

March 2, 1937.

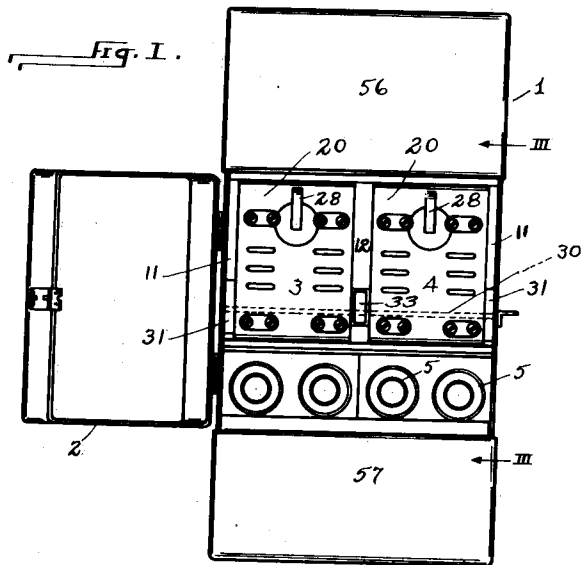
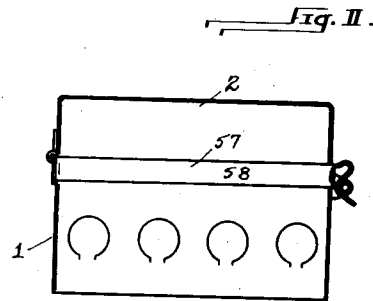
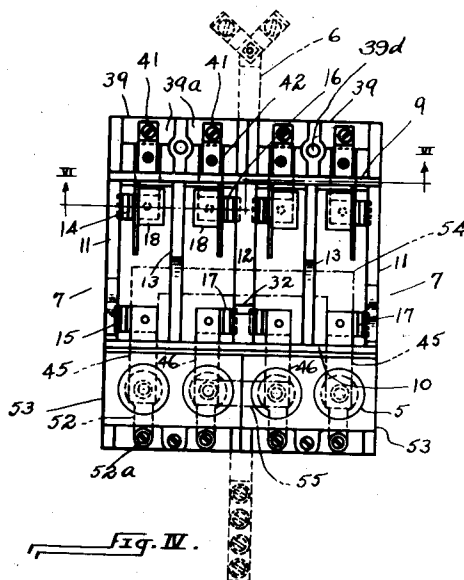
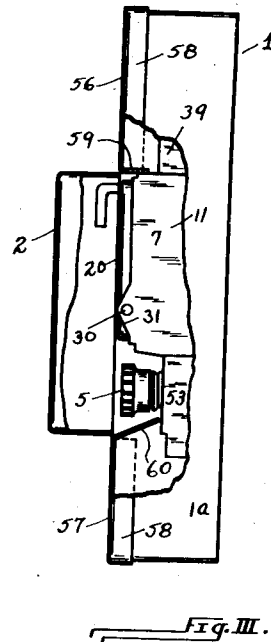
A. CORBETT

2,072,730

FUSED SAFETY SWITCH

Filed Dec. 6, 1935

4 Sheets-Sheet 1



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Alfred Corbett
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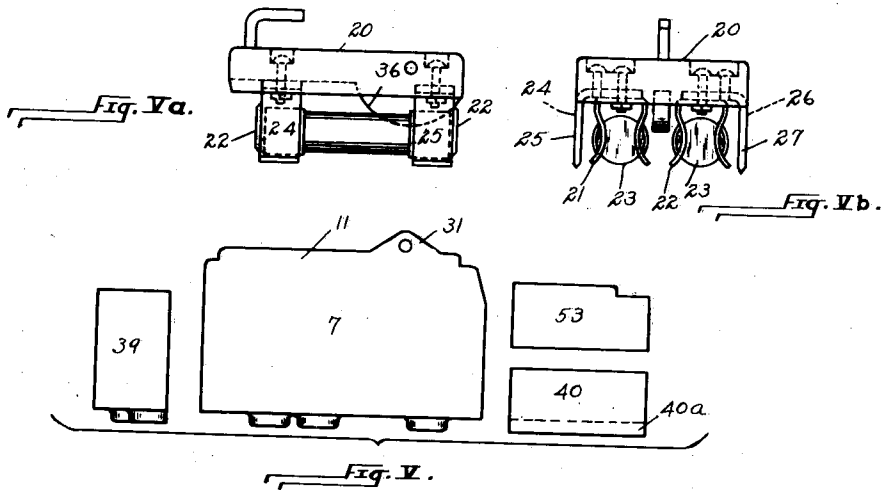
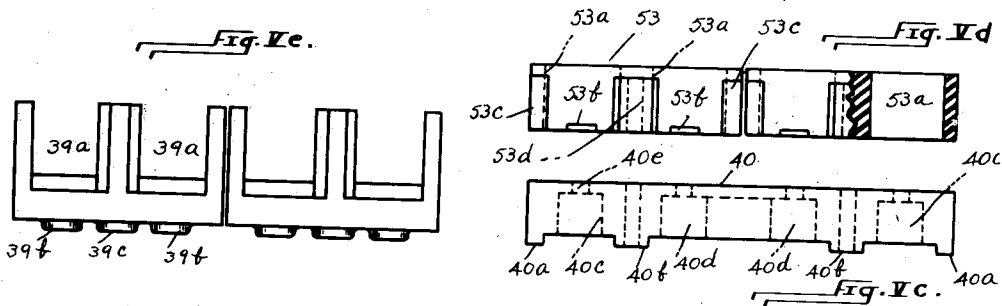
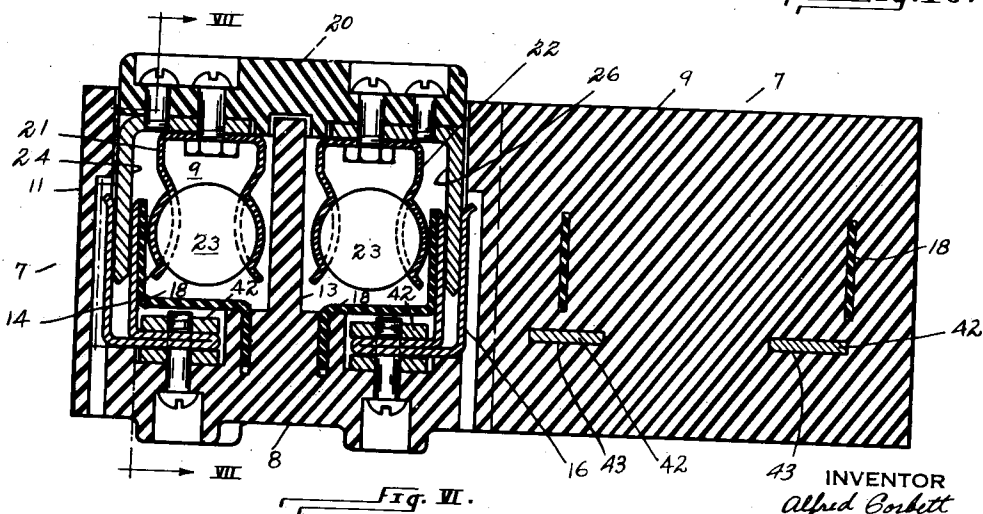
A. CORBETT

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FUSED SAFETY SWITCH

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4 Sheets-Sheet 2



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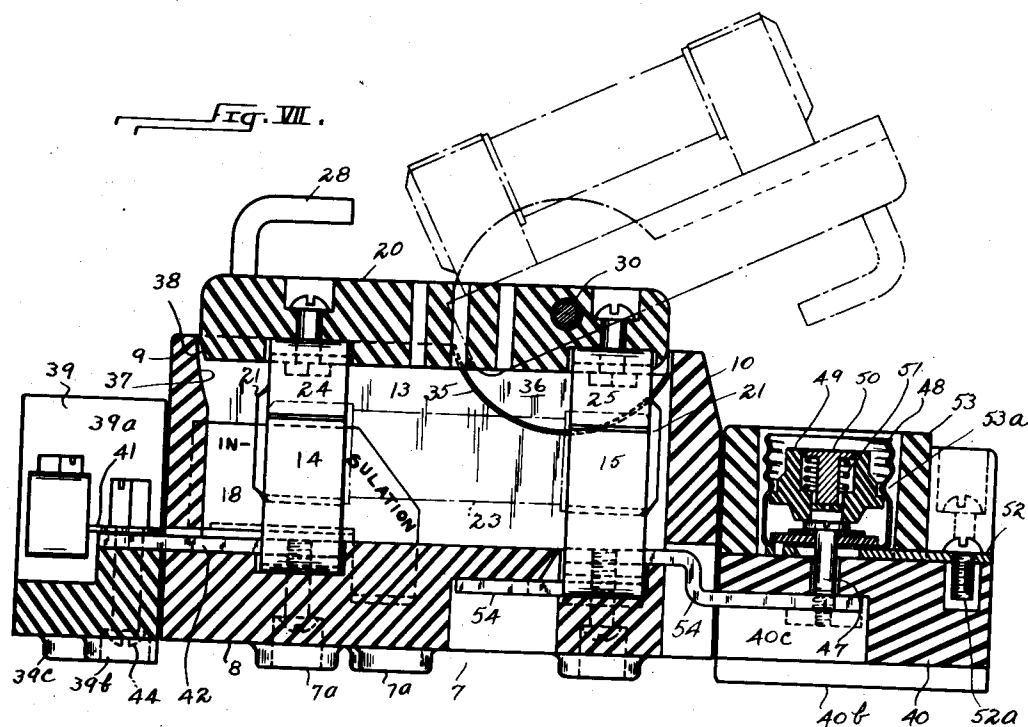
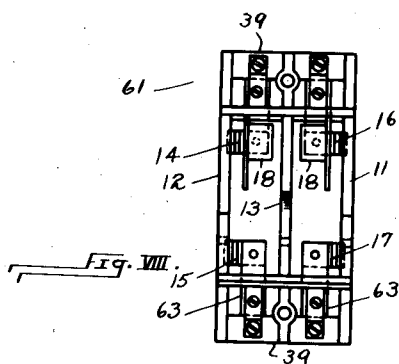
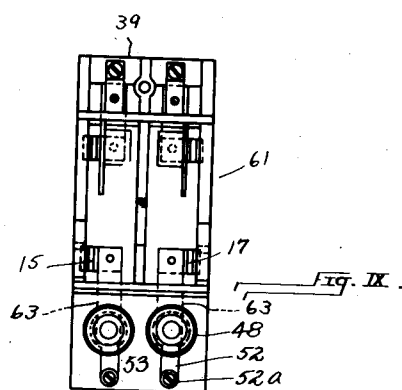
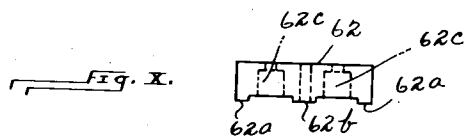
A. CORBETT

2,072,730

FUSED SAFETY SWITCH

Filed Dec. 6, 1935

4 Sheets-Sheet 3



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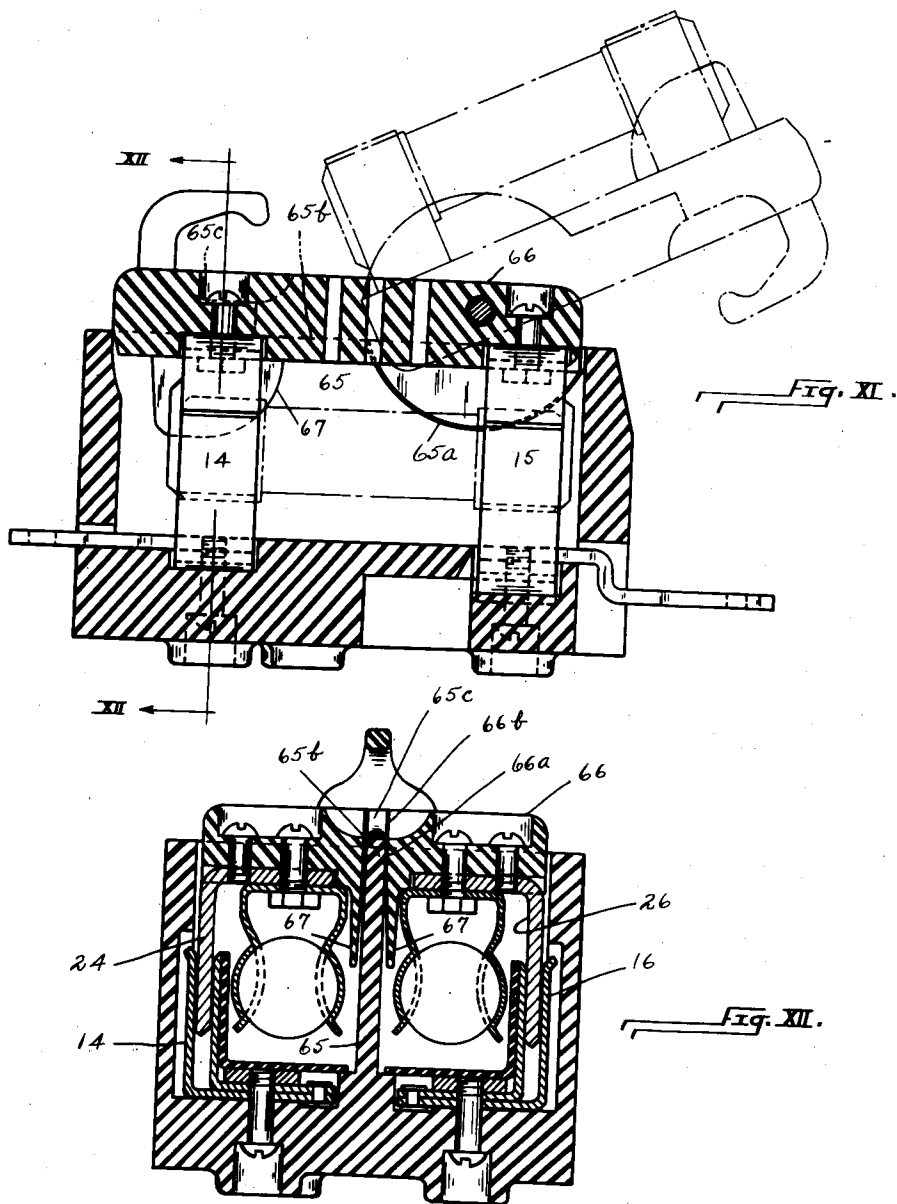
A. CORBETT

2,072,730

FUSED SAFETY SWITCH

Filed Dec. 6, 1935

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,072,730

FUSED SAFETY SWITCH

Alfred Corbett, Irwin, Pa., assignor to National Electric Products Corporation, a corporation of Delaware

Application December 6, 1935, Serial No. 53,174

9 Claims. (Cl. 200—114)

This invention relates to a fused safety switch, to the combination of a fused safety switch with specialized means for leading electrical power to and from the switch, and to the combination of the fused safety switch with a fuse cabinet peculiarly adapted to receive and house the switch.

In fused switch assemblies in which fuses are associated with switching means to protect line circuits, or special circuits, such as range circuits, it is of importance that the fuse-containing assembly be of relatively restricted dimensions, in order that it may be housed in a cabinet of moderate size, while leaving within the cabinet working space for the connection of conductors. It is desirable that fused safety switches be formed of a receptacle element and a cover element, with the fuse mounted on the under side of the cover element, and with the cover element hingedly mounted to the receptacle. The disadvantage with a structure, as so generally described, is that the hinging of the cover to the receptacle causes the cover to occupy what is considered in the art to be an unreasonable space, when the cover is in its open position to expose the interior of the receptacle. This either necessitates the use of a fuse cabinet of relatively great size to accommodate the switch in both its positions, or, in a fuse cabinet of restricted dimensions, gives cramped space within the cabinet for the attachment of conductors to the fused switch.

With these problems in mind, I have invented a fused safety switch in which a fuse-carrying cover element is so pivoted to its associated receptacle that in open position of the cover the switch, considered as a whole, occupies a minimized space; and with this fused safety switch I have associated a containing cabinet so formed and arranged as to be peculiarly adapted to the accommodation of my fused safety switch, and also to occupy itself a minimized space while providing interiorly of the cabinet abundant free working space for the attachment of conductors to the fused switch. This fuse cabinet I also have made of such form and arrangement that, when the fused safety switch is mounted therein, the assembly presents a compact and pleasing appearance.

In evolving the fused safety switch of my invention, and my combination of fused safety switch and containing cabinet for it, I have succeeded in associating with the switch inlet connector elements of unitary structure, and have also associated in the cabinet and with the switch unitary fuse-mounting elements so constructed and arranged that they may be integrated with

the switch, within the cabinet, to protect a greater or lesser number of branch circuits, without alteration in or removal of the fused safety switch itself.

In the unitary connector structures for leading off branch circuits from the switch I have also incorporated tamper-proof structures of known form in such manner that they are not removable from mounted position without removing the switch assembly from the cabinet and disintegrating the assembly by detachment of its outlet connector elements.

The structure and arrangement of my fused safety switch assembly is such as to adapt the switch to varied service in the fused protection of circuits, and without substantial alteration in the structure of the switch itself to permit its ready adaptation to various service requirements.

In the accompanying drawings Fig. I is a front elevation, showing the cabinet and fused safety switch of my invention with the safety switch and branch circuit fuses exposed by open position of the cabinet door, and with the remaining spaces within the cabinet enclosed.

Fig. II is an end elevation of the cabinet shown in Fig. I.

Fig. III is a view, looking in the direction of the arrows III—III of Fig. I, showing the assembly of the cabinet and the fused safety switch therein, walls of the cabinet being partially broken away to show in side elevation the safety switch contained within the cabinet.

Fig. IV is a plan view of the receptacle portion of my fused safety switch, cover elements therefor being omitted, showing, associated with the switch proper, added connector elements for inlet connection and outlet connection by way of fused branch circuits from the switch, and showing in dotted lines buss connectors associated directly with the switch.

Fig. V is an exploded side elevational view, on a slightly enlarged scale, illustrating surface contours only, of the receptacle portion of my fused safety switch proper, and unitary inlet and outlet connector elements for integrated association with the receptacle of the switch proper.

Fig. Va is a side elevational view, on the scale of Fig. V, showing in side elevation the cover element of my fused safety switch, and showing fuses of the cartridge type mounted on the under face thereof for presentation to the interior of an associated receptacle.

Fig. Vb is an end elevation of the cover element shown in Fig. Va.

Fig. Vc is an end elevation showing, on a scale

larger than that of Figs. V, Va, and Vb, a structural base element or block adapted for integration with the fused safety switch to provide for the mounting and connection of the sockets for 5 branch circuit fuses at the outlet end of the switch.

Fig. Vd is, on the scale of Fig. Vc, a view of two structural elements or blocks adapted for mounting on the base block of Fig. Vc to receive 10 and house fuse sockets mounted on the base block of Fig. Vc and to house fuses received in such sockets, one of the said structural shield blocks being shown wholly in end elevation, and the other of the said blocks being shown partly in 15 end elevation and partly in vertical section.

Fig. Ve shows in end elevation, on the scale of Fig. Vc, two structural elements or blocks adapted to be integrated with the receptacle of the fused switch to provide inlet connection thereto.

Fig. VI is a transverse, vertical, sectional view, taken on the irregular section line VI—VI of Fig. IV, illustrating, on a still further enlarged scale, the structure within the receptacle at one side of the switch, as shown in Fig. IV, with the 20 cover shown thereon in closed, circuit-completing condition of the switch, and taken vertically through an end wall of the receptacle at the other side of the switch structure.

Fig. VII is a longitudinal, vertical sectional view, on the scale of Fig. VI, taken on the section line VII—VII of Fig. VI, and showing in broken lines an intermediate position of the cover in rotation of the cover to expose the interior of the receptacle; this view also illustrating in longitudinal, vertical section the integration of the unitary structural blocks forming inlet and outlet 30 connectors for the switch, and showing a tamper-proof socket mounted on the base block at the outlet end of the switch and housed in a shield block assembled on the base block.

Fig. VIII is a plan view of a modified safety switch assembly, shown on the scale of Fig. IV, showing the switch as of single construction, rather than as of the double construction shown 45 in preceding figures of the drawings, and showing mounted at both ends of the switch the simple form of connector block illustrated as an inlet connector in the preceding figures of the drawings.

Fig. IX is a plan view similar to Fig. VIII, and on the same scale, but showing at the outlet end of the switch proper a base block for the mounting of branch circuit fuse sockets formed substantially as one-half the base block shown in 55 Fig. Vc.

Fig. X is an end elevation of the single unit base block shown in assembly in Fig. IX.

Fig. XI is a view, taken in vertical, longitudinal section, on the scale of Figs. VI and VII, illustrating a modification in the barrier structure of the switch arranged fully to shield the contacts in the receptacle of the switch during movement of the cover to open position, and illustrating an intermediate stage in such movement in order to 65 illustrate the shielding of the contacts.

Fig. XII is a cross-sectional view through the switch, taken on the section line XII—XII of Fig. XI.

Referring to the drawings, reference numeral 70 1 designates generally the cabinet for containing the safety switch, which is shown with its door 2 in open position, exposing to view two separately operable switch units 3 and 4, and plug fuses 5 for the protection of branch circuits taken off 75 from the switches.

Referring now particularly to the structure and arrangement of the switch assembly itself, it is to be noted that the two switches, designated respectively by reference numerals 3 and 4, are shown as associated together, and having a common neutral bar 6. It should be initially explained that the direct association of two switch units, one of which may protect the line circuit, and the other of which may protect a special circuit, such as a range circuit, may be made either by the use of an integral molding for the receptacle elements of the two switch units, or by forming the receptacles of the two switch units separately, and integrating them in the assembly. Also, as will appear, one of the switch units, comprising an assembly of receptacle, cover, and connectors, may be independently used. Also, in line with this thought, more than two switch units may be assembled together, either by the use of a molding comprising more than two receptacles, 20 or by the integration of more than two initially separate receptacles.

Referring particularly to the structure of the switch, best shown in Figs. V to VII, inclusive, of the drawings, each of the receptacles 7 is formed of insulating material, molded or otherwise formed into an integral body having a bottom wall 8, end walls 9 and 10, and side walls 11 and 12, the side wall 12 being, as shown in these figures of the drawings, common to the two receptacles of the assembly. At its longitudinal center line the receptacle is divided into two chambers of substantially equal area by a barrier 13, which is integrally formed with the body of the receptacle. In one of the chambers defined by the barrier 13 are spring contacts 14 and 15, and in the other of the chambers are spring contacts 16 and 17 of polarity opposite to that of the spring contacts 14 and 15. Associated with spring contacts 14 and 16, at the inlet end of the receptacle, are fiber shields 18, arranged to extend upwardly along that element of the spring contacts which lies inwardly of the receptacle. The spring contacts 15 and 17 may, for the reason hereinafter explained, be unshielded. 45 The cover 20 of the receptacle carries on the under face thereof spring clips 21 and 22, adapted to receive and engage cartridge fuses 23. Conductively associated with the cartridge fuses 23 on the under face of cover 20 are contact blades 24, 25, 26, and 27, the contact blade 26 being cut off from view by contact blade 27 in Fig. Vb and by contact blade 24 in Figs. VII and Va.

In closed, circuit-completing condition of the switch the circuit is completed on one side of barrier 13 by spring contacts 14, contact blade 24, the cartridge fuse 23 interconnecting the two spring clips 21, contact blade 25, and spring contacts 15. The completion of a conductive assembly through the cartridge fuse 23 at the other side of barrier 13 is identically effected by the elements assembled at that side of the fuse.

Cover 20 is articulated to the body of receptacle 7, so that it may be swung into open position to expose the interior of the receptacle, and to expose the fuse-attaching elements and the fuses carried on the under face of the cover. For swinging movement, cover 20 is provided with a handle 28, which is shown as of simple form, but which may be of any suitable specialized form if so desired, and is mounted on a pin- 70 tle 30, trunnioned in the side walls of the receptacle. As best illustrated in Fig. I of the drawings, pintle 30 is common to the covers 20 associated with both the switch units, being mount- 75

ed in upwardly extended lugs 31, formed on the outer side wall 11 of the receptacle, and lying in a groove 32 (see Fig. IV) in the common side wall 12. The pintle is overlaid at the common side wall 12 by a strap 33 shown in Fig. I. Pintle 30 is thus so engaged by groove 32 and strap 33 that it is held against longitudinal movement and against rotation.

Returning to a consideration of one of the two receptacle and cover assemblies shown in duplicate in these figures of the drawings, it will be noted that pintle 30 extends through the body of the cover 20 forwardly—that is, to the left in Fig. VII—of the rearward edge of the cover, and that it is slightly above the upper edges of the outer side wall 11 of the receptacle. The cover thus has a center of rotation intermediate its ends and substantially removed forwardly from its rearward end, so that in swinging movement of the cover into open position the rearward region of the cover follows a path extending into the hollow interior of the receptacle, and in fully open position the rearward region of the cover overlies the rearward region of the receptacle. It will be noted by an inspection of the drawings, that the positioning of the pintle 30 is such as to cause the cover, in its open position, to overlie the receptacle to the maximum extent possible without increasing the depth of the receptacle.

In order, at the rear of the switch structure, to permit turning movement of the cover, barrier 13 is provided with an arcuate recess 35 centered on the pintle 30, and a barrier portion 36 depends from the under face of the cover in alignment with the barrier 13. This barrier member 36 is of segmental form, and also has its edge formed on an arc centered in the pintle 30. In receptacle-closing position of the cover, barrier member 36 therefore lies in the matching recess 35 of barrier 13 to form a complete barrier extended from end to end of the receptacle.

In opening movement of cover 20, the equally curved surfaces of recess 35 and barrier member 36 permit free turning movement of the cover. At the forward or inlet end of the switch, the forward wall 9 of the receptacle may be chamfered as at 37, and the lower forward edge of the cover 20 may be chamfered as at 38; to permit turning movement at the forward end of the cover within the overall thickness of the front wall 9.

It will be appreciated that, with the cover 20 swung further than its position as shown in Fig. VII, the cover in its reversed position overlies almost half the length of the receptacle. In addition to economizing in the overall longitudinal dimensions of the switch when the cover is in open position, the cover, when opened, thus also screens spring contacts 15 and 17 at the outlet end of the receptacle, and for this reason it is unnecessary that these contacts be provided with insulating shields, such as the insulating shields 18 which shield spring contacts 14 and 16 at the inlet end of the receptacle.

It being necessary to provide for electrical connection, both at the inlet end and at the outlet end of the switch proper, I have provided connector elements which readily may be integrated with the switch proper by attachment of the connector units and the switch proper both to buss bars leading to and from the switch. To this end, I provide inlet connector blocks 39, and outlet connector or base blocks 40. Extending longitudinally in each of the inlet connector blocks 39 are a pair of stepped recesses

39a, adapted to receive line connectors 41, and for the mounting of bars 42, of opposite polarity, leading to the spring contacts 14 and 16, through slots 43 in the end wall 8 of the switch. Beneath inlet connector block 39 are hollow feet or thimbles 39b to receive the heads of screws 44 for attaching conductors to the block. Each block is also provided with an additional foot 39c, in line with a bore 39d, through which may extend the screw for securing the block in the fuse or switch cabinet in which the assembly is mounted. These feet on the connector are of equal height with screw-receiving feet 1a formed at the under side of the receptacle 1. It will be noted that in the double form of switch shown in Figs. I to VII, inclusive, of the drawings, two inlet connector blocks 39 are used, one for each switch unit of the structure. The formation of the inlet connector blocks 39 as units, each of which is adapted for integration in a switch unit, permits these blocks to be used without change in either a single switch assembly or a multiple switch assembly.

At the outlet end of the receptacle 1, the outlet base blocks 40 are integrated. These base blocks 40 desirably are formed to extend across the entire width of the double switch receptacle, to provide for cross connection between the switches in the manner which is to be described. Each of the blocks has thereon feet 40a and 40b of a height equal to the feet on the receptacle 1 and on the inlet connector block 39. Of these feet, the feet 40b have therethrough central bores to receive screws for mounting the base blocks to the fuse or switch cabinet. Recesses 40c extend forwardly from the rearward edge of the block in the lower region of the block, these recesses being adapted to receive conductor bars 45, leading from spring contacts within the receptacle through slots in the end wall 10 of the receptacle. A similarly formed, but intermediately positioned, pair of recesses 40d are adapted to receive conductor bars 46, also passed through slots in the end wall 10 of the receptacle from spring contacts within the receptacle.

As shown, the recesses 40c and 40d do not extend wholly through the block 40, so that the block 40 is adapted solely to use as a final base block at the outlet end of the receptacle. If it is desired to use two or more base blocks, in order to provide mounting for an additional number of branch circuits taken off from the switch, intermediate base blocks are inserted between the outer or final base block 40, and the receptacle of the switch. Such base blocks, for intermediate use, differ from the base block 40 only in the fact that the recesses 40c and 40d are extended throughout the entire width of the block to provide channels through which the conductor bars may be extended into an additional outlying block or blocks.

Base block 40 is provided with a plurality of apertures 40e, one leading from each of the recesses in the base block to the upper surface of the block. These bores receive bolts, or the like, 47, making connection with conducting bars 45 and 46, and serving each as the center contact of a socket for a plug fuse guarding a branch circuit. The fuse sockets shown are of the tamper-proof type, each comprising a screw shell 48, which has fixed therein a tubular structure 49, containing a conducting plunger 50 urged away from the center contact by a coil spring 51. These structures, which in themselves do not form part of my invention, are adapted,

upon the insertion of plug fuse 5, to complete connection between the center contact provided by bolt 47, and the screw shell 48. From each of the screw shells 48 a branch conductor bar

5 52 leads to a terminal post 52a.

Since the tamper-proof nature of the fuse socket renders the central connections of the socket inaccessible when the tubular guard 49 is permanently secured in the screw shell 48, it is highly desirable that the means for housing and shielding the sockets be formed of an integral element or elements mountable on and removable from the base block 40. These housings or guard blocks 53 are shown as formed integrally each to house two fuse sockets in vertical bores 53a extended through the blocks. Each of the blocks has through the forward wall thereof slots 53b to lead to the branch conducting bars 52 from the fuse sockets into a terminal-receiving space lying between abutments 53c. Through each of the blocks 53 is a screw-receiving bore 53d, which is adapted in assembly to align with the bore terminating in one of the feet 40b of the base block 40, this alignment providing through passage for a screw making connection between the blocks 40 and 53 by through attachment to the base of the fuse or switch cabinet in which the assembly is mounted.

This outlet structure readily adapts itself to multiplication for leading off additional branch circuits. This because, utilizing as intermediate base blocks the slightly modified form of block described above, base blocks 40 and housing blocks 53 may indefinitely be multiplied along the neutral bar 6 associated with the switch structure, and along extended conductor, or buss, bars 45 and 46. Also, this unit construction of the outlet connectors adapts itself readily to the use of tamper-proof fuse sockets, of the type indicated above, to protect the various branch circuits which are led off.

To describe an outlet connection, usable with the unit switch assembly shown, reference is to be had particularly to Figs. IV, VI and VII of the drawings. In Fig. IV it will be seen that the conducting bars 45 are interconnected at the receptacle by means of a U-shaped conducting bar 54, which interconnects the spring contacts 15 of one receptacle assembly and the spring contacts 17 of the other receptacle assembly. The intervening conducting bars 46, leading from the spring contact 17 of one receptacle assembly, and the spring contact 15 of the other receptacle assembly, are interconnected between the fuse sockets which they serve by conducting bar 55. Appropriate electrical connection may be made in various alternative ways, since unit construction of the outlet connector blocks lends itself to variety in the effective connection of branch circuits, as well as to multiplication in the branch circuits taken off, with the change in the form of any of the structural elements.

Turning now to the fuse or switch cabinet 1, and to the mounting of the switch structures in the cabinet, it will be seen that the door 2 of the cabinet encloses an intermediate region only of the cabinet, and that this door 2 is a structure arranged to project outwardly from the cabinet body 1a. This arrangement of the cabinet door 2 permits the switch structure proper to be enclosed within the compass of the cabinet, whether the cover of the switch be in closed position or in open position. The length of the protuberance provided by the cabinet door 2 is, however, minimized by the mounting of the switch cover 20.

In installation, the base portion 1a of the cabinet may be inset from the surface of a wall with its outer face lying flush with the wall surface, so that merely the protuberance formed by the door 2 projects outwardly beyond the surface of the wall.

The means for enclosing the interior of the cabinet to both sides of the door 2 are detachable cover members 56 and 57, which have on each thereof peripheral flanges 58 embracing the wall of the cabinet body 1a. Inwardly of the cabinet the cover element 56 has a dependent flange or wall 59, separated from the embracing flange 58 by slots. This construction permits wall 59 to lie between the body walls embraced by the flange 58, providing a finishing stub partition interiorly of the cabinet cooperative with the adjacent edge of the door 2, and providing an interlocked engagement between the cover element and the body of the cabinet.

Cover element 57 has thereon a generally similar interiorly depending wall 60, which is similarly separated by slotting from the flange 58 of this cover element. Wall 60 is, however, inclined longitudinally of the assembly, and is extended in forward inclination to a line at which it contacts the upper surface of socket-embracing blocks 53. This arrangement of the door and cover element separates the space occupied by the switch and plug fuses from the remaining space within the cabinet, and presents a particularly finished and attractive appearance when the door of the cabinet is open.

It will readily be understood that the fundamental form of the fuse or switch cabinet and its cooperative relation to the switch assembly may be preserved in installations in which additional connector units are added to the switch assembly, for taking off additional branch circuits. This involves merely such changes in the proportions of the cabinet elements that one or more rows of fuses 5 are exposed inwardly of the inclined partition wall 60 of the cabinet cover element 57.

Fig. VIII of the drawings shows a substantially identical receptacle structure formed as a single switch. This single switch receptacle, designated generally by reference numeral 61, is adapted for use merely as a line switch, either fused or unfused, by mounting at the outlet end of the switch an inlet block 39 identical with the inlet block by which inlet connection is made to the switch. In this form, in which fuse mounting for branch circuits is not directly associated with the switch, the structure of the switch, as to its receptacle and cover structure and arrangement, is substantially identical with that previously described, the cover being mounted on the receptacle to turn about an axis intermediate its length, and the receptacle and cover being provided with barriers 13 and 36, identical with the similarly designated elements shown in the preceding figures of the drawings. In this single switch structure also only the spring contacts 14 and 16 at the inlet end of the receptacle need be guarded by insulating shields 18.

Fig. IX of the drawings illustrates a single switch structure similar to that shown in Fig. VIII, save that it has, at the outlet end of the receptacle 61, an outlet connector assembly comprising a fuse socket housing block 53, identical with those previously shown, and an outlet base block 62, which is a modification of the base block 40, shown in preceding figures of the drawings. This base block 62 has on the under face thereof

feet 62a disposed at the side edges of the block, and a foot 62b through which extends a bore for a mounting screw. It has extended forwardly from its rearward edge recesses 62c for the reception and attachment of conducting bars.

In both the showing of Fig. VIII and the showing of Figs. IX and X, two conducting bars 63, having simple connection to the spring contacts 15 and 17, are shown, but it will be understood that connection may be made in varied manner to give outlet from the switch. Also, the outlet base block 62 may be modified in the manner described for the modification of outlet base block 40, in order to provide intermediate base blocks adapted to a multiplication in the number of fused branch circuits taken off from the switch.

In Figs. XI and XII, there is illustrated a modification in the switch structure designed particularly to prevent danger to an operator of the switch while moving the switch cover between its open and closed positions. This modified structure is shown as incorporated in a single switch, corresponding generally to the switch shown in Figs. IX and X of the drawings, but it is to be, of course, understood that it is applicable to an arrangement comprising two or more switch units.

Referring to these figures of the drawings, it is in the upper edge contour of the barrier 65, therein shown, that the modified receptacle structure resides. This barrier 65 has in its upper region an arcuately defined recess 65a, corresponding to the arcuate recess 35 previously described as formed in barrier 13. Forwardly of recess 65a there is a region 65b which lies within a groove 66a in cover 66. Forwardly of this region 65b is a region 65c in which the barrier 65 is extended still farther upwardly to lie in a through slot 66b in the cover 66.

Dependent from the under face of the cover adjacent the inlet end thereof, are two insulating wings 67 arranged, in closed position of the cover, to embrace the inlet region of the barrier adjacent the spring contacts 14 and 16 therein. The overlapping of the cover 66 with barrier 65, by means of the slotted embracement of barrier portion 65c, together with the downward extension of insulating wings 67, is such that, in opening movement of the cover, the cover structures do not pass upwardly beyond the barrier until contact blades 24 and 26 have been wholly withdrawn from contact with the spring contacts 14 and 16. This arrangement provides means in the primary parts of the assembly for shielding the contacts, and thereby prevents accidental bridging across the switch during opening movement of the cover.

Similarly, in swinging the cover from open position to its closed position, the contact blades 24 and 26 do not come into contact with the spring contacts 14 and 16 before the insulating wings 67 to some extent overlap the barrier portion 65c which they embrace. With this structure, the operator is protected not only against danger under ordinary conditions, but is also protected against extraordinary conditions which conceivably may arise.

It will be noted that the receptacle element of the switch is so formed that for most simple connections it may be reversed, the outlet end of the switch becoming the inlet end thereof, and vice versa. The terms "inlet" and "outlet" have been used throughout the specification for purposes of convenience in describing the location of the various switch parts. These terms are to

be read in the light of the showing of the drawings, and are not to be considered terms of limitation as defining a fixed relationship of switch parts in the switch proper peculiarly for either inlet or outlet connection. It is also to be understood that my safety switch, and all the various modifications illustrated, may be used as an unfused switch by interconnecting the blade contacts on opposite sides of the cover by simple conductors rather than by fuses. In such case, also, suitable fuses may be mounted, and electrically connected in the receptacle rather than on the cover to be made a part of through circuits by the cooperation of the cover-carried contacts.

It has been noted in an early portion of the specification that a multiple switch assembly may be made up by integrating together unitary receptacles, such as the receptacles shown in Figs. VIII and XI, instead of forming an integral multiswitch receptacle. The description of the fundamental structure, and modifications, hereinabove contained, renders clear how this may readily be done.

Throughout the drawings the structural parts have been shown of a wall thickness appropriate to the use of porcelain as the material out of which the primary elements are made. It will be understood that, if these parts are made of some suitable hot molded insulation, such as the molding resin compositions, the thickness of the bases and walls can be substantially reduced, thus further reducing the compactness of structure obtained in principle by the shape and arrangement of the parts.

It will readily be understood that such various modifications in and adaptations of my switch do not affect the novel and advantageous features which I have succeeded in incorporating in a switch of the sort involved, and which have with particularity been described and explained above.

I claim as my invention:

1. In a safety switch assembly the combination of a hollow insulating receptacle, contacts mounted in the receptacle and spaced longitudinally of the receptacle in cooperative pairs, an insulating cover for the receptacle having on its under face contacts electrically interconnected longitudinally of the cover in pairs each of which in closed position of the cover electrically interconnects a longitudinally spaced pair of contacts in the receptacle, said cover being arranged in closed position to overlie substantially the entire cavity of the receptacle, and trunnions intermediate the length both of the cover and the receptacle and arranged for turning movement of the cover about a fixed axis whereby when swung to open position exposing the contacts on the under face of the cover regions of the cover lying adjacent the turning axis to both sides thereof partially overlie the interior of the receptacle to shield contacts at one end of the receptacle.

2. In a safety switch assembly the combination of a hollow insulating receptacle having a central barrier extending longitudinally thereof, contacts mounted in the receptacle and spaced longitudinally of the receptacle in cooperative pairs, contacts of opposite polarity being separated by the said barrier, an insulating cover for the receptacle having on its under face contacts electrically interconnected longitudinally of the cover in pairs each of which in closed position of the cover electrically interconnects a spaced pair of contacts in the receptacle, means articu-

lating the cover to the receptacle to turn about an axis intermediate the length of the cover thereby to overlie a region of the receptacle in open position of the cover, a recess in the barrier of the receptacle having an edge formed on an arc centered in the axis of the cover, and a depending wall on the cover having an edge also formed on an arc centered in the axis of the cover, said wall and recess cooperating to permit swinging movement of the cover to fully open position and cooperating to form in closed position of the cover a complete barrier from end to end of the receptacle.

3. In a safety switch assembly the combination of a hollow insulating receptacle having mounted therein cooperative contacts spaced from each other longitudinally of the receptacle, an insulating cover for the receptacle having on the under face thereof contacts electrically interconnected longitudinally of the cover and positioned on the cover in closed position thereof electrically to interconnect the longitudinally spaced contacts in the receptacle, an insulating block arranged to carry inlet connection to at least one contact at the inlet end of the receptacle, and at least one separately formed insulating block adapted for integration with the switch receptacle at the outlet end thereof and adapted to carry both outlet connections to at least one contact at the outlet end of the receptacle and to carry a fuse socket for the fusing of a circuit led off from said outlet connection, and at least one separately formed insulating block adapted for integration in the assembly by attachment to the block carrying the fuse socket and arranged to house a fuse socket carried by said first-named block.

4. In a switch assembly the combination of a switch receptacle having an outlet conductor projected therefrom, a separately formed insulating block adapted to receive said conductor in a region below the upper surface of the block, a fuse socket mounted on said insulating block and having a contact structure projected through the said block and connected with the conductor housed therein, said fuse socket having fixed therein means screening the said contact structure from above, and a separately formed insulating block arranged to receive and house said fuse socket and adapted for integrating attachment to the insulating block carrying the fuse socket.

5. In a safety switch assembly the combination of a hollow insulating contact-containing receptacle, and an insulating contact-carrying cover, said cover being arranged in closed position to overlie substantially the entire cavity of the receptacle, and trunnions intermediate the length both of the cover and the receptacle and arranged for turning movement of the cover about a fixed axis, whereby in its open position the cover partially overlies the cavity of the receptacle.

6. In a safety switch assembly the combination of an insulating contact-containing receptacle, and an insulating contact-carrying cover articulated to turn about an axis intermediate the ends of the cover thereby partially to overlie the receptacle in open position of the cover, with an insulating block arranged to carry inlet connection

to at least one contact at the inlet end of the receptacle, and at least one separately formed insulating block adapted for integration with the switch receptacle at the outlet end thereof and adapted to carry outlet connection to at least one contact at the outlet end of the receptacle and also to carry a fuse socket for the fusing of a circuit led off from said outlet connection, and at least one separately formed insulating block adapted for integration in the assembly by attachment to the block carrying the fuse socket and arranged to house a fuse socket carried by said first-named block.

7. In a safety switch assembly the combination of an insulating contact-containing receptacle, and an insulating contact-carrying cover articulated to turn about an axis intermediate the ends of the cover thereby partially to overlie the receptacle in open position of the cover, an outlet conductor projected from the said contact-containing receptacle, a separately formed insulating block adapted to receive said conductor in a region below the upper surface of the block, a fuse socket mounted on said insulating block and having a contact structure projected through the said block and connected with the conductor housed therein, said fuse socket having fixed therein means screening the said contact structure from above, and a separately formed insulating block arranged to receive and house said fuse socket and adapted for integrating attachment to the insulating block carrying the fuse socket.

8. In a fused safety switch assembly the combination of an insulating contact-containing receptacle, an insulating cover carrying fuse-interconnected contacts cooperative with the contacts of the receptacle electrically to interconnect the receptacle-contained contacts through the cover-carried fuse in closed position of the cover, and means articulating the cover to the receptacle to turn about the axis intermediate the ends of the cover thereby in open position of the cover partially to overlie the receptacle, with at least one separately formed insulating block adapted for integration with the said contact-containing receptacle at the outlet end thereof and adapted to carry outlet connection to at least one contact at the outlet end of the receptacle and also to carry a fuse socket for the fusing of a circuit led off from said outlet connection, and at least one separately formed insulating block adapted for integration in the assembly by attachment to the block carrying the fuse socket and arranged to house a fuse socket carried by said first-named block.

9. In a safety switch assembly the combination of an insulating contact-containing receptacle, and an insulating contact-carrying cover articulated to the receptacle to turn about an axis intermediate the ends of the cover thereby partially to overlie the receptacle in open position of the cover, with at least one separately formed insulating block adapted for integration with the said contact-containing receptacle and adapted to receive and mount electrical outlet connection to at least one contact contained in the said receptacle.

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