April 30, 1946. V. L. MARES 2,399,495

CIRCUIT INTERRUPTER

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Fig. 1.

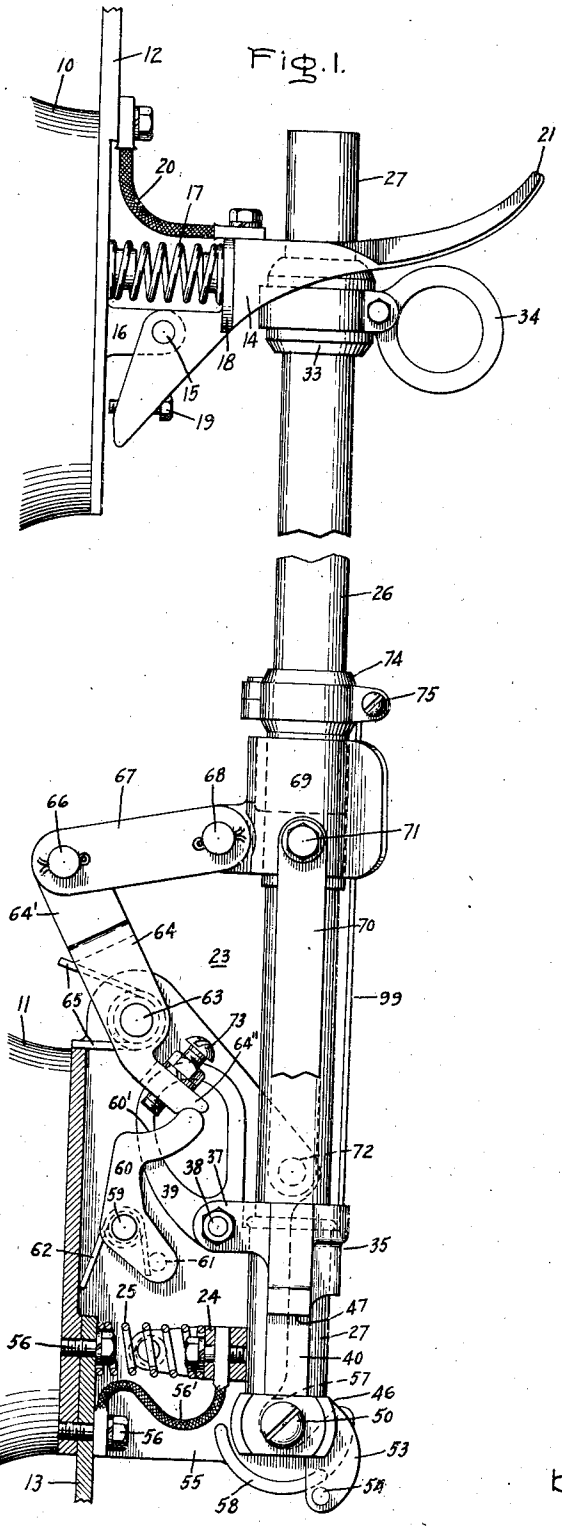


Fig. 3.

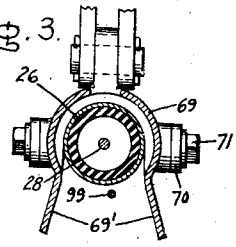
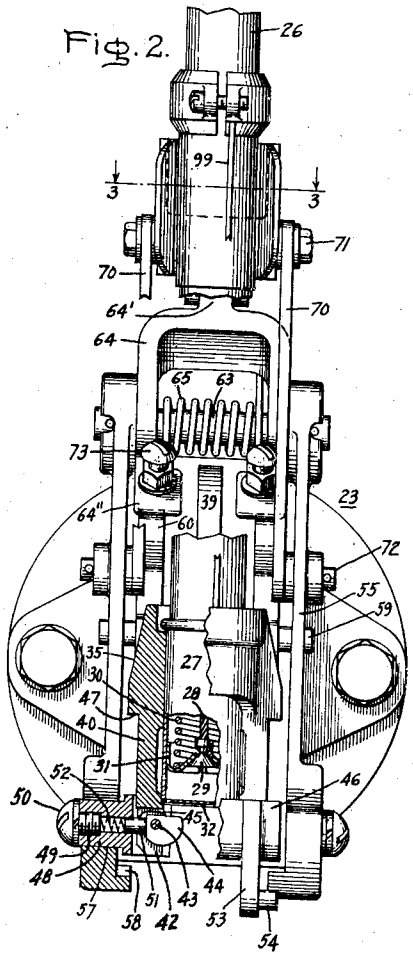


Fig. 2.



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Fig. 7.

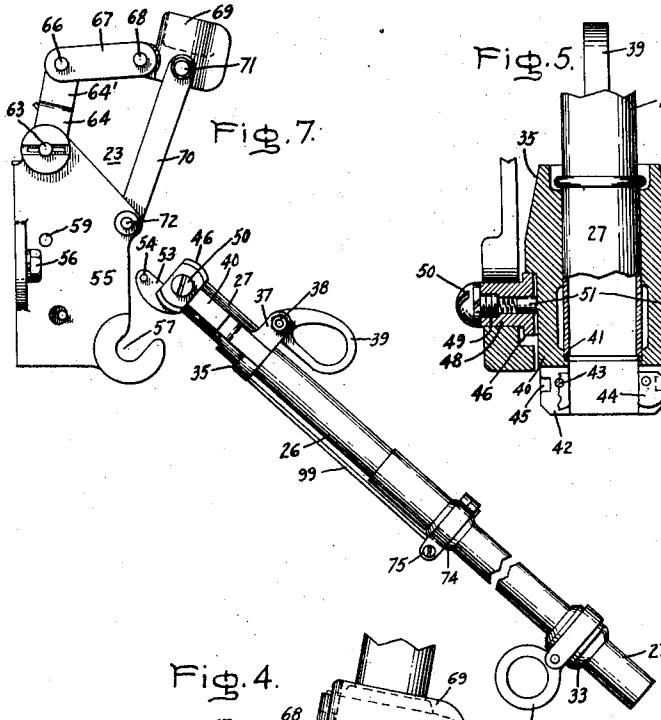


Fig. 5.

Fig. 4.

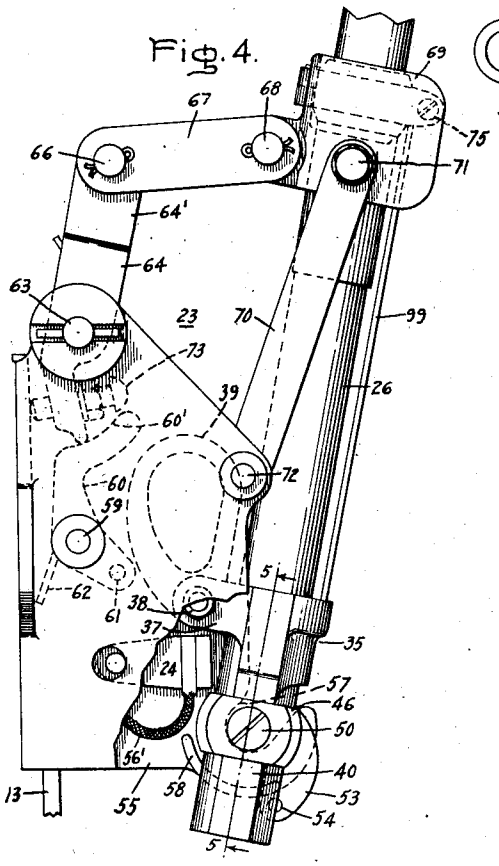
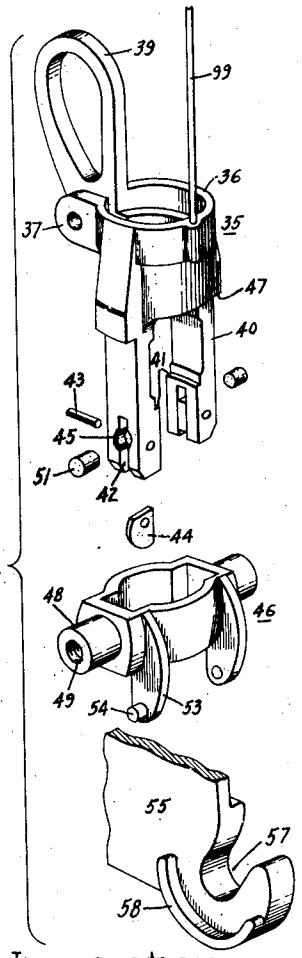


Fig. 6.



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UNITED STATES PATENT OFFICE

2,399,495

CIRCUIT INTERRUPTER

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Application March 6, 1944, Serial No. 525,175

11 Claims. (Cl. 200—114)

My invention relates to circuit interrupters of the type comprising a fuse for completing the circuit between spaced terminals with means for causing the fuse to be moved from between the terminals after operation, to prevent arcing. Specifically, my invention is an improvement on the invention disclosed and claimed in Williams Patent 2,237,801, granted April 8, 1941, and assigned to the same assignee as the present application.

Fuses for high voltage applications such as in the neighborhood of 100 kilovolts or more become very long and may be in the neighborhood of five feet or more in length. It is usually desirable for such fuses upon operation thereof to drop away from their current carrying position to introduce an isolating gap in the circuit. Owing to the great length of such high voltage fuses it has heretofore been very difficult to provide means for supporting the fuse which would not be damaged when the fuse moved to its dropped out position.

It is an object of my invention to provide a new and improved construction of circuit interrupter employing a high voltage fuse which may drop out of its current carrying position upon operation thereof without damage to its support, and which is simple and compact in structure and generally foolproof in operation.

It is another object of my invention to provide a new and improved terminal assembly for a high voltage switching means.

Further objects and advantages of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention, reference may be had to the accompanying drawings in which Fig. 1 is a side elevational view of the circuit interrupter of my invention in the closed circuit position with certain parts thereof broken away; Fig. 2 is a front elevational view of the lower portion of the circuit interrupter of Fig. 1 with parts thereof broken away; Fig. 3 is a sectional view taken on line 3—3 of Fig. 2; Fig. 4 is a side elevational view of the lower portion of the circuit interrupter with the circuit interrupter in the drop-out position; Fig. 5 is a sectional view of the lower portion of the circuit interrupter taken on line 5—5 of Fig. 4; Fig. 6 is an exploded view of certain portions of the circuit interrupter of my invention; and Fig. 7 is a side elevational view similar to Fig. 1 illustrating one step in reclosing the circuit by replacing the fuse.

Referring now to the drawings, the interrupting device comprises spaced insulators 10 and 11 on which are carried upper and lower terminal assemblies including terminals 12 and 13, respectively. Included in the upper terminal assembly is a contact 14 which is pivoted on a pin 15 carried by ears 16 projecting from the front of the terminal 12. The contact 14 is biased in a clockwise direction, as viewed in Fig. 1, by a compression spring 17 arranged between the front face of the terminal 12 and a boss 18 on the rear of the contact 14. Pivotal movement of the contact 14 is limited by an adjustable stop 19 which is threaded into the lower end of the contact 14 and engages the terminal 12 below the pivot pin 15. The contact 14 is electrically connected to the terminal 12 by a flexible conductor 20. Furthermore, upper contact 14 is provided with forked contact arms 21. The construction of the upper terminal assembly described thus far is not my invention but is disclosed in the above mentioned Williams patent.

The lower terminal assembly generally indicated at 23 will be described in greater detail hereinafter. In addition to terminal 13, it includes a contact 24 adapted to be biased into contacting engagement by spring means 25.

The circuit between the contacts 14 and 24 is completed by a high voltage expulsion fuse unit which may be of the type shown in Williams Patent 2,043,024, granted June 2, 1936, and assigned to the same assignee as the present application. This fuse unit comprises, as best shown in Figs. 1 and 2, a tubular housing 26 of insulating material having metal ferrules or contacts 27 secured at each end, between which a fusible element, not shown, is electrically connected. The lower end of the fusible element is connected to a flexible conductor 28 which terminates in a conical member 29. A spring 30 surrounding the lower end of the flexible conductor urges a split cup-shaped contact 31 against the conical member 29. Each half of the contact 31 is provided with a tapered wall of the same contour as the conical member 29. The spring 30 which forces the contact 31 downwardly therefore wedges the contact against the inside of the metal ferrule 27 and makes a good contact between the contact 31 and the metal ferrule 27. This lower contact construction is fully disclosed in the above mentioned Williams Patent 2,237,801. If desired, the contact construction of Powell Patent 2,335,083,

granted November 23, 1943, may be employed instead of the illustrated construction.

The lower end of the ferrule 27 is closed by an indicating disk 32 held in position in a manner so that it may be pushed out when the fuse element is expelled. The flexible conductor 28 and the fusible element, supplemented by a strain member, which is connected to the upper end thereof is subjected to the force of compression spring 30. When the fusible element ruptures owing to excessive current flowing therethrough, the disk 32, the contact 31 and the compression spring 30 are forced through the lower end of the ferrule 27. The force with which these parts are expelled may be increased by the gas pressure resulting from the arc which ruptures the fusible element.

A collar 33 having an operating eye 34 is clamped to the upper metal ferrule 27 on the fuse cartridge. The upper edge of the collar 33 is tapered and is adapted to fit into a complementary concave tapered surface on the under side of each contact arm 21 to complete the connection between the contact arms 21 and consequently the upper terminal 12 and the upper ferrule 27 of the fuse unit. The compression spring 17 forces the contact arm 21 against the upper edge of the collar 33. Since the complementary surfaces of the contact arms are concave the fuse unit is latched in place when the collar 33 is in the position indicated in Fig. 1. The upper end of the fuse unit extends above the contact arms and the contact arms therefore guide its movement.

Before mounting the fuse unit in the switch, a fuse fitting 35, best shown in Figs. 6 and 7, which includes a metal sleeve 36 is placed over the lower ferrule 27. The upper end of this sleeve is split and is provided with adjacent flanges 37 which are clamped together as indicated at 38 to secure the sleeve to the ferrule. Preferably one of these flanges 37 terminates in an eye 39, the purpose of which will be described hereinafter. The fuse fitting 35, as is best shown in Fig. 6, comprises two diametrically opposed, downwardly extending arms 40. The inside of each of these arms is provided with a shoulder 41 which supports the edge of the lower ferrule 27 of the fuse unit but which does not interfere with the downward movement of indicator disk 32 or contact 31. The fuse fitting 35 is placed on the lower ferrule 27 so that the lower edge of the ferrule engages the shoulders 41, as best shown in Figs. 2 and 5, whereupon the flanges 37 are clamped together to unite the fuse unit and fuse fitting to make a rigid electrical and mechanical assembly.

The lower ends of downwardly extending arms 40 are each slotted as indicated at 42. Within slots 42 are pivotally mounted by pins 43 the cams 44, the purpose of which will become apparent as the following description proceeds. The slots 42 are enlarged as indicated at 45 in Figs. 2, 5 and 6, so as to form a circular recess the purpose of which will also become apparent as the following description proceeds.

A trunnion supporting sleeve 46, best shown in Fig. 6, is adapted to be slidably mounted on downwardly extending arms 40 of fuse holder 35. The upward movement of trunnion supporting sleeve 46 on arms 40, or rather the downward movement of fuse holder 35 in sleeve 46, is limited by shoulders 47 on fuse fitting 35. The trunnion supporting sleeve 46 includes a pair of diametrically opposed trunnions 48 of circular cross section including an axially extending opening 49 in each trunnion. The outer portion of this opening 49 is threaded to accommodate a spring retaining screw 50, best shown in Fig. 5. Slidably mounted within the openings 49 are plungers 51 biased in an inward direction toward downwardly extending arms 40 by compression springs 52. It will be obvious that when trunnion supporting sleeve 46 is slidably mounted on arms 40 with the openings 49 opposite the openings 45 in arms 40, then the spring biased plungers 51 will move into openings 45, as shown in Fig. 2, causing the cams 44 to rotate to the position indicated in Fig. 2. It will be obvious, furthermore, that with the plungers 51 in this position trunnion supporting sleeve 46 is locked to fuse holder 35. It will be noted that in this locked position the cams 44 extend inwardly so as to be engaged by any parts driven out of the bottom of the fuse tube 26.

The trunnion supporting sleeve 46 also includes downwardly extending portions or extensions 53 from which extend pins 54, the purpose of which will become apparent from the following description. Each of the pins 54 is parallel to and extends in the same direction as the associated trunnion 48. When the trunnion supporting sleeve 46 is latched to the fuse fitting 35, which in turn is clamped to the lower fuse ferrule 27 in the manner indicated in Fig. 7, the fuse is latched to the trunnions and consequently is adapted to be inserted in trunnion supporting means which are associated with the lower terminal assembly 23, to be described hereinafter.

The lower terminal assembly 23 includes a support 55 to which lower terminal 13 is bolted, as indicated at 56. Terminal 13 is connected with contact 24 by means of flexible conductor 56'. The lower portion of support 55 is provided with trunnion receiving notches 57 arranged at either side of support 55 to receive the trunnions 48. Circumferentially arranged about trunnion receiving notches 57 are inwardly extending bosses 58 which are adapted to engage the pins 54 of trunnion supporting sleeve 46, the purpose of which will become apparent from the following description.

Mounted within support 55 on a pin 59 are a pair of cranks 60 interconnected by a pin 61 at the lower end thereof and each provided with a cam portion 60' at the upper end thereof. Cranks 60 are normally biased in a counterclockwise direction as viewed in Fig. 1 by virtue of a torsion spring 62, one end of which bears against pin 61, while the other end bears against the portion of support 55 fastened to insulator 11. Pivotally mounted as indicated by pin 63 to the upper end of support 55 is a U-shaped crank 64 including an extension 64' extending from the center of the base of the U. A torsion spring 65 is supported by pin 63 and has one end thereof engaging support 55 while the other end thereof engages the base of the U of U-shaped crank 64, thereby constantly biasing crank 64 in a clockwise direction as viewed in Fig. 1. The extension 64' from crank 64 is pivotally connected as indicated at 66 with links 67, which in turn are connected by pin 68 to a cup-shaped receptacle 69 having an open front as indicated at 69' in Fig. 3. The opening 69' is sufficiently large to permit the tubular housing 26 of the fuse to pass freely therethrough. The cup-shaped receptacle 69 is also further supported by links 70 pivotally mounted at 71 to the cup-shaped receptacle 69. The other ends of links 70 are pivotally supported

as indicated at 72 to the front of support 55. It will be obvious then that the spring 65 normally tends to force the links 67 and the cup-shaped receptacle 69 outwardly to the position shown in Figs. 4 and 7. Adjustable screws 73 are provided in the extensions 64'' of crank 64, to limit the outward travel of the links 67 and cup-shaped receptacle 69 by engaging the portion of support 55 adjacent insulator 11, as is clearly shown in Fig. 4.

When the fuse unit 26 is in the closed current carrying position it would be very undesirable for the spring 65 to exert a force on receptacle 69, since otherwise the fuse tube which is very long might be stressed to such an extent as to cause breakage thereof. Accordingly I arrange the ends 64'' of crank 64 to engage the cam surface 60' of cranks 60 so as to form a latching toggle, as is clearly shown in Fig. 1. With this arrangement, all the force exerted by spring 65 is restrained by the latching toggle and consequently no force is exerted tending to push cup-shaped receptacle 69 outwardly.

The eye 39 which is an integral part of fuse fitting 35 is disposed above pin 61 of cranks 60 so that downward movement of eye 39 which occurs upon operation of the fuse to be described hereinafter, will strike pin 61 thereby rotating crank 60 in a clockwise direction as viewed in Fig. 1 so as to free crank 64 and permit spring 65 to move crank 64 and consequently cup-shaped receptacle 69 to the position indicated in Fig. 4 which movement is limited by adjustable screw 73. Spring 62 will force crank 60 to rotate in a counter-clockwise direction to the position indicated in Fig. 4 with cam surfaces 60' engaging the extensions 64'' of crank 64.

Mounted on the fuse unit 26 just above receptacle 69 when the fuse is in the current carrying position indicated in Fig. 1, is a collar 74 preferably adapted to be clamped to the fuse by clamping means 75 and spaced above fitting 35 the proper distance as determined by a conducting rod 99. This rod also provides electrical connection between fuse fitting 35 and collar 74 to prevent corona. This collar is arranged so that when the cartridge fuse moves downwardly upon rupture of the fusible element therein to the position indicated in Fig. 4 collar 74 will move into cup-shaped receptacle 69. Although the fuse tube 26 can freely move through the opening 69' in cup-shaped receptacle 69 the collar 74 will not be able to move through this opening and consequently the outward pivotal movement of the cartridge fuse will be limited to the maximum movement of cup-shaped receptacle 69 as shown in Figs. 4 and 7.

The above described fuse unit and fittings are a complete assembly which is mounted in the switch without disturbing the adjustment of the fusible element within the tubular housing 26.

The operation of the circuit interrupter of my invention will be fairly obvious in view of the detailed description included above. With the fuse unit in closed circuit position indicated in Figs. 1 and 2 rupture of the fusible element will drive the lower contact 31 and the disk 32 out of the bottom of the fuse tube as will be obvious from the disclosure of Fig. 2. This downward movement of the contact 31 and disk 32 will rotate cams 44 in a clockwise direction as viewed in Fig. 2 to the position shown in Fig. 5 and consequently will force plungers 51 out of openings 45 in arms 40 of fuse fitting 35. Fuse fitting 35 is then free to move downwardly in trunnion supporting sleeve 46. Such downward movement is not only caused by the weight of the fuse unit and the fuse fitting 35 mechanically and electrically connected thereto, but is also caused by the action of spring 17 of the upper terminal assembly. The fuse unit and fuse fitting 35 therefore move downwardly until trunnion supporting sleeve 46 engages the shoulders 47 on fuse fitting 35. This downward movement is sufficient to cause collar 74 to move down into cup-shaped receptacle 69. Such downward movement of fuse fitting 35 will also cause eye 39 to engage pin 61 thus turning crank 60 out of latching engagement with respect to crank 64 and allowing spring 65 to push the receptacle 69 and consequently the fuse unit to the position shown in Fig. 4 which is the open circuit position providing sufficient electrical clearance between upper fuse ferrule 27 and contact 14, thereby affording the necessary isolating gap. When the fuse unit moves downwardly, collar 33 is freed from the coacting latching portions of contact arms 21. By virtue of the adjustable screw 73 the fuse unit will be held in this position, shown in Fig. 4, until removed for replacement.

To remove the cartridge fuse from the lower terminal assembly 23 an ordinary maintenance tool is inserted in eye 34 and the fuse unit is lifted upwardly until the collar 74 is moved out of receptacle 69, thereby enabling the fuse to be swung outwardly and downwardly pivoting about trunnions 48. Pins 54 engaging with bosses 58 prevent the fuse from swinging sidewise and furthermore prevent removal of the fuse from the trunnion receiving notches until it has been rotated sufficiently somewhat approaching the position indicated in Fig. 7 where the pins 54 clear the bosses 58.

It will be evident that during the removal of the fuse unit as described above and particularly when the fuse is moved upwardly so that collar 74 is moved out of cup-shaped receptacle 69 that spring biased plungers 51 move into openings 45 and force cams 44 to the reset position indicated in Fig. 2. The trunnion supporting sleeve 46 is thereby locked to fuse fitting 35 and the mechanism is automatically reset for assembly on the new fuse to be substituted for the one which has operated. Thereafter, the fuse fitting 35 is removed from the fuse which has operated, and is clamped to a new fuse.

To install the new fuse unit to which fuse fitting 35 is securely clamped, an operator will engage eye 39 with a suitable maintenance tool and lift the trunnions 48 into trunnion receiving notches 57 in a manner somewhat as indicated in Fig. 7. In this position the pins 54 clear the bosses 58. Thereafter the maintenance tool may engage eye 34 and the fuse swung into the closed position as indicated in Fig. 1. The arrangement of trunnion supporting sleeve 46 and support 55 is such as to prevent any lateral sway of the fuse. Also pins 54 cooperating with bosses 58 prevent the fuse unit from being lifted out of trunnion receiving notches 57 while being swung to the closed position. As the fuse unit is pushed into receptacle 69 it begins to move rearwardly and consequently crank 64 begins to rotate in a counter-clockwise direction as viewed in Fig. 4 against the action of spring 65. The ends 64'' of crank 64 slide along the cam faces 60' of cranks 60 causing cranks 60 to rotate in a clockwise direction as viewed in Fig. 4. When the fuse unit reaches the closed position indicated in Fig. 1 the cranks 60 and the crank 64 form a latching toggle,

as is clearly indicated in Fig. 1, thereby preventing spring 65 from exerting any force on the fuse unit comprising tubular casing 26. In this closed position spring biased contacts 14 and 24 engage the fuse ferrules 27 to complete the electrical circuit through the fusible element.

It will be obvious that my invention provides a fuse disconnecting switch of the drop-out type which is adapted for use on very high voltage circuits and which will safely move to its dropped-out position without damage to its pivotal support since during this dropping-out operation the fuse is firmly supported at a point intermediate the ends thereof. In addition, no undue force is exerted when the fuse is in the current carrying position which would undesirably stress the fuse tube until after rupture of the fusible element therein when the upper end of the fuse unit is automatically unlatched and free to move.

While I have shown and described particular embodiments of my invention, it will be obvious to those skilled in the art that various changes and modifications may be made without departing from my invention and I therefore aim in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of my invention.

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

1. An electric switching device comprising a pair of spaced terminals, a switching unit including an elongated member interconnecting said terminals, means providing a pivoted support for one end of said member, means for pivotally moving said member from between said terminals, and means for engaging said member intermediate the ends thereof only during the operation of said switching unit to support said member while it is moving from between said terminals.

2. An electric circuit interrupter comprising a pair of spaced terminals, a fuse including a tubular housing interconnecting said terminals, means providing a pivoted support for one end of said fuse, means for pivotally moving said fuse from between said terminals, and means for engaging said housing intermediate the ends thereof upon operation of said fuse to support said fuse during its movement from between said terminals.

3. An electric circuit interrupter comprising a pair of spaced terminals, a fuse including a housing electrically interconnecting said terminals, means providing a pivoted support for one end of said fuse unit, means for pivotally moving said fuse unit from between said terminals, means for engaging said housing intermediate the ends thereof upon operation of said fuse unit to support said fuse unit during its movement from between said terminals, and means for rendering said means for pivotally moving said fuse unit ineffective until after said fuse has operated.

4. An interrupting device comprising a pair of spaced terminals, a fuse housing having a fusible element therein, a hinged fitting for said housing in which said housing is longitudinally slidable, latch means between said housing and support for preventing sliding of said housing in said support, said means being rendered ineffective by operation of said fusible element, means released by longitudinal movement of said housing for holding said housing between said terminals, means exerting a force on said fuse housing for moving said housing from between said terminals, and means for rendering said last mentioned means ineffective to exert any force on said housing until after rupture of said fusible element.

5. An interrupting device comprising a pair of spaced terminals, a fuse unit including a housing having a fusible element therein, a hinged support for said fuse unit in which said fuse unit is longitudinally slidable, latch means between said fuse unit and support for preventing sliding of said fuse unit in said support, said means being rendered ineffective by rupture of said fusible element, means released by longitudinal movement of said fuse unit for holding said fuse unit between said terminals, a cup-shaped receptacle having an opening in the side thereof through which said fuse unit may move adapted to slip over said fuse unit intermediate the ends thereof, means for movably supporting said receptacle from one of said terminals, a collar on said fuse unit normally above said receptacle but adapted to move into said receptacle upon longitudinal movement of said fuse unit following rupture of said fusible element, said collar being too large to move through the opening in said receptacle so that when said collar is in said receptacle said fuse unit is supported from said one terminal intermediate the ends thereof, means exerting a force on said fuse unit through said receptacle for moving said fuse unit from between said terminals, and means for rendering said last mentioned means ineffective to exert any force on said housing until after rupture of said fusible element.

6. An interrupting device comprising a pair of spaced terminals, a fuse unit including a housing having a fusible element therein, a hinged support for said fuse unit in which said fuse unit is longitudinally slidable, latch means between said fuse unit and support for preventing sliding of said fuse unit in said support, said means being rendered ineffective by rupture of said fusible element, means released by longitudinal movement of said fuse unit for holding said fuse unit between said terminals, spring means for exerting a force on said housing for moving said fuse unit from between said terminals, and latching means for rendering said last spring means ineffective to exert any force on said housing until after rupture of said fusible element.

7. An interrupting device comprising a pair of spaced terminals, a fuse unit including a housing having a fusible element therein, a hinged support for said fuse unit in which said fuse unit is longitudinally slidable, latch means between said fuse unit and support for preventing sliding of said fuse unit in said support, said means being rendered ineffective by operation of said fusible element, means released by longitudinal movement of said fuse unit for holding said fuse unit between said terminals, spring means for exerting a force on said housing for moving said fuse unit from between said terminals, latching means for rendering said last mentioned means ineffective to exert any force on said housing, and means responsive to the longitudinal movement of said fuse unit following rupture of said fusible element for releasing said latching means.

8. An interrupting device comprising a pair of spaced terminals, a fuse unit having a fusible element therein, a hinged support for said fuse unit in which said fuse unit is longitudinally slidable, latching means between said fuse unit and support for preventing sliding of said fuse unit in said support, said means being rendered ineffective by rupture of said fusible element, means released by longitudinal movement of said fuse unit for holding said fuse unit between said terminals, a cup-shaped receptacle having an opening in the

side thereof through which said fuse unit may move adapted to slip over said fuse unit intermediate the ends thereof, means for movably supporting said receptacle from one of said terminals, and a collar on said fuse unit normally above said receptacle but adapted to move into said receptacle upon longitudinal movement of said fuse unit following rupture of said fusible element, said collar being too large to move through the opening in said receptacle so that when said collar is in said receptacle said fuse unit is supported from said one terminal intermediate the ends thereof.

9. An interrupting device comprising a pair of spaced terminals, a fuse unit including a housing having a fusible element therein, a hinged support for said fuse unit in which said fuse unit is longitudinally slidable, latching means between said fuse unit and support for preventing sliding of said fuse unit in said support, said means being rendered ineffective by rupture of said fusible element, means released by longitudinal movement of said fuse unit for holding said fuse unit between said terminals, a cup-shaped receptacle having an opening in the side thereof through which said fuse unit may move adapted to slip over said fuse unit intermediate the ends thereof, means for movably supporting said receptacle from one of said terminals, a collar on said fuse unit normally above said receptacle but adapted to move into said receptacle upon longitudinal movement of said fuse unit following rupture of said fusible element, said collar being too large to move through the opening in said receptacle so that when said collar is in said receptacle said fuse unit is supported from said one terminal intermediate the ends thereof, spring means exerting a force on said housing through said receptacle for moving said fuse unit from between said terminals, latching means for rendering said last mentioned means ineffective to exert any force on said housing until after rupture of said fusible element, and means for releasing said latching means upon rupture of said fusible element.

10. An interrupting device comprising a pair of spaced terminals, a fuse housing having a fusible element therein, a hinged fitting for said housing in which said housing is longitudinally slidable, latch means between said housing and support for preventing sliding of said housing in said support, said means being rendered ineffective by operation of said fusible element, means released by longitudinal movement of said housing for holding said housing between said terminals, means exerting a force on said fuse housing for moving said housing from between said terminals, means for rendering said last mentioned means ineffective to exert any force on said housing until after rupture of said fusible element, and means for automatically resetting said last mentioned means upon reclosing the circuit through said interrupting device.

11. An interrupting device comprising a pair of spaced terminals, a fuse unit including a housing having a fusible element therein, a hinged support for said fuse unit in which said fuse unit is longitudinally slidable, latching means between said fuse unit and support for preventing sliding of said fuse unit in said support, said means being rendered ineffective by rupture of said fusible element, means released by longitudinal movement of said fuse unit for holding said fuse unit between said terminals, a cup-shaped receptacle having an opening in the side thereof through which said fuse unit may move adapted to slip over said fuse unit intermediate the ends thereof, means for movably supporting said receptacle from one of said terminals, a collar on said fuse unit normally above said receptacle but adapted to move into said receptacle upon longitudinal movement of said fuse unit following rupture of said fusible element, said collar being too large to move through the opening in said receptacle so that when said collar is in said receptacle said fuse unit is supported from said one terminal intermediate the ends thereof, spring means exerting a force on said housing through said receptacle for moving said fuse unit from between said terminals, latching means for rendering said last mentioned means ineffective to exert any force on said housing until after rupture of said fusible element, means for releasing said latching means upon rupture of said fusible element, and means for automatically restressing said spring means and resetting said latching means upon reclosing the circuit through said interrupting device.

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