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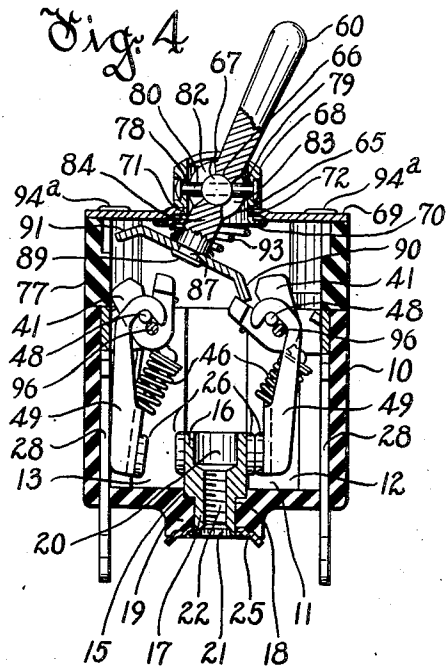
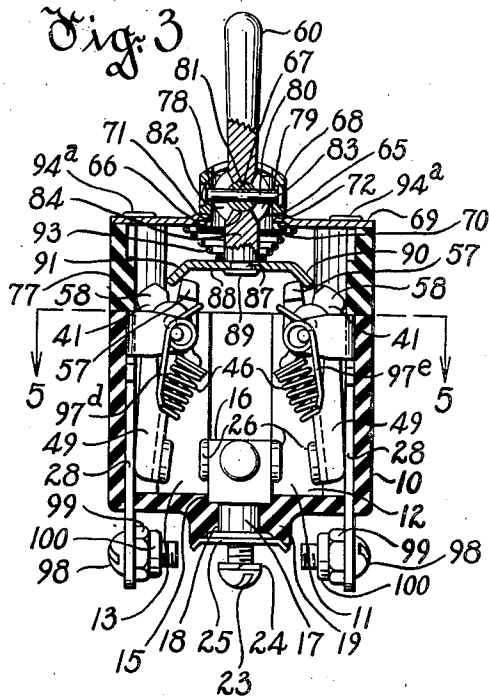
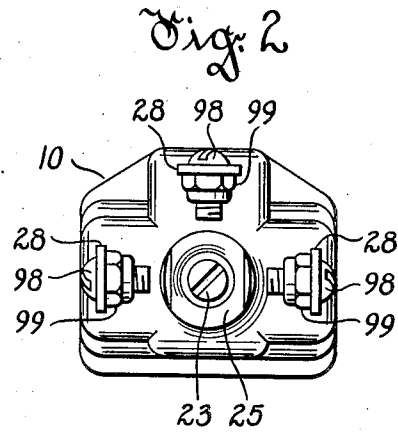
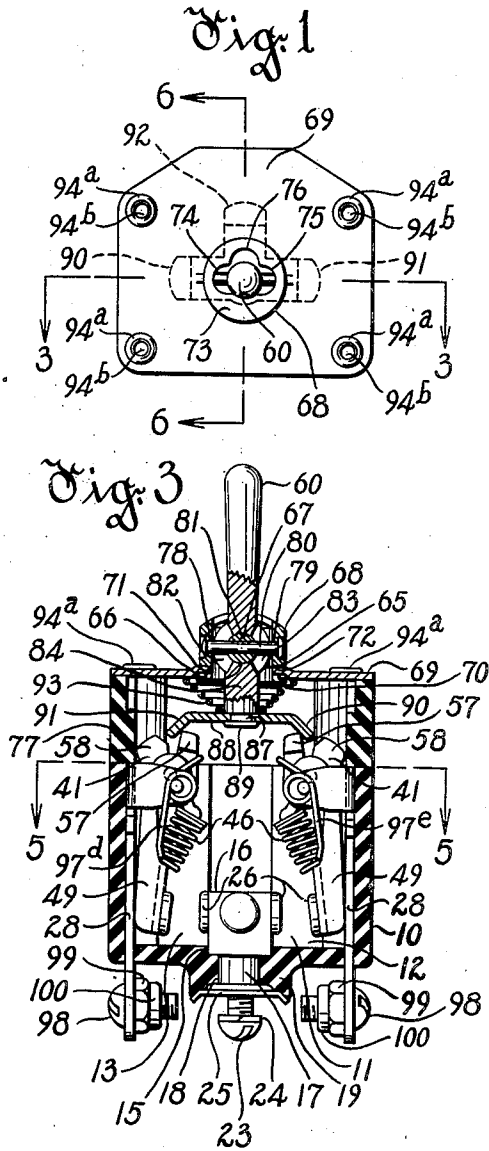
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ELECTRIC SWITCH

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2 Sheets-Sheet 1



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ELECTRIC SWITCH

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This invention relates to improvements in electric switches, and more particularly to electric snap switches of the multiple circuit controlling type.

A primary object of the invention is to improve and simplify the construction and assembly of the parts and the operation of switches of the aforementioned character.

Another object is to provide such a switch which is extremely compact in construction yet rugged and absolutely reliable in operation.

Another object is to provide a multiple circuit controlling switch enabling use of the required or desired number of switch units of identical form.

Another object is to provide a switch of the aforementioned character wherein one or more of the switch units may readily be rendered of the momentary contact type.

Another object is to provide such a switch wherein a single manually oscillatable lever is employed to effect and control operation of the several switch units.

Another object is to provide novel and simple means for insuring against operation of more than one switch unit at a time.

Another object is to provide novel means for guiding and controlling the movements of the single manually oscillatable lever of the switch.

Another object is to provide novel means to facilitate bottom wiring of the complete switch.

Another object is to provide a combined contactor supporting and actuating unit, including novel means for facilitating attachment of a circuit wire.

Another object is to provide a novel form of pivotal support for the single manually operable lever of the switch.

Another object is to provide a circuit controlling switch unit of novel form whereby wiping or sliding movement of the contactor with respect to its contact is insured during both breaking and making of the circuit controlled thereby.

Another object is to provide a novel form of insulating base and novel means for retaining the switch units in assembled relationship thereto.

Another object is to provide novel means for facilitating attachment of the switch as a whole to a suitable support.

Other objects and advantages of the invention will hereinafter appear.

The accompanying drawings illustrate certain embodiments of the invention which will now be described, it being understood that the invention

is susceptible of embodiment in other forms within the scope of the appended claims.

In the drawings,

Figure 1 is a top plan view of a multiple circuit controlling snap switch constructed in accordance with my invention; the single manually operable lever being shown in its intermediate, or "off," position.

Fig. 2 is a bottom plan view of the switch shown in Fig. 1, illustrating the form and arrangement of the bottom wiring terminals.

Fig. 3 is a longitudinal sectional view, on the line 3—3 of Fig. 1, looking in the direction of the arrows; certain of the switching elements being shown in elevation.

Fig. 4 is a sectional view substantially like that of Fig. 3, but with the manually oscillatable lever in one of its extreme positions, with consequent positioning of the contactor of one switch unit in circuit completing position.

Fig. 5 is a top plan view of the switch, with the metal cover plate and operating lever and the insulating spacer member removed.

Fig. 6 is a longitudinal sectional view, on the line 6—6 of Fig. 1, looking in the direction of the arrows; all of the switch parts, including the manually oscillatable operating lever, being shown in "off" position, and a slightly modified form of said lever being illustrated.

Fig. 7 is a view substantially similar to that of Fig. 5, but modified by omission of the coiled torsion springs associated with two of the switch units, and

Fig. 8 is a fragmentary sectional view, on the line 8—8 of Fig. 5, illustrating the manner of assembling the torsion springs with respect to certain of the switch units and the common insulating base or housing of the multiple circuit controlling switch.

Referring first to the device of Figs. 1 to 6 and 8, the numeral 10 designates a molded insulating base which is provided with an upwardly opening main recess 11 (see Fig. 5), a pair of opposed auxiliary recesses 12 and 13, and a third auxiliary recess 14; all of said auxiliary recesses communicating with said main recess 11 and opening to the upper surface of base 10.

The switch illustrated is adapted to provide for completion of any one of three different circuits selectively, and to insure against completion of two or more of said circuits at the same time. Accordingly I prefer to provide in the bottom wall of the main recess 11 a substantially square sub-recess or depression 15 (Figs. 3 and 4) which is adapted to snugly receive the correspondingly

shaped lower end of a block 16 of metal of good electrical conductivity, such as brass. Block 16 is provided with a reduced lower end 17 of cylindrical contour, and the bottom wall of base 10 is provided with a passage 18 of circular cross section to accommodate end 17; the lower surface of said bottom wall of the base being provided with a substantially circular boss 19 to afford added thickness, as shown in Figs. 3 and 4. Block 16 is provided at its upper end with a relatively wide and relatively deep drilled countersink 20 (Fig. 4) to reduce the mass or weight thereof and to facilitate spot-welding of the contact tips to the outer surfaces thereof, as hereinafter described; and the end 17 is provided with a relatively small and relatively shallow drilled countersink 21. A drilled and tapped passage extends between the countersinks 20 and 21 to accommodate the shank of a wiring terminal screw 23 (Fig. 4); said screw 23 preferably having associated therewith a split lock-washer 24 of well known form.

The lower surface of boss 19 is shaped to receive a terminal plate 25 of substantially circular contour; diametrically opposed portions of plate 25 being bent as illustrated in Figs. 2, 3 and 4 for cooperation with said surface of boss 19 to restrain said plate against rotation relatively to the boss. Plate 25 is perforated to accommodate the cylindrical end 17 of member 16, and the countersunk portion of said end is spun or upset over an annular offset portion of said plate, as shown in Fig. 4, to rigidly and permanently secure said parts to each other and to base 10. As will be understood, plate 25 serves as a common terminal for each of the three snap switch units or mechanisms herein employed. The multiple circuit controlling switch herein disclosed is preferably of relatively high current controlling capacity, and I accordingly provide upon the three sides of member 16 respectively opposite to the auxiliary recesses 12, 13 and 14 three like contact tips 26 which are preferably formed from a composition the main ingredient of which is silver. As shown in Figs. 5 and 6 a rib 27 is formed integrally with the bottom and side wall of main recess 11; said rib extending upwardly throughout a portion of the height of member 16, and in abutting relationship to the latter to insure proper assembly of said member 16.

The snap switch mechanisms positioned within the opposed auxiliary recesses 12 and 13 are shown as identical with each other, whereas the mechanism within auxiliary recess 14 is substantially like the other two, except that a relatively shorter main pivot pin is employed due to the limited space available, with consequent omission of the coiled torsion spring.

The snap switch mechanism positioned within recess 14 will be described; it being understood that like parts of each switch mechanism have been designated by like numerals of reference. Thus each mechanism includes a one-piece punched and stamped sheet metal member composed of highly conductive material, such as brass. The relatively long, flat main body portion of said member is designated by the numeral 28, the lower end thereof preferably having a relatively large circular opening or perforation 29 formed therein, to facilitate attachment thereto of a circuit wire, as hereinafter described. Said lower end is insertable downwardly through a correspondingly shaped opening 30

14, so that said end projects a predetermined distance below the lower surface of base 10.

Recess 14 is slightly enlarged at its upper end, as shown at 31 in Figs. 5 and 6; said enlargement including opposed vertical slot formations 32 and 33 (Fig. 5) which are respectively adapted to accommodate a pair of laterally extending lugs 34 and 35 formed integrally with said main body portion 28 and coplanar with the latter. Lugs 34 and 35 are adapted to seat against the lower ends of slots 32 and 33 to limit the degree of downward movement of portion 32 relatively to base 10, the lower end of slot 33 being shown at 36 in Fig. 6. The arrangement is preferably such that the upper end 37 of portion 28 (see Fig. 6) is located substantially flush with the upper end of base 10. Also formed integrally with and extending laterally from portion 28, at the upper end thereof, are a pair of perforated lugs 38 and 39 (Figs. 5 and 6), said lugs being bent inwardly at substantially right angles to portion 28 into approximately parallel relationship to each other.

The perforations in lugs 38 and 39 are adapted to freely receive a main pivot pin 40, the opposite ends of which are preferably located in planes substantially flush with the outer surfaces of the respective lugs. Pin 40 penetrates a bearing opening of corresponding size formed in a molded insulating actuating lever 41, said lever having molded therein a flat, punched metal member 42 (Fig. 6) having a bearing opening 43 formed therein to likewise accommodate said pin and to reinforce the bearing opening in said lever. Member 42 has an integral portion extending downwardly from lever 41, said portion being provided with a rounded head 44 (Fig. 6) which is adapted to act as an abutment for a metal cup 45 the convex portion of which is adapted to project into the upper end of a coiled compression spring 46, and the flange of which cup is adapted to seat against the flat upper end of said spring.

Pin 40 is adapted to be positioned between the opposed vertical side walls of recess 14 and is restrained against substantial endwise movement by said walls. Lever 41 is provided with a second bearing opening above that aforesaid, the metal insert 42 having an opening of corresponding size, designated by numeral 47 in Fig. 6, to accommodate an auxiliary pivot pin 48 the ends of which are positioned between the inner surfaces of the aforementioned lugs 38 and 39 to prevent substantial endwise displacement of pin 48.

49 designates the contactor which is punched and stamped to the form illustrated from sheet metal of good conductivity, such as brass. The lower end portion of contactor 49 is of substantially channel-form in transverse cross section, the flat connecting portion 50 having a tip 26 spot-welded, brazed or otherwise rigidly attached to the surface thereof which faces the contact tip 26 attached to the corresponding surface of block 16. The upper end of connecting portion 50 is formed as illustrated at 51 to form an abutment for the flat lower end of spring 46. The sides of the channel-shaped portion of said contactor 49 are extended upwardly in the form of arms 52 and 53 (see Fig. 8) which are flared slightly relatively to each other, said arms having hook-shaped upper ends 54 and 55 which are respectively adapted to seat against the opposite ends of pin 48.

By reason of the aforementioned flare of arms 52 and 53, the contactor 49 is adapted to

ends of the same are adapted for a predetermined degree of frictional engagement with the inner surfaces of lugs 33 and 38 to insure good electrical engagement or contact between said parts. Nevertheless such frictional engagement is not sufficient to substantially interfere with the desired snap movement of contactor 49 from each extreme position thereof to the other under the bias of spring 46.

Lever 41 is provided at its upper end with a transversely extending upwardly opening notch or slot 56 of approximately V-form, to provide a lost-motion driving connection between an operating lever and said lever 41. The portion 57 of lever 41, at the inner side of notch 56, is preferably of slightly greater width than the distance between lugs 38 and 39, whereas the portion 58 of said lever at the opposite side of said notch is preferably of a width slightly less than the distance between the hooked end portions 54 and 55 of contactor arms 52 and 53, to provide oscillatory clearance between said parts.

As best illustrated in Fig. 6 member 28 is preferably provided with an integral portion 59 which initially extends upwardly a short distance beyond the upper end of said member when in final form, said member 28 being sheared downwardly to a slight extent along lines parallel to the sides of said portion 59, which is then bent inwardly at a predetermined angle, as shown, to provide an abutment to limit the degree of oscillatory movement of lever 41 which effects snap movement of contactor 49 to its circuit interrupting position illustrated.

The aforementioned operating lever is preferably of the special form designated in general by the numeral 60 in Figs. 1, 3 and 4 and by the numeral 61 in Fig. 6. The lever 61 is provided at its upper end with a cylindrical recess 62 to accommodate a fibrous pad 63 and a hollow hemispherical glass lens 64 the inner surface of which is provided with a layer or coating 64^a of fluorescent or luminescent material, as desired. The peripheral wall of recess 62 is spun inwardly over a portion of lens 64 to retain the latter in assembled position. Levers 60 and 61 are in other respects substantially identical with each other and corresponding parts thereof have been designated by like numerals of reference.

Thus each lever 60 and 61 is provided with an approximately spherical intermediate enlargement 65 which is provided with a relatively large transverse opening or passage 66 which is adapted to freely receive a substantially cylindrical metal member or shaft 67 which provides a support about which the lever is adapted to oscillate. As shown in Fig. 6 the flat ends of member 67 are arranged in flush relationship to the opposite ends of opening 66. Said enlargement 65 is located within a hollow metal bushing 68 which is rigidly and non-rotatably secured to a substantially flat metal cover plate 69. Thus plate 69 is provided with a circular opening to receive the reduced lower end of bushing 68, said end being spun or upset outwardly over the inner surface of said plate, as shown at 70, to permanently secure said parts to each other. In practice said reduced lower end of bushing 68 is provided with a diametrically opposed pair of kerfs or slots into which a pair of lugs 71 and 72, partially sheared from and upwardly offset with respect to plate 69, are respectively adapted to fit, as shown in Figs. 3 and 4. By this means rotation of bushing 68 relatively to plate 69 is positively prevented.

Bushing 68 is preferably provided with a convex upper end wall 73 (Fig. 6), which is provided with a pair of opposed slots 74 and 75, and a slot 76 extending in a direction at right angles to the other slots. All of the slots 74, 75 and 76 communicate with each other, and the same act jointly at the area common thereto to provide an opening of a size to permit free insertion of the handle 60 or 61 upwardly therethrough, as illustrated in Fig. 1.

Plate 69 is preferably of the six-sided shape thereof illustrated in Fig. 1, and bushing 68 is rigidly and non-rotatably attached thereto in the relationship illustrated in said figure. Plate 69 is so shaped to conform to the contour of the upper end of base 10 and of the molded insulating spacer member 77 interposed between the latter and plate 69.

As best illustrated in Figs. 3 and 4, bushing 68 is provided with diametrically opposed openings 78 and 79 with countersinks to respectively accommodate the head and upset end of a pin 80 which acts as a pivotal support for member 67; the latter having an opening 81 extending diametrically therethrough to freely accommodate said pin. Also as shown in Figs. 3 and 4, the lever enlargement 65 is provided with diametrically opposed kerfs 82 and 83 of arcuate form which communicate with the aforementioned opening 66 in said enlargement, and thus provide clearance between pin 80 and lever 60 or 61 upon oscillation of the latter in the plane of the axis or length of said pin.

The lower end portion 84 of lever 60 (or 61) is provided with a reduced extension 85, two sides of which are flattened, as shown at 86 and 87; a punched and stamped sheet metal member 88 having an opening (see Figs. 3, 4 and 6) to non-rotatably fit around said extension; and the lower end of extension 85 being upset or riveted over the lower face of member 88 to rigidly and permanently secure said parts to each other, as shown at 89. Member 88 is provided with three integral arms, the outer end portions of which are bent downwardly at a predetermined angle, as shown at 90, 91 and 92, for cooperation with the respective insulating levers 41 of the three switch units.

Prior to attachment of member 88 to lever 60 or 61 a coiled compression spring 93 of inverted cone-shape is interposed between said member and the lower surface of plate 69. The purpose of spring 93 is to insure against vibration or rattling of lever 60 and to bias the same to its intermediate or neutral position (shown in Figs. 1, 3 and 6) when all of the switch units are in their circuit-interrupting positions. Spring 93 thus acts, along with the several switch units, to insure such neutral positioning of lever 60, under the condition aforementioned, regardless of the angle at which the switch as a whole is supported.

The base 10 has molded therein and projecting upwardly therefrom adjacent the four main corners thereof the hollow internally threaded members 94 formed of a suitable metal, such as brass. The hollow molded insulating spacer member 77 has passages (not shown) extending therethrough to accommodate members 94, the upper ends of which likewise penetrate aligned openings in plate 69 and are spun or upset outwardly over the latter, as shown at 94^a, to rigidly and permanently secure plate 69, spacer 77 and base 10 to each other.

As best illustrated in Fig. 1 the tapped upper

end portions 94^b of members 94 are adapted to accommodate the shanks of screws (not shown) to provide for attachment of the switch as a whole to a panel or other suitable support.

As shown in Figs. 5 and 6 I prefer to interpose between the rear surface of the member 28, within recess 14, and the opposed face of the slot-forming recess 31 at the upper end of base 10 a curved or convex leaf spring 95 the purpose of which is to provide a relatively tight fit of the switch unit within said recess 14, and to prevent rattling or relative movement of the unit as a whole with respect to base 10.

As will be understood, the peripheral wall of insulating spacer 77 is adapted to overlie a portion of the switch unit within recess 14 as well as portions of the switch units within the recesses 12 and 13, to retain said units in properly assembled relationship to base 10, as best illustrated in Figs. 3, 4 and 6.

The switch units positioned within auxiliary recesses 12 and 13 preferably are substantially like that within recess 14, and the corresponding parts of all of said units are therefore designated by like numerals of reference. As best illustrated in Fig. 5, however, the units within recesses 12 and 13 are each provided with a main pivot pin 96 of substantially greater length than the main pivot pin 40 aforescribed; the recesses 12 and 13 being accordingly provided with upwardly opening pairs of opposed slots 12^a, 12^b and 13^a, 13^b to accommodate the respective opposite ends of pins 96. The extra length of pins 96 is utilized to provide for association with each of the two switch units a coiled torsion spring 97, each spring 97 comprising a pair of coiled portions 97^a and 97^b surrounding the ends of the respective pin 96; a connecting portion 97^c positioned at the outer surface of the portion 57 of the respective actuating lever 41 and located below the integral laterally extending lugs on said portion 57, as best illustrated in Fig. 6. The free ends 97^d and 97^e of the respective coils 97^a and 97^b of said torsion springs are relatively long and straight with slightly bent tips, as best illustrated in Fig. 3; upwardly opening recesses being provided in base 10 to accommodate said coiled portions and the free ends thereof, as best illustrated in Figs. 5 and 7. It will be understood that when said switch units are inserted into recesses 12 and 13 with their associated torsion springs 97 in assembled relationship thereto, said springs will act to overpower the coiled compression springs 46 of the respective units, thus biasing the contactors of said switch units to their circuit interrupting positions (see Fig. 3). In respect of the showing of Fig. 4, it is of course to be understood that the lever 60 is being manually retained in the position illustrated, so that upon manual release of lever 60 the parts of the right-hand switch unit will be automatically returned to their normal circuit interrupting position, shown in Fig. 3.

It is to be understood, of course, that the torsion springs may be omitted from either one or both of the two switch units last mentioned. Thus in Fig. 7 I have shown both of said units with said torsion springs omitted; whereby each of the three switch units is adapted to be retained in either its circuit interrupting position (when lever 60 or 61 is in its intermediate or neutral position) or in its circuit completing position (when lever 60 is moved selectively to one or another of its three extreme positions).

As will be apparent to those skilled in the art

in a switch like that illustrated in Fig. 7 wherein all of the switch units are of the non-momentary type in both their circuit completing and circuit interrupting conditions, a similar result might be obtained by using switch units in recesses 12 and 13 completely identical with that in recess 14; provided that suitable blocks of insulating material or the like are employed to fill the recesses which accommodate the relatively long pivot pins 96; or the insulating base 10 might be provided with auxiliary recesses corresponding to the recesses 12 and 13, but of a form identical with the auxiliary recess 14.

As aforeindicated, the arrangement of the auxiliary pivot pin 48 of each switch unit in eccentric relationship to the main pivot pin of lever 41 insures a lifting or sliding action of each contactor tip with respect to the tip of its associated stationary contact prior to snap movement of the contactor to its disengaged position. The prying or lifting effect thus provided is important in respect of preventing or overcoming any tendency toward sticking or "freezing" of the contactor.

In Fig. 3 I have shown each member 28 provided at its perforated lower end with a bolt or screw 98 which is adapted to clamp a circuit wire (not shown) thereto; each screw having associated therewith a threaded nut 99, which in turn carries a member 100 of fiber or the like for cooperation with the screw shank to insure against accidental loosening thereof.

It will be apparent to those skilled in the art that the switch aforescribed may be modified by omission of one or two of the switch units illustrated; in which event it is preferable to employ a bushing (corresponding to that shown at 68) but with the corresponding one or two of the three slots 74, 75 and 76 omitted, to insure proper guiding of the lever 60 or 61. Similarly, it is obvious that an insulating base substantially like that shown at 10 but of larger transverse dimensions might be employed to provide a fourth auxiliary recess exactly like that shown at 14, whereby a fourth switch unit might be employed. With such an arrangement, a metal member corresponding to that shown at 88, but with another arm and tip diametrically opposed to the tip 92 would be required, and a bushing having a fourth slot, opposite to the slot 76 would be employed.

Other modifications of the devices illustrated will at once suggest themselves to those skilled in the art.

I claim:

1. In a multiple circuit controlling switch, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts carried by said base within said main recess, a corresponding number of oscillatable contactors mounted within the respective auxiliary recesses, each contactor being associated with one of said stationary contacts individually, actuating elements individual to the respective contactors for effecting operation of the latter entirely independently of each other whereby the same are adapted for movement selectively into and out of engagement with the individual stationary contacts respectively associated therewith, common operating means for said contactors, said means comprising a manually oscillatable lever adapted upon movement from one extreme position thereof to another to transiently engage directly the actuating elements of two of

said contactors in sequence to thereby effect disengagement of one of said contactors from its associated stationary contact and subsequent engagement of another of said contactors with its associated stationary contact, said lever being also adapted upon movement thereof to an intermediate position to insure disengagement of all of said contactors from their associated stationary contacts, and means including coiled compression springs individual to the respective actuating elements and contactors for effecting such movements of the latter with a snap action.

2. In a multiple circuit controlling switch, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts carried by said base within said main recess, a corresponding number of oscillatable contactors mounted within the respective auxiliary recesses, each contactor being associated with one of said contacts individually, actuating elements individual to the respective contactors for effecting operation of the latter entirely independently of each other whereby the same are adapted for movement selectively into and out of engagement with the individual stationary contacts respectively associated therewith, common operating means for said contactors, said means comprising a manually oscillatable lever adapted upon movement in a single plane from one extreme position thereof to another to transiently engage directly the actuating elements of two of said contactors in sequence to thereby effect disengagement of one of said contactors from its associated stationary contact and subsequent engagement of another of said contactors with its associated stationary contact, said lever being also adapted upon movement thereof to an intermediate position to insure disengagement of all of said contactors from their associated stationary contacts, means including coiled compression springs individual to the respective actuating elements and contactors for effecting such movements of the latter with a snap action, and said oscillatable lever being also movable in a different plane from said intermediate position to a third extreme position to effect engagement of another of said contactors with its associated stationary contact, said last mentioned contactor also having a coiled compression spring interposed between the same and the actuating element associated therewith to insure engaging and disengaging movements thereof with a snap action.

3. In a multiple circuit controlling switch, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts carried by said base within said main recess, a corresponding number of oscillatable contactors mounted within the respective auxiliary recesses, each contactor being associated with one of said stationary contacts individually, actuating elements individual to the respective contactors for effecting operation of the latter entirely independently of each other whereby the same are adapted for movement selectively into and out of engagement with the individual stationary contacts respectively associated therewith, common operating means for said contactors, said means comprising a single manually oscillatable lever adapted upon movement from one extreme position thereof to another to transiently engage directly the actuating elements of two of said contactors in sequence to thereby effect disengagement of one of said contactors from its asso-

ciated stationary contact and subsequent engagement of another of said contactors with its associated stationary contact, said member being also adapted upon movement thereof to an intermediate position to insure disengagement of all of said contactors from their associated stationary contacts, means including coiled compression springs individual to the respective actuating elements and contactors for effecting such movements of the latter with a snap action, said oscillatable lever being also movable in a different plane from said intermediate position to a third extreme position to effect engagement of another of said contactors with its associated stationary contact, said last mentioned contactor also having a coiled compression spring interposed between the same and the actuating element associated therewith to insure engaging and disengaging movements thereof with a snap action, and a wiring terminal element common to all of said stationary contacts.

4. In a multiple circuit controlling switch, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts carried by said base within said main recess, a corresponding number of oscillatable contactors mounted within the respective auxiliary recesses, each contactor being associated with one of said stationary contacts individually, actuating elements individual to the respective contactors for effecting operation of the latter entirely independently of each other whereby the same are adapted for movement selectively into and out of engagement with the individual stationary contacts respectively associated therewith, common operating means for said contactors, said means comprising a single manually oscillatable lever adapted upon movement from one extreme position thereof to another to transiently engage directly the actuating elements of two of said contactors in sequence to thereby effect disengagement of one of said contactors from its associated stationary contact and subsequent engagement of another of said contactors with its associated stationary contact, said lever being also adapted upon movement thereof to an intermediate position to insure disengagement of all of said contactors from their associated stationary contacts, means including coiled compression springs individual to the respective actuating elements and contactors for effecting such movements of the latter with a snap action, said oscillatable lever being also movable in a different plane from said intermediate position to a third extreme position to effect engagement of another of said contactors with its associated stationary contact, said last mentioned contactor also having a coiled compression spring interposed between the same and the actuating element associated therewith to insure engaging and disengaging movements thereof with a snap action, a wiring terminal element common to all of said stationary contacts, and wiring terminal elements individual to the respective contactors, all of said wiring terminal elements being exposed and readily accessible at the outer surface of said insulating base.

5. In an electric snap switch mechanism, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts mounted upon said base within said main recess, a corresponding number of contactors pivotally supported relatively to said base

within the respective auxiliary recesses, a pivoted actuating lever and a coiled compression spring individual to each contactor to provide for snap movement of the latter into and out of engagement with the stationary contact respectively associated therewith, a manually operable lever pivotally supported in a manner to provide for oscillatory movement thereof in any direction relatively to said base, said last mentioned lever having means rigidly attached thereto and adapted for cooperative lost motion engagement with each of said actuating levers individually upon oscillatory movement of said operating lever in different predetermined directions selectively from an intermediate position thereof, and guide means associated with said operating lever to limit the same to forward and return movement in any one of said predetermined directions prior to oscillatory movement thereof in another of said directions, whereby simultaneous operation of two or more of said contactors is positively prevented.

6. In an electric snap switch mechanism, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts mounted upon said base within said main recess, a corresponding number of contactors pivotally supported relatively to said base within the respective auxiliary recesses, a pivoted actuating lever and a coiled compression spring individual to each contactor to provide for snap movement of the latter into and out of engagement with the stationary contact respectively associated therewith, a manually operable lever pivotally supported in a manner to provide for oscillatory movement thereof in any direction relatively to said base, said last mentioned lever having means rigidly attached thereto and adapted for cooperative lost motion engagement with each of said actuating levers individually upon oscillatory movement of said operating lever in different predetermined directions selectively from an intermediate position thereof, guide means associated with said operating lever to limit the same to forward and return movement in any one of said predetermined directions prior to oscillatory movement thereof in another of said directions, whereby simultaneous operation of two or more of said contactors is positively prevented, and said operating lever when in its intermediate position providing for disengagement of all of said contactors from the contacts respectively associated therewith.

7. In an electric snap switch mechanism, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts mounted upon said base within said main recess, a corresponding number of contactors pivotally supported relatively to said base within the respective auxiliary recesses, a pivoted actuating lever and a coiled compression spring individual to each contactor to provide for snap movement of the latter into and out of engagement with the stationary contact respectively associated therewith, a manually operable lever pivotally supported in a manner to provide for oscillatory movement thereof in any direction relatively to said base, said last mentioned lever having means rigidly attached thereto and adapted for cooperative lost motion engagement with each of said actuating levers individually upon oscillatory movement of said operating lever in at least three different predetermined direc-

tions selectively from an intermediate position thereof, guide means associated with said operating lever to limit the same to forward and return movement in any one of said predetermined directions prior to oscillatory movement thereof in another of said directions, whereby simultaneous operation of two or more of said contactors is positively prevented, said operating lever when in its intermediate position providing for disengagement of all of said contactors from the contacts respectively associated therewith, each of said coiled compression springs normally acting respectively upon movement of said operating lever in a given direction to one extreme position thereof to effect retention of the latter in such position and engagement of its associated contactor with its respective stationary contact, and additional spring means associated with at least one of said actuating levers and adapted to overpower the respective compression spring to thereby bias its associated contactor to disengaged position and permit return of said operating lever to its intermediate position upon manual release of the latter.

8. In an electric switch, in combination, a metal cover plate having an opening formed therein, a hollow metal bushing having a reduced lower end projecting downwardly through said opening and upset over the lower surface of said plate in a manner to rigidly and non-rotatably secure the former to the latter, the upper end of said bushing being partially closed but the same having a multiplicity of slots formed therein and extending radially from the center thereof, a lever the upper end portion of which is freely insertable upwardly through the central portion of the opening formed by said slots jointly, each of said slots being of a size to provide clearance for said portion of said lever to guide and limit the same to oscillatory movement in a given plane, said lever having an enlargement adapted to movably fit within said bushing below said upper end of the latter, said enlargement having a relatively large transverse opening formed therein, a substantially cylindrical metal member freely rotatable within said opening, said metal member having a relatively small opening extending diametrically there-through, said lever enlargement being cut away on opposite sides thereof at right angles to said opening therein to afford access to said opening in said metal member, and a pivot pin extending through said last mentioned opening and supported at its opposite ends by said bushing, said cut away portions of said enlargement affording clearance for said lever upon oscillation of the latter in a plane parallel to the axis of said pivot pin.

9. In an electric switch, in combination, a metal cover plate having an opening formed therein, a hollow metal bushing having a reduced lower end projecting downwardly through said opening and upset over the lower surface of said plate in a manner to rigidly and non-rotatably secure the former to the latter, the upper end of said bushing being partially closed but the same having a multiplicity of slots formed therein and extending radially from the center thereof, a lever the upper end portion of which is freely insertable upwardly through the central portion of the opening formed by said slots jointly, each of said slots being of a size to provide clearance for said portion of said lever to guide and limit the same to oscillatory movement in a given plane, said lever having an enlargement adapted to movably fit within said

bushing below said upper end of the latter, said enlargement having a relatively large transverse opening of circular cross section formed therein, a substantially cylindrical metal member freely rotatable within said opening, said metal member having a relatively small opening extending diametrically therethrough, said lever enlargement being cut away on opposite sides thereof at right angles to said opening therein to afford access to said opening in said metal member, and a pivot pin freely insertable through said last mentioned opening and supported at its opposite ends by said bushing, said cut away portions of said enlargement affording clearance for said lever upon oscillation of the latter in any plane.

10. In an electric switch, in combination, a metal cover plate having an opening formed therein, a hollow metal bushing having a reduced lower end projecting downwardly through said opening and upset over the lower surface of said plate in a manner to rigidly and non-rotatably secure the former to the latter, the upper end of said bushing being partially closed but the same having a multiplicity of slots formed therein and extending radially from the center thereof, a lever the upper end portion of which is freely insertable upwardly through the central portion of the opening formed by said slots jointly, each of said slots being of a size to provide clearance for said portion of said lever to guide and limit the same to oscillatory movement in a given plane, said lever having an enlargement adapted to movably fit within said bushing below said upper end of the latter, said enlargement having a relatively large transverse opening of circular cross section formed therein, a substantially cylindrical metal member freely rotatable within said opening, said metal member having a relatively small opening extending diametrically therethrough, said lever enlargement being cut away on opposite sides thereof at right angles to said opening therein to afford access to said opening in said metal member, and a pivot pin positioned within said last mentioned opening and supported at its opposite ends by said bushing, said metal member and said cut away portions of said enlargement cooperating with said pivot pin to afford universal movement of said lever relatively to said bushing except as limited by the aforementioned slots.

11. In a device of the character described, in combination, a hollow metal bushing, a metal lever having a substantially spherical enlargement intermediate the ends thereof adapted to oscillatably fit within said bushing, said enlargement having a relatively large circular opening extending diametrically therethrough, a pair of opposed arcuate kerfs formed in said enlargement in a plane at right angles to the axis of said opening and communicating with the latter, a substantially cylindrical metal member positioned within said opening and adapted to form a pivotal support for said lever, said member having a relatively small circular opening extending diametrically therethrough at the mid-length thereof, said bushing having diametrically opposed openings formed therein, and a pivot pin penetrating said last mentioned openings and said relatively small opening, to thereby provide a pivotal support for said metal member and to act as an alternative pivotal support for said lever, the aforementioned kerfs formed in said enlargement being adapted to accommodate said pivot pin and to provide clearance between the latter and said lever.

12. In an electric snap switch, a punched sheet

metal member formed at the lower end thereof to provide for attachment of a circuit wire, a pair of perforated lugs formed integrally with said member at the upper end thereof, said lugs being bent inwardly at substantially right angles to the main body of said member, a molded insulating actuating lever having a substantially circular passage extending transversely therethrough, a pivot pin positioned within said passage and having bearing engagement with the perforations in said lugs, said lever being formed at the upper end thereof to provide for cooperative engagement therewith of a suitable operating member, said lever having an abutment at the lower end thereof, said lever also having a second substantially circular passage extending transversely therethrough above the passage first mentioned, a second pivot pin positioned within the second mentioned passage, the ends of said second pin being located between said lugs and restrained by the latter against substantial endwise displacement, an oscillatable contactor comprising a sheet metal member having a pair of flat substantially parallel side arms, the upper ends of said arms being hook-shaped for pivotal engagement thereof with said second pin, said contactor having a portion integrally connecting said arms below the upper ends thereof, an abutment formed on said contactor, and a coiled spring interposed under compression between said last mentioned abutment and said lever abutment to bias said contactor to one extreme position or the other according to the position of said lever.

13. In an electric snap switch, a punched sheet metal member formed at the lower end thereof to provide for attachment of a circuit wire, a pair of perforated lugs formed integrally with said member at the upper end thereof, said lugs being bent inwardly at substantially right angles to the main body of said member, a molded insulating actuating lever having a substantially circular passage extending transversely therethrough, a pivot pin positioned within said passage and having bearing engagement with the perforations in said lugs, said lever being formed at the upper end thereof to provide for cooperative engagement therewith of a suitable operating member, said lever having an abutment at the lower end thereof, said lever also having a second substantially circular passage extending transversely therethrough above the passage first mentioned, a second pivot pin positioned within the second mentioned passage, the ends of said second pin being located between said lugs and restrained by the latter against substantial endwise displacement, an oscillatable contactor comprising a sheet metal member having a pair of flat substantially parallel side arms, the upper ends of said arms being hook-shaped for pivotal engagement thereof with said second pin, said contactor having a portion integrally connecting said arms below the upper ends thereof, an abutment formed on said contactor, and a coiled spring interposed under compression between said last mentioned abutment and said lever abutment to bias said contactor to one extreme position or the other according to the position of said lever, the arms of said contactor having a predetermined degree of frictional engagement with the inner surfaces of the respective lugs, to thereby insure a good electrical connection between said sheet metal member and said contactor.

14. In an electric snap switch, a punched and stamped sheet metal member having a relatively long, flat body portion, the lower end of said body

portion having an opening formed therein to facilitate attachment of a circuit wire, a pair of perforated lugs formed integrally with the upper end of said body portion, said lugs being bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever having a pair of upper and lower substantially circular passages extending transversely there-through, a pivot pin positioned within the lower passage, the ends of said pin having bearing engagement with the perforations in said lugs, a relatively shorter pivot pin positioned within the upper passage, the ends of said shorter pin being located between said lugs and restrained by the latter against substantial endwise displacement, a punched and stamped sheet metal contactor the lower end portion of which is of approximately channel-shape in transverse cross section, the sides of said channel being extended upwardly to provide substantially parallel arms with hook-shaped upper ends for pivotal engagement with the ends of said second pin, an abutment formed at the upper end of said channel portion, and a coiled compression spring interposed between said last mentioned abutment and said lever abutment to bias said contactor to move with a snap action from each extreme position thereof to the other upon corresponding movements of said actuating lever.

15. In an electric snap switch, a punched and stamped sheet metal member having a relatively long, flat body portion, the lower end of said body portion having an opening formed therein to facilitate attachment of a circuit wire, a pair of perforated lugs formed integrally with the upper end of said body portion, said lugs being bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever having a pair of upper and lower substantially circular passages extending transversely there-through, a pivot pin positioned within the lower passage, the ends of said pin having bearing engagement with the perforations in said lugs, a relatively shorter pivot pin positioned within the upper passage, the ends of said shorter pin being located between said lugs and restrained by the latter against substantial endwise displacement, a punched and stamped sheet metal contactor the lower end portion of which is of approximately channel-shape in transverse cross section, the sides of said channel being extended upwardly to provide substantially parallel arms with hook-shaped upper ends for pivotal engagement with the ends of said second pin, an abutment formed at the upper end of said channel portion, a coiled compression spring interposed between said last mentioned abutment and said lever abutment to bias said contactor to move with a snap action from each extreme position thereof to the other upon corresponding movements of said actuating lever, and said actuating lever having an upwardly opening notch formed therein for cooperative engagement therewith of an oscillatable operating lever of suitable form.

16. In an electric snap switch, a punched and stamped sheet metal member having a relatively long, flat body portion, the lower end of said body portion having an opening formed therein to facilitate attachment of a circuit wire, a pair of perforated lugs formed integrally with the upper end of said body portion, said lugs being bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever having a pair of upper and lower substantially circular passages extending transversely there-

through, a pivot pin positioned within the lower passage, the ends of said pin having bearing engagement with the perforations in said lugs, a relatively shorter pivot pin positioned within the upper passage, the ends of said shorter pin being located between said lugs and restrained by the latter against substantial endwise displacement, a punched and stamped sheet metal contactor the lower end portion of which is of approximately channel-shape in transverse cross section, the sides of said channel being extended upwardly to provide substantially parallel arms with hook-shaped upper ends for pivotal engagement with the ends of said second pin, an abutment formed at the upper end of said channel portion, a coiled compression spring interposed between said last mentioned abutment and said lever abutment to bias said contactor to move with a snap action from each extreme position thereof to the other upon corresponding movements of said actuating lever, said actuating lever having a flat sheet metal member molded therein as an insert, said insert having openings formed therein in alignment with said passages to provide for reinforcement of the walls of the latter with respect to said pivot pins, and a portion of said insert extending downwardly a substantial distance beyond said lever to provide the aforementioned abutment on the latter.

17. In an electric snap switch, a punched and stamped sheet metal member having a relatively long, flat body portion, the lower end of said body portion having an opening formed therein to facilitate attachment of a circuit wire, a pair of perforated lugs formed integrally with the upper end of said body portion, said lugs being bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever having a pair of upper and lower substantially circular passages extending transversely there-through, a pivot pin positioned within the lower passage, the ends of said pin having bearing engagement with the perforations in said lugs, a relatively shorter pivot pin positioned within the upper passage, the ends of said shorter pin being located between said lugs and restrained by the latter against substantial endwise displacement, a punched and stamped sheet metal contactor the lower end portion of which is of approximately channel-shape in transverse cross section, the sides of said channel being extended upwardly to provide substantially parallel arms with hook-shaped upper ends for pivotal engagement with the ends of said second pin, an abutment formed at the upper end of said channel portion, a coiled compression spring interposed between said last mentioned abutment and said lever abutment to bias said contactor to move with a snap action from each extreme position thereof to the other upon corresponding movements of said actuating lever, said actuating lever having a flat sheet metal member molded therein as an insert, said insert having openings formed therein in alignment with said passages to provide for reinforcement of the walls of the latter with respect to said pivot pins, a portion of said insert extending downwardly a substantial distance beyond said lever to provide the aforementioned abutment on the latter, said contactor having a silver base tip rigidly attached to the lower end portion thereof for cooperation with a stationary contact tip of similar form, and said upper pivot pin being arcuately movable bodily to insure lifting or sliding movement of said contactor tip relatively to the stationary

contact tip prior to disengagement of the former from the latter.

18. In an electric snap switch, a punched and stamped sheet metal member having a relatively long, flat body portion, the lower end of said body portion having an opening formed therein to facilitate attachment of a circuit wire, a pair of perforated lugs formed integrally with the upper end of said body portion, said lugs being bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever having a pair of upper and lower substantially circular passages extending transversely therethrough, a pivot pin positioned within the lower passage, the ends of said pin having bearing engagement with the perforations in said lugs, a relatively shorter pivot pin positioned within the upper passage, the ends of said shorter pin being located between said lugs and restrained by the latter against substantial endwise displacement, a punched and stamped sheet metal contactor the lower end portion of which is of approximately channel-shape in transverse cross section, the sides of said channel being extended upwardly to provide substantially parallel arms with hook-shaped upper ends for pivotal engagement with the ends of said second pin, an abutment formed at the upper end of said channel portion, a coiled compression spring interposed between said last mentioned abutment and said lever abutment to bias said contactor to move with a snap action from each extreme position thereof to the other upon corresponding movements of said actuating lever, said actuating lever having a flat sheet metal member molded therein as an insert, said insert having openings formed therein in alignment with said passage to provide for reinforcement of the walls of the latter with respect to said pivot pins, a portion of said insert extending downwardly a substantial distance beyond said lever to provide the aforementioned abutment on the latter, said contactor having a silver base tip rigidly attached to the lower end portion thereof for cooperation with a stationary contact of suitable form, and said upper pivot pin being arcuately movable relatively to said lower pin to insure a wiping or sliding action of said contactor tip relatively to the stationary contact as an incident to engagement or disengagement of the former with respect to the latter.

19. A multiple circuit controlling switch comprising a molded insulating base having a main recess opening to the upper surface thereof, a plurality of auxiliary recesses located at different sides of said main recess and communicating with the latter, a metal block secured to the lower surface of said main recess and having a contact area facing each of said auxiliary recesses, said block having a wiring terminal portion exposed at the lower surface of said base, each of said auxiliary recesses having a substantially rectangular opening in the lower end wall thereof, a contactor supporting and actuating mechanism located within each of said auxiliary recesses, each mechanism comprising a punched and stamped sheet metal member of high electrical conductivity, said member having a relatively long, flat main body portion the perforated lower end of which is adapted to extend downwardly through the respective recess opening to provide for attachment of a circuit wire, said main body portion having coplanar lugs extending from opposite sides thereof and said base having ledges against which said lugs are adapted to seat, said main body portion having at the upper end there-

of a pair of perforated lugs bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever positioned between said perforated lugs, a pivot pin penetrating said last mentioned lugs and said lever to afford a pivotal support for the latter, a contactor pivotally supported by said lever in an eccentric relationship to said pivotal support of the latter, and a coiled compression spring interposed between said lever and said contactor to effect snap movements of the latter into and out of engagement with the respective contact area of said block upon corresponding movements of the former.

20. A multiple circuit controlling switch comprising a molded insulating base having a main recess opening to the upper surface thereof, a plurality of auxiliary recesses located at different sides of said main recess and communicating with the latter, a metal block secured to the lower surface of said main recess and having a contact area facing each of said auxiliary recesses, said block having a wiring terminal portion exposed at the lower surface of said base, each of said auxiliary recesses having a substantially rectangular opening in the lower end wall thereof, a contactor supporting and actuating mechanism located within each of said auxiliary recesses, each mechanism comprising a punched and stamped sheet metal member of high electrical conductivity, said member having a relatively long, flat main body portion the perforated lower end of which is adapted to extend downwardly through the respective recess opening to provide for attachment of a circuit wire, said main body portion having coplanar lugs extending from opposite sides thereof and said base having ledges against which said lugs are adapted to seat, said main body portion having at the upper end thereof a pair of perforated lugs bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever positioned between said perforated lugs, a pivot pin penetrating said last mentioned lugs and said lever to afford a pivotal support for the latter, a contactor pivotally supported by said lever in an eccentric relationship to said pivotal support of the latter, a coiled compression spring interposed between said lever and said contactor to effect snap movements of the latter into and out of engagement with the respective contact area of said block upon corresponding movements of the former, each of said levers having an upwardly opening notch formed therein, and a single manually operable lever pivotally supported relatively to said base for cooperative engagement with said first mentioned levers selectively, said manually operable lever having guide means associated therewith to insure return of each of said first mentioned levers to a given extreme position thereof prior to cooperative engagement of another of the same by said manually operable lever.

21. A multiple circuit controlling switch comprising a molded insulating base having a main recess opening to the upper surface thereof, a plurality of auxiliary recesses located at different sides of said main recess and communicating with the latter, a metal block secured to the lower surface of said main recess and having a contact area facing each of said auxiliary recesses, said block having a wiring terminal portion exposed at the lower surface of said base, each of said auxiliary recesses having a substantially

rectangular opening in the lower end wall thereof, a contactor supporting and actuating mechanism located within each of said auxiliary recesses, each mechanism comprising a punched and stamped sheet metal member of high electrical conductivity, said member having a relatively long, flat main body portion the perforated lower end of which is adapted to extend downwardly through the respective recess opening to provide for attachment of a circuit wire, said main body portion having coplanar lugs extending from opposite sides thereof and said base having ledges against which said lugs are adapted to seat, said main body portion having at the upper end thereof a pair of perforated lugs bent inwardly into substantially parallel relationship to each other, a molded insulating actuating lever positioned between said perforated lugs, a pivot pin penetrating said last mentioned lugs and said lever to afford a pivotal support for the latter, a contactor pivotally supported by said lever in an eccentric relationship to said pivotal support of the latter, a coiled compression spring interposed between said lever and said contactor to effect snap movements of the latter into and out of engagement with the respective contact area of said block upon corresponding movements of the former, each of said levers having an upwardly opening notch formed therein, a single manually operable lever pivotally supported relatively to said base for cooperative engagement with said first mentioned levers selectively, said manually operable lever having guide means associated therewith to insure return of each of said first mentioned levers to a given extreme position thereof prior to cooperative engagement of another of the same by said manually operable lever, the supporting means for said manually operable lever comprising a metal cover plate, a molded insulating spacer member interposed between said cover plate and said base, said spacer member overlying each of said stamped sheet metal members to retain all of the same in assembled relationship to said base, and means common to said base, said spacer and said cover plate for retaining the same in assembled relationship to each other.

22. A multiple circuit controlling switch comprising a molded insulating base having a main recess opening to the upper surface thereof, a plurality of auxiliary recesses located at different sides of said main recess and communicating with the latter, a metal block secured to the lower surface of said main recess and having a contact area facing each of said auxiliary recesses, said block having a wiring terminal portion exposed at the lower surface of said base, each of said auxiliary recesses having a substantially rectangular opening in the lower end wall thereof, a contactor supporting and actuating mechanism located within each of said auxiliary recesses, each mechanism comprising a punched and stamped sheet metal member of high electrical conductivity, said member having a relatively long, flat main body portion the perforated lower end of which is adapted to extend downwardly through the respective recess opening to provide for attachment of a circuit wire, said main body portion having coplanar lugs extending from opposite sides thereof and said base having ledges against which said lugs are adapted to seat, said main body portion having at the upper end thereof a pair of perforated lugs bent inwardly into substantially parallel relationship to each other,

a molded insulating actuating lever positioned between said perforated lugs, a pivot pin penetrating said last mentioned lugs and said lever to afford a pivotal support for the latter, a contactor pivotally supported by said lever in an eccentric relationship to said pivotal support of the latter, a coiled compression spring interposed between said lever and said contactor to effect snap movements of the latter into and out of the respective contact area of said block upon corresponding movements of the former, each of said levers having an upwardly opening notch formed therein, a single manually operable lever pivotally supported relatively to said base for cooperative engagement with said first mentioned levers selectively, said manually operable lever having guide means associated therewith to insure return of each of said first mentioned levers to a given extreme position thereof prior to cooperative engagement of another of the same by said manually operable lever, the supporting means for said manually operable lever comprising a metal cover plate, a molded insulating spacer member interposed between said cover plate and said base, said spacer member overlying each of said stamped sheet metal members to retain all of the same in assembled relationship to said base, and means common to said base, said spacer and said cover plate for retaining the same in assembled relationship to each other, said last mentioned means also acting to facilitate attachment of the switch as a whole to a suitable support.

23. In an electric snap switch mechanism, in combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts mounted upon said base within said main recess, a corresponding number of contactors pivotally supported relatively to said base within the respective auxiliary recesses, a pivoted actuating lever and a coiled compression spring individual to each contactor to provide for snap movement of the latter into and out of engagement with the stationary contact respectively associated therewith, a manually operable lever pivotally supported in a manner to provide for oscillatory movement thereof in any direction relatively to said base, said last mentioned lever having means rigidly attached thereto and adapted for cooperative engagement with each of said actuating levers individually upon oscillatory movement of said operating lever in different predetermined directions selectively from an intermediate position thereof, guide means associated with said operating lever to limit the same to forward and return movement in any one of said predetermined directions prior to oscillatory movement thereof in another of said directions, whereby simultaneous operation of two or more of said contactors is positively prevented, said operating lever when in its intermediate position providing for disengagement of all of said contactors from the contacts respectively associated therewith, each of said coiled compression springs normally acting respectively upon movement of said operating lever in a given direction to one extreme position thereof to effect retention of the latter in such position and engagement of its associated contactor with its respective stationary contact, said manually operable lever having a coiled compression spring associated therewith to normally effect neutral or centered position thereof when each of said contactors is in its circuit interrupting position, and means com-

prising coiled torsion springs respectively associated with at least two of said actuating levers to insure automatic return of their respectively associated contactors to circuit interrupting position and to likewise permit return of said manually operable lever to its neutral or centered position upon manual release of the same.

24. In a multiple circuit controlling switch, in combination, a molded insulating base, having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts carried by said base within said main recess, a corresponding number of oscillatable contactors associated with said contacts and respectively supported within said auxiliary recesses, actuating means individual to the respective contactors for effecting operation of the latter entirely independently of each other whereby the same are adapted for movement selectively into and out of engagement with the stationary contacts respectively associated therewith, common operating means for said contactors, said means comprising a manually oscillatable lever adapted upon movement from one extreme position thereof to another to transiently engage the actuating elements of two of said contactors in sequence to thereby effect disengagement of one of said contactors from its associated stationary contact and subsequent engagement of another of said contactors with its associated stationary contact, said lever being also adapted upon movement thereof to an intermediate position to insure disengagement of all of said contactors from their associated stationary contacts, and means including coiled compression springs individual to the respective actuating elements and contactors for effecting such movements of the latter with a snap action.

25. In a multiple circuit controlling switch, in

combination, a molded insulating base having a main recess and a plurality of auxiliary recesses communicating therewith, a plurality of stationary contacts carried by said base within said main recess, a plurality of oscillatable contactors also carried by said base within the respective auxiliary recesses, actuating elements individual to the respective contactors for effecting operation of the latter entirely independently of each other whereby the same are adapted for movement selectively into and out of circuit completing relationship to the stationary contacts respectively associated therewith, common operating means for said contactors, said means comprising a manually oscillatable lever adapted upon movement in a single plane from one extreme position thereof to another to transiently engage the actuating elements of two of said contactors in sequence to thereby effect interruption of a circuit by one of said contactors and subsequent completion of a circuit by another of said contactors, said lever being also adapted upon movement thereof to an intermediate position to insure circuit interrupting positioning of all of said contactors with respect to their associated stationary contacts, means including coiled compression springs individual to the respective actuating elements and contactors for effecting such movements of the latter with a snap action, and said oscillatable lever being also movable in a different plane from said intermediate position to a third extreme position to effect completion of a different circuit, said last mentioned contactor also having a coiled compression spring interposed between the same and the actuating element associated therewith to insure circuit completing and interrupting movements thereof with a snap action.

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