engagement with said contacts 49 and 50.

After attachment of the circuit wires (not shown) by means of the binding screws 62, the switch as a whole may be mounted in a concealed relation within a hollow tool handle or the like. Thus in Fig. 2 the numeral 69 designates a fragment of a hollow tool handle, the same having an opening 70, preferably rectangular, of less length and width than top plate 34. The assembled switch is inserted into opening 70 in such manner that the extension 68 and top plate 34 engage the lower and upper surfaces of the tool handle wall, at the end 71 of opening 70, to provide a wedging or clamping action between these parts.

The sides of plates 65 and 66 longitudinally of the switch base fit fairly closely between the longitudinal side walls of opening 70, wherefore substantial lateral displacement of the assembled switch parts with reference to the tool handle is prevented. Top plate 34 is provided with a somewhat elliptical opening 72 to accommodate the shank of a securing screw 73 which takes into a tapped opening 74 in handle 69 (Fig. 2), whereby the top plate may be tightly clamped in position upon the tool handle. As shown in Fig. 2 the slide button 30 is so positioned exteriorly of the tool handle as to facilitate manual movement thereof in the manner aforedescribed.

In certain installations it is desired to provide means affording an electrical connection between two wire ends (such as the adjacent ends of sections of a grounding wire) to avoid the necessity for soldering and taping said ends, and to facilitate disconnection thereof when desired. I therefore preferably provide base 15 with an auxiliary recess 75, as shown in Fig. 1, said recess being formed to accommodate a wiring terminal member substantially like member 57 aforedescribed. In such case the relatively thin wall or diaphragm 76 initially provided in base 15 adjacent to recess 75 is removed by broaching to accommodate wiring terminal member 57, to provide for connection and securement of the extra wire ends (not shown) as by means of the usual binding screw. Such additional wiring terminal member will be clamped in position within auxiliary base recess 75 upon assembly of the parts of the switch superstructure.

When it is desired to remove the slide button 30 for inspection or replacement thereof, the securing screw 73 is taken out and the assembled switch is partially or wholly removed from the tool handle opening 70, whereupon by moving button 30 to an intermediate position plate 35 may be forcibly turned by inserting a screw driver or other suitable tool.

By reason of the more rugged form and more rigid assembly of the switch parts the operating life of the switch is very greatly increased, as compared with the switches shown in my prior Patents Nos. 1,905,914 and 1,998,962 aforementioned; while retaining the rated capacity of 3 amperes at 250 volts, or 6 amperes at 125 volts.

In Fig. 5 I have illustrated a slightly modified form of slide button actuator, which is designated by the numeral 77, said button being preferably molded from "Bakelite" or other suitable insulating material, free from inserts of any kind. Button 77 may be the same as button 30 aforedescribed in respect of the top portion or surface thereof, and button 77 is provided with recesses 78 and 79 in the lower surface thereof to afford clearance for the upset ends of securing rivets 43 and 44. Button 77 has a downward projection 80 of oblong contour formed integrally with the lower surface thereof, said projection having a fairly close sliding fit between the longitudinal side walls of an opening 81 provided in metal top plate 82. The opposite ends of projection 80 are engageable with the respective opposite end walls of opening 81 to limit movement of button 77 in opposite directions. Projection 80 is provided with an integral extension 83 of the same width as but preferably of shorter length than the former. Extension 83 is provided in the transverse sides thereof, by the molding operation, with grooves 84 and 85 which are respectively adapted to receive the arms 86 and 87 (dotted lines) of a spring wire retaining clip, the curved or bowed connecting portion of which is shown at 88. The free ends of arms 86 and 87 are bent to extend inwardly toward each other as shown at 89 and 90 and then outwardly from each other as shown at 91 and 92, whereby insertion of said clip into said grooves is facilitated.

Assuming securement of top plate 82 and the other switch parts to the insulating base, by

means of rivets 43 and 44, in the manner illustrated in connection with the switch of Figs. 1 to 4, assembly of the slide button may be effected in the following manner: The upper end of a pin 93 (preferably formed of metal) is freely insertable into a substantially cylindrical recess 94 provided centrally of extension 83 and projection 80, and the rounded lower end 95 of said pin is brought into engagement with the cup 26 (see Figs. 1 and 3) provided at the upper end of the coiled compression spring.

Button 77 is then pressed downwardly, against the action of the compression spring, to bring extension 83 to a plane slightly below the lower surface of top plate 82, with projection 80 fitting between the longitudinal sides of opening 81. Thereupon the wire clip is forcibly inserted into grooves 84 and 85 from one side or the other of extension 83, the bowed connecting portion 88 and the flared ends 91 and 92 of the clip arms underlying the lower surface of top plate 82 to positively prevent accidental upward displacement of slide button 77. A switch provided with a slide button like that shown in Fig. 5 is, of course, operable in the same manner as the switch shown in Figs. 1 to 4. Slide button 77 may be disassembled at will by merely forcibly withdrawing clip 88, such withdrawal being effected by use of a screw driver or the like, to pull upon the bowed portion 88 of the clip; or such removal may be initiated by individually or jointly pushing backwardly the flared portions 91, 92 of the clip arms.

In the form of switch shown in Figs. 6 to 9 many of the parts afore described are employed, and the same have been given corresponding numerals of reference, the differences being embodied in the superstructure and in the actuating means supported thereby. Thus in Figs. 6 to 9, the top plate comprises a punched and stamped sheet metal member having a flat portion 96 which is secured to base 15 by rivets 43 and 44 in clamping relation to the insulating plate 63a which preferably projects a like amount beyond each end of base 15. Flat portion 96 is provided at the right-hand end thereof with a portion 97 of reduced width which is curved upwardly as shown, the upper end of said last mentioned portion being still further reduced and laterally notched, as shown at 98 in Fig. 6, to accommodate and retain the looped end 99 of a coiled tension spring 100, when the latter is under tension.

The left-hand end 101 of flat portion 96 is of reduced width and is bent upwardly at a predetermined angle, as shown in Figs. 7 and 9, and said upwardly bent portion is provided with an integral outwardly extending lug 102, which is preferably extruded therefrom in the manner shown at 103 in Fig. 7. Formed integrally with flat portion 96 and extending upwardly at substantially right angles thereto are a pair of arms 104 and 105, which are respectively provided at their upper edges with integral laterally extending flanges 106 and 107. Flanges 106 and 107 are each provided with two tapped openings 108 to provide for attachment of the switch by screws or bolts (not shown) to a hollow or recessed toolhandle or other suitable support.

Arms 104 and 105 are provided with alined openings to receive the shank 109 of a headed pivot pin, the end of said shank being enlarged or upset, as shown at 110, after assembly thereof with respect to said arms. Interposed between arms 104 and 105 and pivotally engaging shank 109 is a lever preferably comprising two flat punched sheet metal members 111 and 112 of identical form, which are alined and spot welded to each other at a plurality of spaced points, or rigidly secured together in any other suitable manner. If desired, of course, said lever might be punched from a single sheet having a thickness equal to the combined thicknesses of said members, although the arrangement herein disclosed is preferred for purposes of economy and facility of production of these parts; said members 111 and 112 being adapted for use individually as actuating levers for certain forms of switches.

Lever 111, 112 is provided in the lower end thereof with a substantially rectangular notch 113 which is adapted to freely receive the relatively wide upper end portion of a flat punched plate 114 of suitable insulating material. The lower end portion of plate 114 is of a width to enter freely into the slot 64a in insulating plate 63a, and to be guided and restrained against lateral displacement by the longitudinal side walls of said slot. The extreme lower end 115 of plate 114 is of curved contour for cooperative engagement with the concavity 27 in member 26. Lever 111, 112 is provided with a relatively small notch 116 opening to the right-hand side wall of notch 113; notch 116 being adapted to receive and retain the other looped end 117 of coiled tension spring 100, it being understood that loop 117 is engaged with notch 116 prior to insertion of plate 114 into notch 113. Spring 100 thus biases the lower end of lever 111, 112 toward the right to effect "off" positioning of the switch parts, as indicated in Fig. 7.

Lever 111, 112 is provided at its upper end with an angularly arranged flat edge 118. A stamped sheet metal trigger member 119 of substantially semi-elliptical form in longitudinal cross section (Fig. 7) and of approximately inverted channel-shape in transverse cross section (Fig. 8) has one end portion thereof fitted rather snugly over the upper end of said lever; said trigger member being rigidly secured to said lever, as by spot-welding the former to the upper edge 118 of the latter.

Interposed between the aforementioned arms 104, 105 is a punched and stamped sheet metal lever member 120 of substantially inverted channel-shape, said member 120 being preferably of a length to extend beyond the other parts of the switch at each end of the latter. Member 120 is pivotally supported by a pin 121 like pin 109 and carried by said arms 104, 105 in spaced relation to the left of pin 109, but preferably located in the same horizontal plane as the latter. The arrangement is such that the inner surface 122 of member 120 is adapted to bear against the upper, outer surface of trigger member 119, whereby member 119 may be moved by lever 120 to the position thereof shown in Fig. 9, against the bias of spring 100; and whereby lever 120 will normally be moved by member 119 to the position thereof shown in Figs. 6, 7 and 8, under the bias of spring 100.

The parallel side portions 123 and 124 of lever 120 are respectively provided with notches 125 and 126, the upper walls of which are adapted to jointly engage pin 109 to limit extreme downward movement of said lever, and the lower walls of which jointly engage said pin to limit upward movement of said lever, thus correspondingly limiting extreme downward and upward movements of trigger member 119. I prefer to provide means

enabling latching of the switch parts in circuit-completing position. For this purpose, side portion 123 of lever 120 is provided at the forward end of the latter with an extension 127, which is bent to extend in a plane parallel to aforementioned surface 122. The forward or left-hand end of lever 120 is therefore of approximately rectangular contour in vertical cross section.

Surface 122 of lever 120 is provided with a circular opening 128 to afford sliding clearance for the relatively large diameter cylindrical upper end portion 129 of a manually depressible latch pin, and extension 127 (Fig. 7) is provided with an alined circular opening 130 to afford sliding clearance for the relatively small diameter cylindrical lower end portion 131 of said pin. A coiled spring 132 is interposed under a predetermined degree of compression between extension 127 and the shoulder 133 formed by portions 129, 131 of the latch pin, whereby the latter is biased upwardly. Said latch pin is provided at its lower end with a cylindrical portion 134 of still smaller diameter. After penetration of opening 130 in extension 127, a relatively thin metal washer 135 is fitted onto portion 134, and the end of portion 134 is upset over the lower surface of said washer, as shown at 136; whereby washer 135 cooperatively engages extension 127 to limit upward movement of the latch pin under the bias of spring 132. Downward movement of the latch pin (in the relative positions of the parts shown in Fig. 9) is limited by complete compression of spring 132, to prevent complete downward movement of cylindrical portion 129 of the latch pin through opening 128, or by engagement of end 136 with the forward end of plate 63a.

With particular reference to Fig. 9, it will be apparent that upon complete downward movement of lever 120, in which the upper walls of notches 125 and 126 will be engaged with pin 109, the washer 135 will be movable in a vertical plane spaced slightly to the left of lug 102; wherefore the latch pin 129 may be depressed, by the thumb or a finger of the same hand of the operator which was used to depress lever 120, to a degree corresponding to or slightly below the position thereof shown in Fig. 9. Thereafter upon manual release of lever 120, while maintaining a slight degree of manual pressure upon the upper end 129 of the latch pin, the resulting pivotal movement of lever 120 under the bias of spring 100 will cause washer 135 to engage the aforementioned angular extension 101 of the metal top plate to prevent further upward pivotal movement of lever 120. At the same time washer 135 will be positioned for positive engagement with the lower surface of latch lug 102 to prevent upward movement of the latch pin under the bias of spring 132.

Thereafter upon manual movement of lever 120 to its extreme downward position washer 135 will be moved out of alinement with latch lug 102, with consequent movement of the latch pin to its upper extreme position under the bias of spring 132. Thereupon manual release of lever 120 will result in extreme upward movement thereof under the bias of tension spring 100, to effect interruption of the circuit controlled by the switch.

What I claim as new and desire to secure by Letters Patent is:

1. In an electric snap switch, in combination, a molded insulating base having a relatively large main recess formed therein and opening to the upper surface thereof, said base having an auxiliary recess formed therein in one corner thereof in spaced relation to said main recess and also opening to said upper surface, said base also having a pair of alined, flat-bottomed grooves of like width and depth formed in the upper surface thereof and respectively leading from said auxiliary recess to said main recess and to the exterior of said base at one end of the latter, a relatively thin resilient metal member having a contact portion thereof positioned in said main recess, a connecting portion positioned in said inner groove, and a terminal portion positioned in said auxiliary recess, a relatively thick metal member having portions thereof positioned within each of the respective grooves, an intermediate portion positioned within said auxiliary recess and rigidly attached to said resilient metal member, and a wiring terminal portion positioned exteriorly of said base, a binding screw having threaded engagement with said wiring terminal portion, a metal top plate rigidly secured to the upper surface of said base, an insulating plate interposed between said top plate and said relatively thin and relatively thick metal members to clamp said members in assembled relation, and said relatively thick member cooperating with the side walls of each of said alined grooves to resist any bending strains upon said relatively thin member as an incident to tightening of said binding screw.

2. In combination, a molded insulaitng base of substantially rectangular contour, said base having a substantially rectangular main recess opening to the upper surface thereof, said base having an upwardly opening auxiliary recess adjacent one end of the latter in spaced relation to said main recess, said base having a pair of alined upwardly opening notches of like depth and width adapted to afford communication between said main recess and the auxiliary recess and between the latter and the exterior of said base at the aforementioned end of the latter, and a combined contact and end wiring terminal assembly having an interlocking connection with and a relatively close fit in said auxiliary recess and the pair of notches associated therewith, the wiring terminal portion of said assembly engaging side and bottom walls of each of said notches and certain of the walls of said auxiliary recess.

3. As an article of manufacture, a combined contact and wiring terminal assembly for electric snap switches, said assembly comprising a relatively thin resilient metal member having spaced downwardly extending contact and terminal portions with an integral connecting portion therebetween, a relatively thick substantially rigid metal member formed of strip stock, a full-width intermediate portion of said last mentioned member having a plurality of bosses extruded from one surface thereof, said bosses being fused to the terminal portion of said first mentioned member to electrically and mechanically connect said members, said last mentioned member being notched to provide a pair of alined shoulders spaced upwardly from the lower edge thereof to seat upon supporting surfaces of suitable form, the outer end of said last mentioned member having a tapped opening formed therein, and a binding screw cooperatively engaging said tapped opening to provide for attachment of a terminal wire.

ALVIN W. KRIEGER.