Oct. 28, 1941. G. F. LINCKS 2,260,751

ELECTRIC CIRCUIT INTERRUPTER

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Fig. 1.

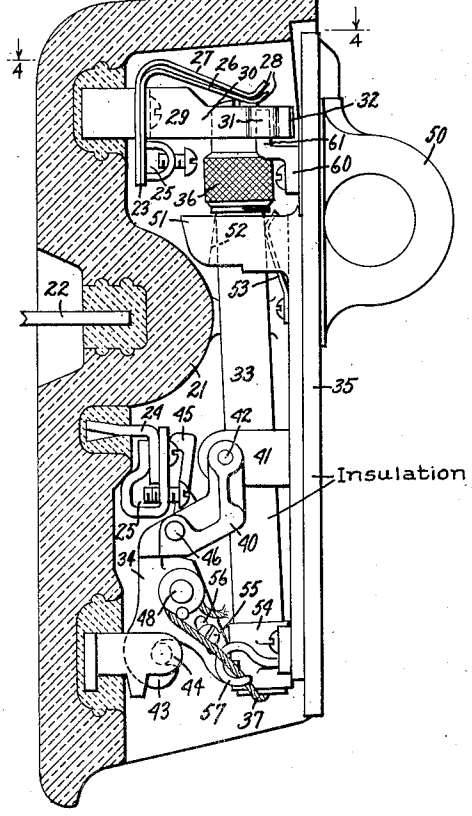



Fig. 2.

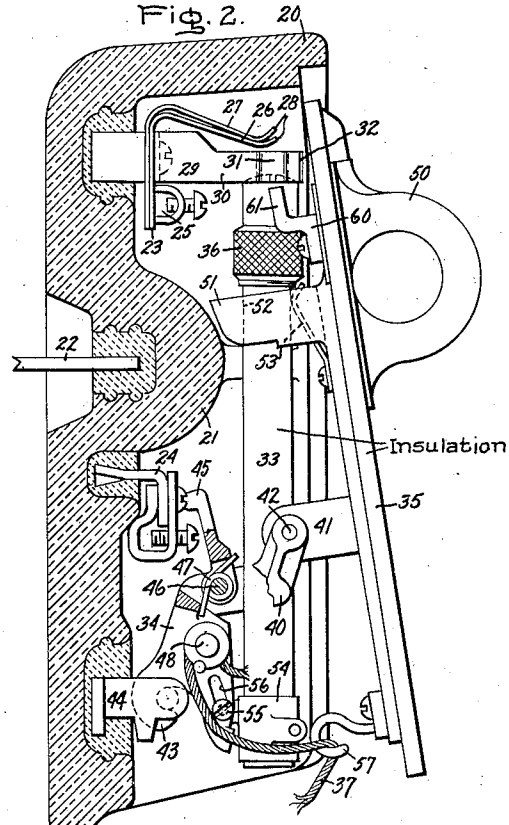



Fig. 3.

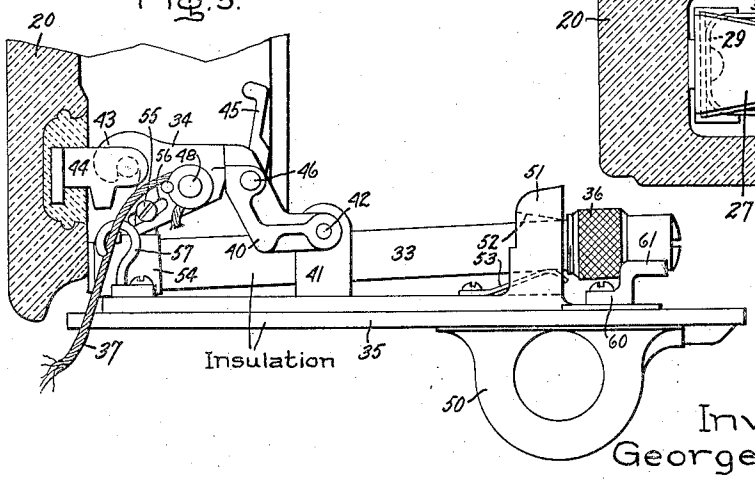
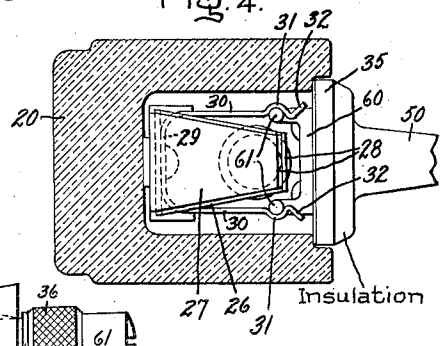



Fig. 4.




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Fig. 5.

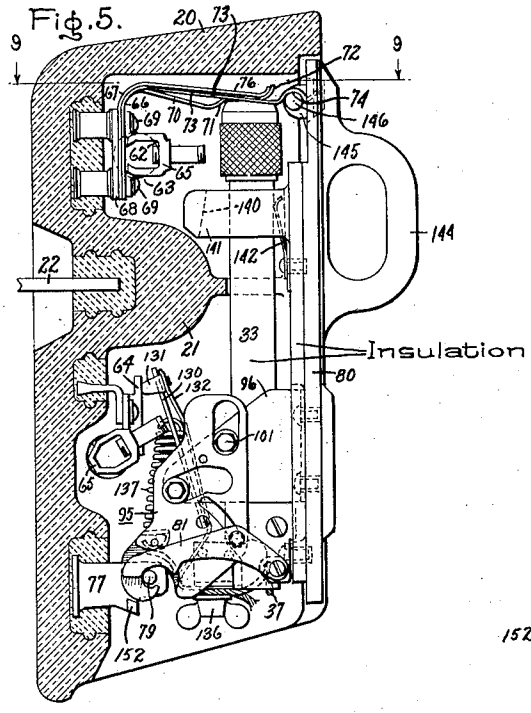



Fig. 7.

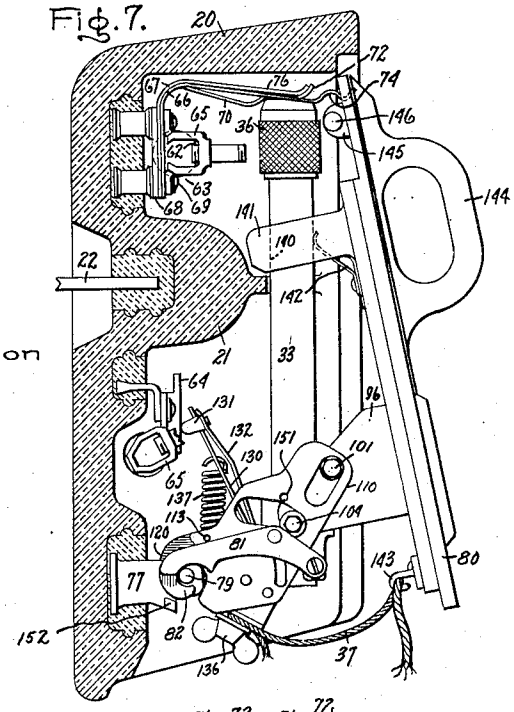


Fig. 8.

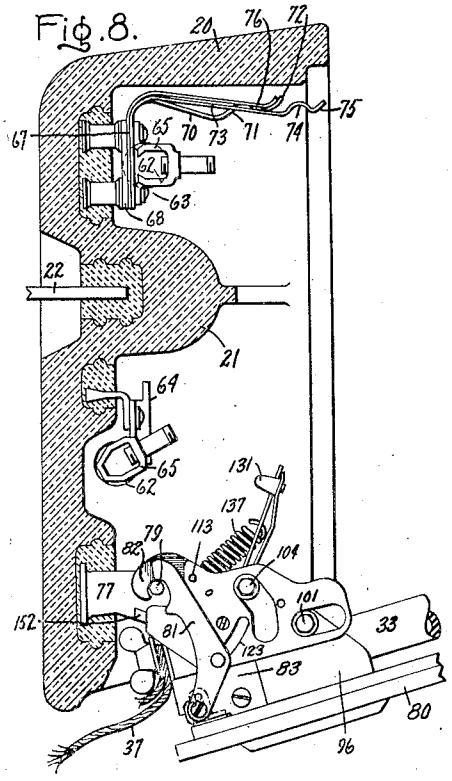
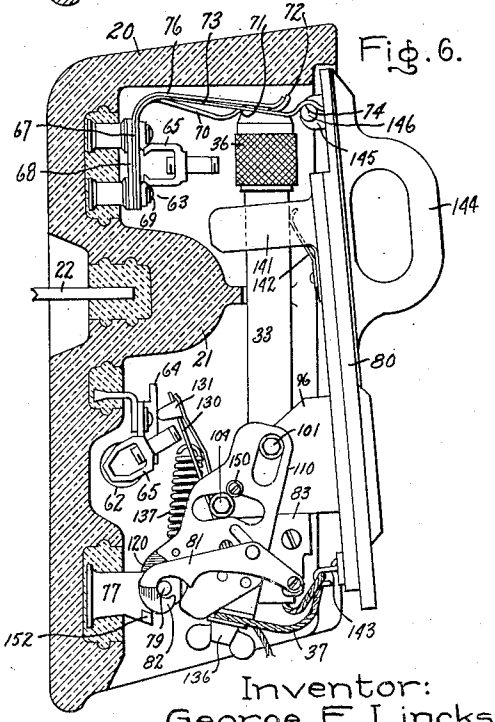


Fig. 6.



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ELECTRIC CIRCUIT INTERRUPTER

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Fig. 9.

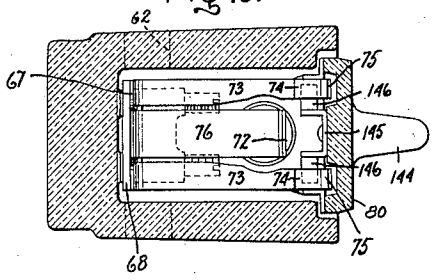



Fig. 10.

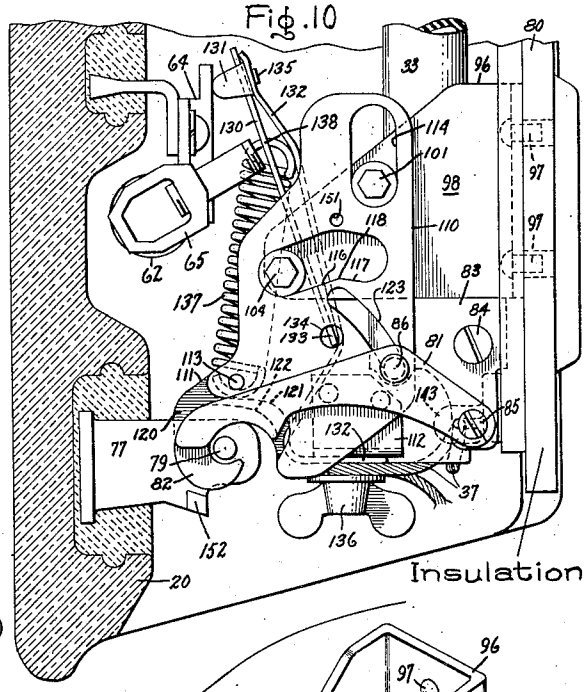



Fig. 11.

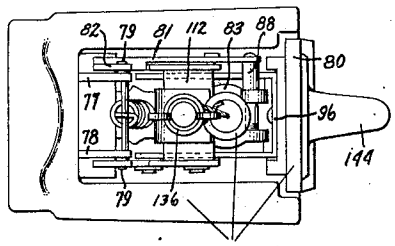
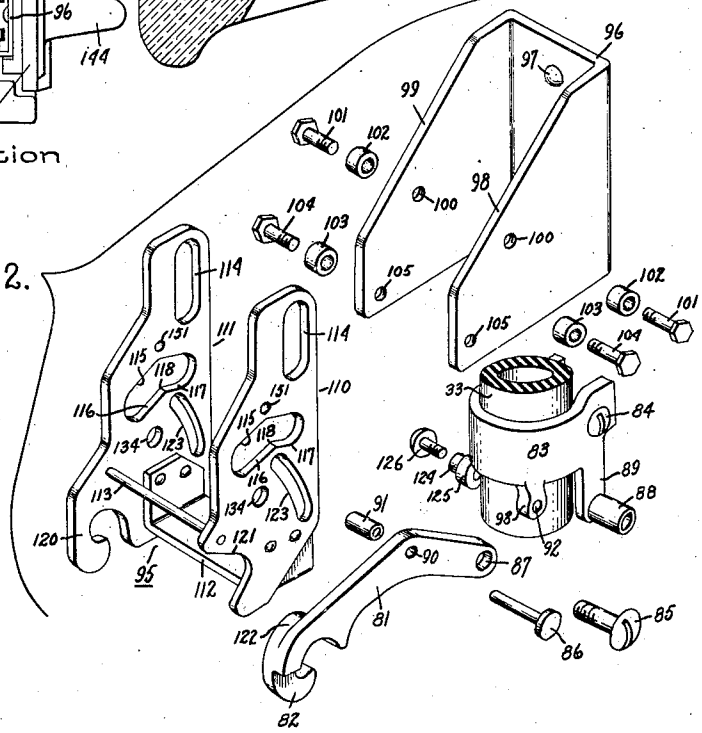



Fig. 12.




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# UNITED STATES PATENT OFFICE

2,260,751

## ELECTRIC CIRCUIT INTERRUPTER

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Application September 8, 1939, Serial No. 293,966

12 Claims. (Cl. 200—114)

The present invention relates to electric circuit interrupters, and more particularly to circuit interrupters such as, for example, drop-out fuse cutouts, which incorporate a movably mounted switching assembly including an insulating holder for supporting an automatically operable circuit interrupting means, together with mechanism capable of functioning automatically upon operation of the circuit interrupting means to effect movement of an element or elements of the switching assembly from an operative position to a dropped-out position or other position giving indication of circuit interruption.

The invention has for one of its objects the provision, in a circuit interrupter such as referred to above, of improved construction and arrangement of supporting and latching mechanism whereby release of the switching assembly from an operative position upon operation of the circuit interrupting means is effected without the necessity for movement of the insulating holder of the switching assembly.

Another object is the provision, in a drop-out circuit interrupter of the enclosed type, of improved mechanism whereby release of the switching assembly from operative position upon operation of the circuit interrupting means is effected in response to movement of a cover or door of the casing of the circuit interrupter, and independently of movement of the insulating holder which forms part of the switching assembly and serves to support the circuit interrupting means.

The invention has also, for one of its objects, the provision of improved mechanism for carrying out features of the invention disclosed and more broadly claimed in my earlier application Serial No. 248,035, filed December 28, 1938 now Patent No. 2,197,646, and assigned to the same assignee as the present invention.

Other objects and the details of that which I believe to be novel and my present invention will become apparent from the following description and the claims appended thereto, taken in conjunction with the accompanying drawing wherein are illustrated two exemplary embodiments of the invention as incorporated in drop-out fuse cutouts of the enclosed type.

In the drawings, Fig. 1 is a side elevation, partially in section, of one of the exemplary embodiments, with the parts of the cutout in normal operative positions; Fig. 2 is a side elevation, partially in section, showing an intermediate stage in the operation of the cutout of Fig. 1; Fig. 3 is a partial sectional elevation of the cutout of Fig. 1, showing certain of the parts in dropped-out position; Fig. 4 is a sectional plan view taken along the line 4—4 of Fig. 1; Fig. 5 is a side elevation, partially in section, of a fuse cutout incorporating a second exemplary embodiment of the invention, with the parts thereof in normal operative positions; Figs. 6, 7, and 8 are side elevations, partially in section, showing the positions of certain of the parts of the cutout of Fig. 5 in three successive stages of operation following fuse operation; Fig. 9 is a sectional plan view taken along the line 9—9 of Fig. 5; Fig. 10 is an enlargement of the showing of the bottom portion of Fig. 5; Fig. 11 is a view looking up at the bottom of the cutout of Fig. 5, and Fig. 12 is an exploded perspective showing details of certain of the parts shown in Fig. 10.

Referring particularly to the embodiment illustrated in Figs. 1–4, 20 designates an electric cutout casing which is constructed of porcelain, glass, or other suitable insulating material, and which has an integrally formed electric creepage and gas barrier 21 on the inner rear wall thereof. On the back of the casing is a mounting bar 22 for attachment to an electric line pole and cross-arm structure or other suitable support. Terminal contacts 23 and 24 are attached on the inner rear wall of the casing respectively above and below barrier 21 and are provided with suitable sockets and clamping screws, indicated at 25, for attachment of line conductors or leads thereto. Upper contact 23 has a forwardly extending resilient contact finger 26, backed by a spring strip 27, which is arranged to engage a terminal cap on the top of a fuse holder. The forward free ends of finger 26 and strip 27 are curved upwardly as indicated at 28 to facilitate engagement of a fuse holder cap therewith. A U-shaped latching element 29 also is secured to contact 23 in such manner that the resilient arms 30 of the element extend forwardly in substantially parallel and horizontally spaced relationship. The outer ends of arms 30 have inwardly facing detent seats 31 and outwardly flared guide portions 32, as will be seen best in Fig. 4.

Pivotally supported within casing 20 is a switching assembly which comprises in the main an elongated tubular holder 33, a hinge element 34, and a cover or door 35 for the open front of the casing. The holder 33, which is constructed of fibrous or other suitable insulating material, is open at the lower end for expulsion of

gases therefrom and is closed at the upper end by a removable contact cap 36. This holder serves to accommodate in a well known manner a circuit interrupting element in the form of a fuse link, the upper end of which link is electrically connected with cap 36, and the lower end or cable extension 37 of which link extends out of the lower end of the holder.

The upper end of hinge element 34 has two spaced arms 40 which are pivotally joined respectively to projections 41, on the inner side of cover 35, by means of pivot pins 42. Projections 41, one of which may be seen on the drawings, are formed integrally with cover 35 and are disposed in horizontally spaced relation so as loosely to receive holder 33 therebetween. The lower end of hinge element 34 has a hook 43 engageable with a hinge bracket 44 on the casing for hingedly supporting the switching assembly. A contact finger 45 is pivotally mounted on a pin 46 extending between arms 40 of the hinge element. This contact finger is biased by means of a coil spring 47 for rotation in a counterclockwise direction, as viewed in the drawings, to effect pressure engagement of the contact finger with lower stationary contact 24. Hinge element 34 also has suitable fuse link clamping means, indicated at 48.

Cover 35 is constructed of insulation, and has on the outer side thereof an eyelet handle 50. On the inner side of the cover is a projection 51 having a tapered slot 52 for loosely receiving and supporting the upper end of holder 33. A spring finger 53, mounted on the inner side of the door, presses the holder firmly against the left-hand side of the slot 52, as viewed in the drawings. A collar 54 is fixedly secured on the lower end of the holder, and this collar has a bearing screw 55 which relatively loosely engages a slot 56 in the lower end of hinge element 34 for pivotally supporting the holder. Normally the lower end of the cover, the lower end of the holder, and the hinge element are releasably secured in substantially rigid relationship by means of fuse link extension 37 which is looped through a hook 57, on the lower inner face of the cover, and is secured to the hinge element by clamping means 48. Thus there is provided a relatively rigid switching assembly which, by means of handle 50, may be swung about hinge bracket 44 into and out of an operative position relative to stationary contacts 23 and 24.

For releasably latching the upper end of the switching assembly in operative position, a latch element 60 is secured on the inner side of the cover adjacent the upper end thereof. This latch element has horizontally spaced prongs 61 which upon rotation of cover 35 to closed position, engage respectively with guide portions 32 of resilient latching arms 30 and pass into latching engagement with detent seats 31. With the cover latched as shown in Figs. 1 and 4, contact finger 26 bears on the top of contact cap 36 to effect electric connection with the upper end of the fuse link in holder 33, while spring finger 53 resists loose movement of the holder. The lower end of the fuse link is electrically connected with lower stationary contact 24 through hinge element 34 and contact finger 45.

Upon release of fuse link extension 37 by rupture of the fuse link, due to overload or short-circuit, the lower end of cover 35 swings outwardly relative to holder 33 and hinge element 34, as a result of the outward pressure exerted by contact finger 45 and the weight of the elements of the switching assembly. Such relative movement between the cover and holder is made possible by the size and tapered shape of slot 52 in cover projection 51, and by the relatively loose pivotal connection of the lower end of the holder with the hinge element at a point spaced from the pivotal connection between the hinge element and cover projections 41. If desired, a stirrup (not shown) may be employed for restraining the lower end of the cover in a partially open indicating position, and without unlatching of the upper end of the cover, in the manner shown in my application previously referred to herein, and also in U. S. Patent 2,081,813, to B. R. Hermann, issued May 25, 1937, which patent also is assigned to the same assignee as the present invention. However, if such stirrup is not employed, as in the illustrated embodiment, the cover continues to move outwardly and downwardly in a manner to effect disengagement of prongs 61 from detent seats 31, as shown in Fig. 2. As soon as the upper end of the cover is released, the switching assembly swings outwardly and downwardly about hinge bracket 44 to the position shown in Fig. 3, wherein the fuse holder is completely isolated from stationary contacts 23 and 24. It is to be noted that the unlatching of the switching assembly is effected by movement of the cover and without the necessity for movement of the holder since the holder itself is not engaged by any latching means.

In the embodiment of Figs. 5–12, the insulating casing 20 has stationary terminal contacts 63 and 64 mounted on the inner rear wall thereof respectively above and below barrier 21. Each of these contacts is provided with suitable socket and clamping means indicated at 65, for attachment of line conductors or leads which may be brought into the casing through openings such as indicated at 62. Upper contact 63 includes a contact plate 66 and a backing plate 67 secured to a contact support 68 by means of screws 69. Contact plate 66 has, extending forwardly substantially from the middle of the upper edge thereof, a resilient contact finger 70. This contact finger is formed adjacent the outer end thereof to provide a downwardly facing seat 71 for engagement with the top of contact cap 36 on fuse holder 33, and the extreme outer end of the contact finger has an upwardly curved guide portion 72 to facilitate movement of the fuse holder cap into engagement with seat 71. Contact plate 66 has also two resilient latching arms 73 extending forwardly respectively on opposite sides of contact finger 70 and provided adjacent their outer ends with downwardly facing detent seats 74 and upwardly curved guide portions 75. Backing plate 67 has a forwardly extending spring finger 76 which backs up contact finger 70.

On the inner rear wall of casing 20, and adjacent the bottom thereof, are mounted in horizontally spaced relation two hinge brackets 77 and 78 provided respectively with hinge pins 79. These brackets are arranged pivotally to support a switching assembly which includes the fuse holder 33, a cover 80 for the open front of the casing, and hinge mechanism now to be described.

For supporting fuse holder 33, there is provided a hinge arm 81, one end of which has an offset hook portion 82 engageable with the hinge pin 79 of hinge bracket 77, which is the hinge bracket on the near side of casing 20, as viewed in Figs. 5–8 and 10. The other end of arm 81

is fixedly attached to a collar 83 which is fixedly clamped on the lower end of holder 33 by means of a bolt or other suitable means, indicated at 84. Attachment of arm 81 to collar 83 is effected by means of a screw 85 and a drive stud 86. Screw 85 passes through an opening 87 in arm 81 and into screw-threaded engagement with a hollow boss 88 supported on a lug 89 depending from collar 83. Drive stud 86 passes through opening 90 in arm 81 and through a spacing sleeve 91 into a socket 92 in a lug 93 depending from collar 83.

Cover 80 is constructed of insulation and is supported by toggle mechanism which in general is of the improved form disclosed in U. S. Patent #2,081,814 to B. R. Hermann, issued May 25, 1937, and assigned to the same assignee as the present invention. This toggle mechanism includes a toggle lever, generally designated 95 on the drawings, and a U-shaped bracket 96 which is fixedly attached to the inner face of cover 80 by means of screws, rivets, or the like, indicated at 97. The plates 98 and 99, forming the legs of bracket 96, extend inwardly from the cover in horizontally spaced relationship so as loosely to accommodate holder 33 therebetween. Formed respectively in plates 98 and 99 are two alined openings 100 in which are mounted screws 101 which serve rotatably to support rollers 102 located respectively on the outer sides of plates 98 and 99. A second pair of rollers 103, located respectively on the outer sides of plates 98 and 99, are rotatably supported on screws 104 mounted in alined openings 105 respectively in plates 98 and 99.

Toggle lever 95 comprises in the main two plates 110 and 111 which are rigidly braced in parallel horizontally spaced relationship by means of a stirrup 112 and a rod 113, and which plates are arranged to receive bracket 96 therebetween. The upper parts of plates 110 and 111 are provided respectively with vertically extending alined slots 114 for receiving rollers 102 on bracket 96. Two alined slots 115 are provided respectively in plates 110 and 111, approximately at the middle of these plates, for receiving the rollers 103 on bracket 96. Each of the slots 115 is formed to provided two guide sections, the first of which, designated 116, has a lower edge which slants upwardly and outwardly as viewed when toggle lever 95 is in its vertical position shown in Figs. 5 and 10, and the second of which sections, designated 117, extends slightly downwardly at an angle to the section 116. A relatively abrupt peak 118 divides the bottom wall of section 116 from the bottom wall of section 117. The engagement of rollers 102 and 103 with slots 114 and 115 respectively provides a pivotal connection between lever 95 and the bracket 96 on cover 80.

Lever 95 is designed hingedly to support cover 80 independently of and movably relative to holder 33. To this end, plate 111 of the lever has a hook-shaped portion 120 engageable with the hinge pin 79 of hinge bracket 78, which latter hinge bracket is on the far side of casing 20, as viewed in Figs. 5–8 and 10. Plate 110 of the hinge lever does not have a corresponding hook portion for engagement with hinge bracket 77, but is cut away, as indicated at 121, so as to accommodate the inwardly offset portion 122 of hinge arm 81, as will be best seen in Fig. 10. In order to improve the stability of the supporting mechanism and prevent undesired movement between the parts thereof, two curved slots 123 are provided respectively in plates 110 and 111 of toggle lever 95 and in alinement with each other. The slot 123 in plate 110 accommodates the spacing sleeve 91 on drive stud 86, while the slot 123 in plate 111 accommodates a cylindrical boss 124 which is supported on a lug 125 depending from collar 83 in horizontal alinement with the previously referred to lug 93. A screw 126 serves to prevent disengagement of boss 124 from the slot 123 in plate 111. Thus cover 80 and its supporting toggle lever 95 are afforded support on hinge bracket 77 as well as on hinge bracket 78, while fuse holder 33 with its supporting arm 81 are afforded support on hinge bracket 78 as well as on hinge bracket 77. The slidable connection, afforded by slots 123 as described above, between toggle lever 95 on the one hand and collar 83 and arm 81 on the other hand, prevents undesirable loose movement of the toggle lever, bracket 96, and fuse holder 33 relative to each other in horizontal planes, while providing for movement of the cover and toggle lever relative to the fuse holder and its supporting arm 81 during the unlatching operation more fully described hereinafter.

Toggle lever 95 is provided with a contact finger for making contact with lower stationary contact 64. This contact finger comprises a supporting plate 130, a contact nose piece 131, and a flexible connection strip 132 of good conductivity. Plate 130 has trunnions 133 which engage openings 134 respectively in plates 110 and 111 for pivotally supporting the contact finger. Nose piece 131 and the upper end of flexible strip 132 are secured to the upper end of plate 130 by rivets or other suitable means, as indicated at 135. The lower end of strip 132 extends below plate 130 and is attached to the bottom of stirrup 112 so as to provide a fuse link terminal, which terminal includes a wing nut 136 for clamping the end of fuse link extension 37 thereto. A tension spring 137, connected at the upper end to plate 130, as indicated at 138, and connected at the lower end to crossbar 113, is provided for biasing the nose piece 131 of the contact finger into engagement with stationary contact 64.

The upper end of fuse holder 33 extends through a tapered slot 140 in a projection 141 formed integrally with, and on the inner side of, cover 80, and a spring finger 142 on the cover tends to bias the holder toward the left, as viewed in the drawings, into engagement with the tapered left-hand side of slot 140. Normally, the lower end of cover 80 and its supporting toggle lever 95 are secured in substantially rigid relation to the lower end of holder 33, and in the relative positions shown on Figs. 5 and 10, by means of fuse link extension 37 which is passed through a hook 143 on the lower inner face of the cover and clamped to stirrup 112 of the toggle lever by wing-nut 136. With the cover, toggle lever, and holder so secured, hook 82 of holder supporting hinge arm 81 and hook 120 of toggle lever plate 111 may be engaged with hinge brackets 77 and 78 respectively, whereupon the switching assembly may be swung, by means of door handle 144, and about the hinge brackets, into and out of the operative position shown in Fig. 5. On the upper inner face of the cover is mounted a latch element 145 having two prongs 146 which extend horizontally in opposite directions and are engageable respectively with the detent seats 74 of latch arm 73 on the casing for releasably holding the switching assembly in operative position.

When the switching assembly is in operative position, spring finger 142 maintains fuse holder contact cap 36 in firm engagement with the shoulder at the rear of contact seat 71 in stationary contact finger 70, while the seat portion 71 of the stationary contact finger presses on the top of cap 36 to effect good electric connection with the upper end of the fuse link in holder 33. Connection of the lower end of the fuse link is effected through flexible connector strip 132 and nose piece 131, which last is held in firm engagement with lower stationary contact 64 by means of spring 137. The pressure of the contact finger, including nose piece 131, against contact 64, tends to effect rotation of the switching assembly to open position, but such action is prevented by the previously described latch mechanism at the upper end of the switching assembly.

Upon rupture of the fuse link in holder 33, due to overload or short-circuit, toggle lever 95 is released by the fuse link cable extension 37, and swings outwardly due to the action of spring 137 and contact finger 130, with resultant outward swinging of the lower end of cover 80. Were it not for the form of slots 115 in the toggle lever and the engagement of rollers 103 therewith, the lower end of the cover would pivot about the roller 102 in slots 114 of the toggle lever and the cover would at the same time move bodily downward under the combined action of gravity and the force of the outwardly and downwardly swinging toggle arm. However, the form of sections 116 of slots 115 acts to compensate for the tendency of the toggle lever to move the cover bodily downwardly and actually prevents such bodily downward movement during the initial stages of movement of the cover, so that latch element 145 does not become disengaged from latching fingers 73. In effect, the slot sections 116 serve as guideways to limit initial movement of the cover substantially to a counterclockwise pivoting of the lower end of the cover about its upper end. During this initial pivoting of the cover, toggle lever 95 swings relative to holder supporting arm 81, as peviously explained, and the fuse holder itself does not move since spring finger 142 maintains the upper end of the holder in engagement with contact finger 70 as long as latch prongs 146 on the cover remain in engagement with detent seats 74. The outward swinging of the lower end of the cover relative to the lower end of the fuse holder effects a relatively rapid retraction of fuse link extension 37 from the fuse holder so as to draw out the arc within the fuse holder and thereby aid in circuit interruption. This initial action has the advantage that it provides a time delay and insures circuit interruption within the fuse holder before disengagement of contact cap 36 from upper stationary contact finger 70. As a result of this, no arcing occurs at either the upper or the lower terminals, even though the switching assembly subsequently moves to a dropped-out position.

More specifically, during the initial stages of the releasing action, rollers 103 ride upwardly in the left-hand sections 116 of slots 115, while upward movement of rollers 102 in slots 114 provides for the necessary lost motion. If it is desired to have only an indication of fuse operation, without complete drop-out of the switching assembly, stops 150 may be placed in openings 151 in plates 110 and 111 of toggle lever 95, so as to prevent roller 103 from riding over humps 118 in slots 115, all as fully described in the previously referred to Patent 2,081,814 of B. R. Hermann. If this expedient is employed, the releasing action will cease when rollers 103 engage stops 150 and the parts of the switching assembly will remain in their positions shown in Fig. 6, wherein it will be seen that the upper end of cover 80 remains latched, while the lower end of the cover extends outwardly in a partially open position to give the desired indication while still protecting the internal parts of the cutout from adverse weather conditions.

If stops 150 or the like are not employed, rollers 103 continue to move outwardly in slots 115 until they pass over humps 118. When rollers 103 enter slot sections 117, cover 80 no longer is held in its raised position and is free to move so as to effect release of latch prongs 146 from engagement with detent seats 74 of stationary latch fingers 73, as shown in Fig. 7. When the upper end of the cover becomes unlatched the upper end of the fuse holder no longer is restrained in operative position and the whole switching assembly swings in a clockwise direction about hinge brackets 77 and 78 to an approximately horizontal dropped-out position, partially shown in Fig. 8, wherein the switching assembly is stopped by engagement of plates 110 and 111 of the toggle lever with projections 152 on the hinge brackets.

In connection with the last described embodiment, as with the first embodiment, it is to be noted that unlatching of the switching assembly for movement to dropped-out position is effected by movement of the cover and without the necessity for movement of the fuse holder since the holder itself is not engaged by any latching means, but is held in operative position only by reason of the latching of the cover.

It will be evident to one skilled in the art that the present invention is not limited strictly to the details of the constructions herein described and illustrated, and that modifications of the supporting mechanism, latching mechanism, and other parts may be made in carrying out the invention, hence it is intended that such modifications as do not depart from the true spirit of the invention shall come within the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a circuit interrupter including an insulating support having spaced contacts thereon; a switching assembly movably mounted on said support and comprising an insulating holder having automatically operable circuit interrupting means, an auxiliary member distinct from said holder, means movably supporting said holder and said member and providing for relative movement between said member and holder, said supporting means including a hinge element hinged on said support and pivotally joined to said member, said hinge element and said member being releasably secured in substantially rigid relationsihp by means releasable in response to operation of said circuit interrupting means, said hinge element being movable relative to said holder and said member upon release of said securing means, an element on said member engageable with a cooperative element on said support releasably to latch said assembly with said holder in an operative position, and means including said hinge element operative upon release of said securing means to effect movement of said member relative to said holder and hinge element.

2. In a circuit interrupter including an insu-

lating support having spaced contacts thereon; a switching assembly comprising an insulating holder having automatically operable circuit interrupting means, an auxiliary member distinct from and extending in substantially parallel juxtaposition with said holder, means pivotally supporting the assembly on said support and providing for relative movement between said member and holder, said supporting means including a toggle lever hinged on said support and pivotally joined with said member, said lever and said member being releasably secured in substantially rigid relationship by means releasable in response to operation of said circuit interrupting means, means on said member engageable with cooperating means on said support releasably to latch said member in a predetermined position relative to said support, said member secured and latched as aforesaid being operative to maintain said holder in an operative position, and means including said toggle lever operative upon release of said securing means to effect movement of said member relative to said holder and in a manner to cause disengagement of said latching means, thereby to free said holder for movement of the holder to a dropped-out position.

3. In a circuit interrupter including an insulating support having spaced contacts thereon; a switching assembly comprising an elongated tubular insulating holder having a fuse link therein, spaced contacts cooperative respectively with said first contacts, an auxiliary member distinct from and extending in substantially parallel juxtaposition with said holder, means pivotally supporting said assembly on said support and providing for relative movement between said member and holder, said supporting means including a toggle lever hinged on said support and pivotally joined to said member, said fuse link being mechanically connected so as releasably to secure said member in substantially rigid relation to said lever, latch means on said member engageable with detent means on said support releasably to latch said member in a predetermined position relative to the support, said member secured and latched as aforesaid being operative to restrain said holder in an operative position, and means including said lever operative upon rupture of said fuse link to effect movement of said member relative to said holder and said support.

4. In a circuit interrupter, the combination of an insulating support, spaced contacts thereon, an insulating holder having automatically operable circuit interrupting means, an auxiliary member distinct from said holder, a hinge element hinged on said support and movably supporting said holder and said member, said hinge element being pivotally joined to said holder and to said member respectively at two different points to provide for relative movement between said holder and said member, means releasably securing said member against movement relative to said hinge element and being releasable in response to operation of said circuit interrupting means, and means on said member cooperative with means on said support releasably to latch said member in a predetermined position relative to said support, said member secured and latched as aforesaid being operative to restrain said holder in an operative position for connection of said circuit interrupting means between said contacts.

5. In a circuit interrupter, the combination of an insulating support, spaced contacts thereon, an insulating holder having automatically operable circuit interrupting means, an auxiliary member distinct from said holder, two distinct hinge elements hinged on said support and movably supporting said holder and said member, one of said hinge elements being pivotally joined to said member, the other of the hinge elements being fixedly joined to said holder, means releasably securing said one hinge element and said member in substantially rigid relationship and being releasable responsively to operation of said circuit interrupting means, and means on said member cooperative with means on said support releasably to latch said member in a predetermined position relative to said support, said member secured and latched as aforesaid being operative to restrain said holder in an operative position for connection of said circuit interrupting means between said contacts.

6. In a circuit interrupter, the combination of a casing having spaced contacts therein; a switching assembly including a cover for the casing and an insulating holder having automatically operable circuit interrupting means, together with means movably supporting said cover and holder on said casing and providing for relative movement between the cover and holder, said supporting means including a hinge element hinged on the casing and pivotally joined with the cover, said hinge element and cover being releasably secured in substantially rigid relationship by means releasable in response to operation of said circuit interrupting means; means operative, dependently upon said hinge element and cover being secured as aforesaid, releasably to latch said assembly so as to maintain said holder in an operative position; and means including said hinge element operative upon release of said securing means to effect movement of said cover relative to said casing and holder.

7. In combination, a casing, spaced contacts therein, a cover for the casing, a fuse holder, a hinge element hinged on the casing and pivotally joined with said cover for movably supporting the cover, means for movably supporting said holder in said casing, said hinge element and holder supporting means providing for relative movement between said cover and holder, means provided for mechanically securing a fuse link carried by said holder in a manner releasably to hold said cover in substantially rigid relationship to said hinge element and holder, means on the cover engageable with means on said casing for releasably latching the cover in a predetermined position relative to the casing, means including the cover operative when the cover is secured and latched as aforesaid to restrain said holder in an operative position, and means including said hinge element operative to effect movement of the cover relative to said holder and casing upon rupture of a fuse link carried by the holder.

8. In a circuit interrupter, the combination of a casing, spaced contacts therein, a cover for the casing, an insulating holder having automatically operable circuit interrupting means, means movable supporting said cover and holder and providing for relative movement between the cover and holder, said supporting means including a hinge element hinged on said casing and pivotally connected with said cover, means for releasably securing the cover and hinge element in substantially rigid relationship and operative to re-

lease the cover upon operation of said circuit interrupting means, means on the cover engageable with means on said casing to latch the cover, the cover secured and latched as aforesaid being operative to restrain said holder in an operative position, and means including said hinge element, operative upon release of the cover by said securing means, for effecting movement of the cover in a manner to release said latching means and for effecting movement of said holder to a position electrically isolated from at least one of said contacts.

9. In a circuit interrupter, the combination of a casing having spaced contacts therein; a switching assembly including a cover for the casing and an insulating holder having automatically operable circuit interrupting means, together with means for movably supporting said cover and holder including a hinge element hingedly mounted on said casing, said hinge element being pivotally joined with said cover and holder respectively at two different points so as to provide for relative movement between the cover and holder, said hinge element and cover being releasably secured in substantially rigid relationship by means releasable in response to operation of said circuit interrupting means; and means operative, dependently upon said hinge element and cover being secured as aforesaid, for releasably latching said assembly in an operative position wherein said circuit interrupting means is connected between said contacts.

10. In a unitary switching device for removable installation in an electric cutout or like casing, the combination of a fuse holder having spaced terminals for cooperation with spaced terminals of an electric cutout or like casing, a cover for an open side of such casing, a hinge element having means for hinged mounting on such casing to support said cover and holder, said hinge element being pivotally joined to the cover and to the holder respectively at two different points so as to provide for relative movement between the cover and holder, means provided for releasably securing the cover relative to said hinge element and arranged for release of the cover in response to operation of a fuse link carried by the holder, and means on the cover arranged for latching engagement with cooperative means on an electric cutout or like casing so as to restrain said holder in an operative position in such casing.

11. In a circuit interrupter, the combination of a casing having spaced contacts therein; a switching assembly including a cover for the casing and an insulating holder having automatically operable circuit interrupting means, together with two distinct hinge elements hinged on said casing for movably supporting said cover and holder and providing for relative movement between the cover and holder, one of said hinge elements being joined to the holder, the other of the hinge elements being pivotally joined to the cover and being releasably secured in substantially rigid relation to the cover by means releasable in response to operation of said circuit interrupting means; and means operative, dependently upon said other hinge element and cover being secured as aforesaid, for releasably latching said assembly so as to restrain said holder in a position for connection of said circuit interrupting means between said contacts.

12. In a unitary switching device for removable installation in an electric cutout or like casing, the combination of a fuse holder having spaced terminals for cooperation with spaced terminals of an electric cutout or like casing, a cover for an open side of such casing, two distinct hinge elements each having means for hinged mounting on an electric cutout or like casing, which said elements are movable relative to each other while one of the elements is pivotally connected to said cover and the other of the elements is fixedly joined to said holder, means provided for releasably securing said cover relative to said one hinge element and said holder and arranged for release of the cover in response to operation of a fuse link carried by the holder, and means on the cover arranged for latching engagement with cooperative means on an electric cutout or like casing to restrain said holder in an operative position in such casing.

GEORGE F. LINCKS.