May 15, 1956 S. I. LINDELL 2,745,921

DROP OUT FUSE CONSTRUCTION

Filed June 10, 1954 4 Sheets-Sheet 1

Fig. 1

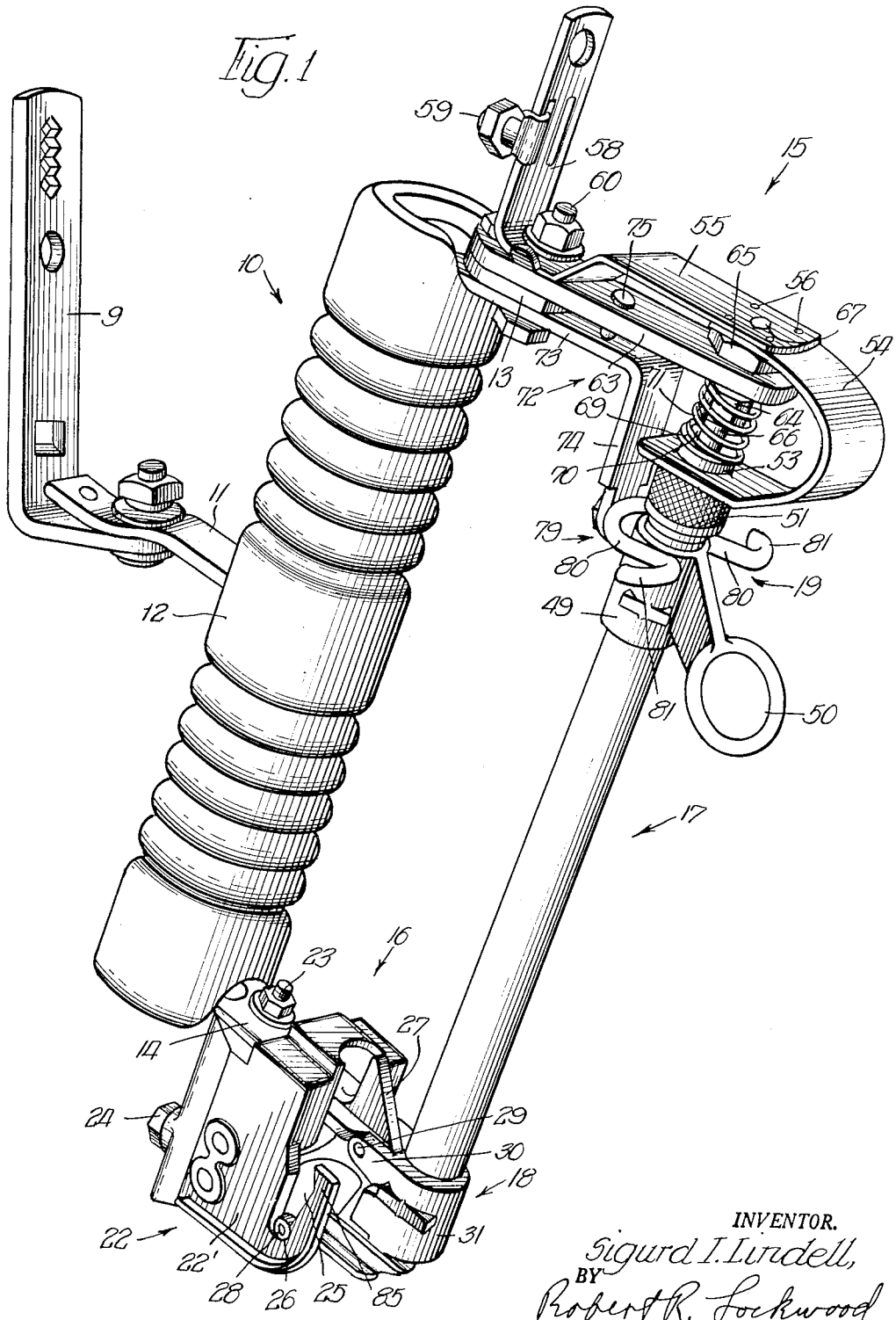

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Fig. 2

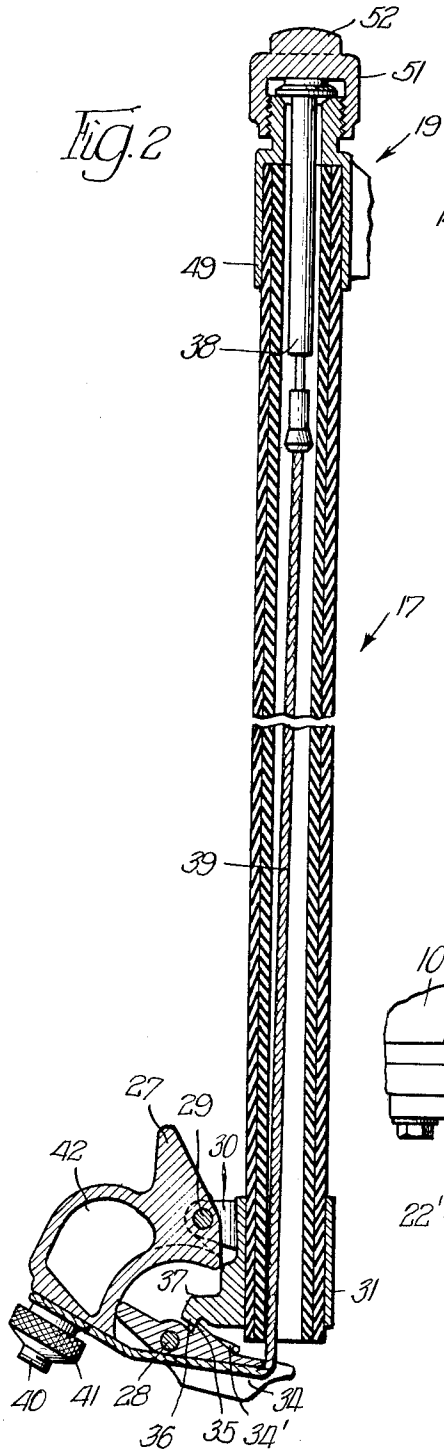

Fig. 3

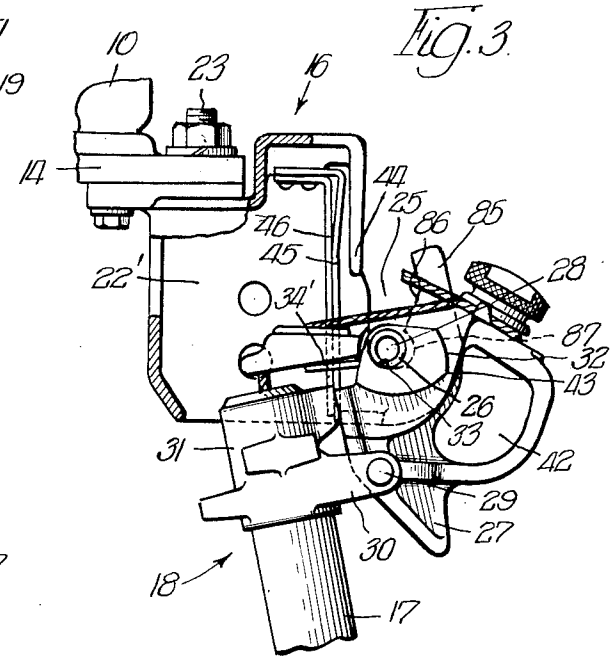

Fig. 4

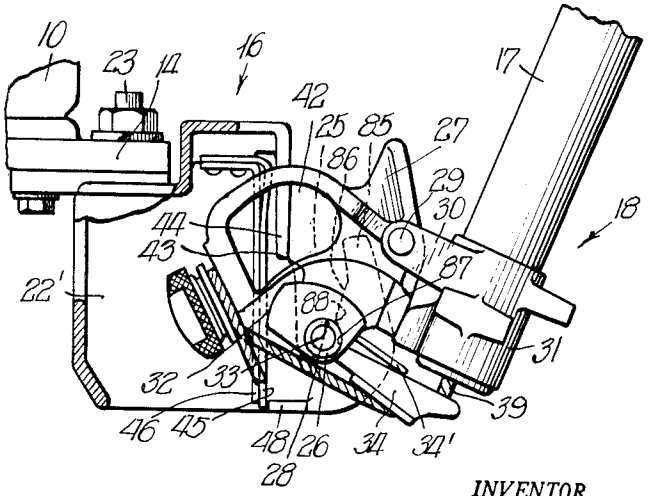

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Fig. 5.

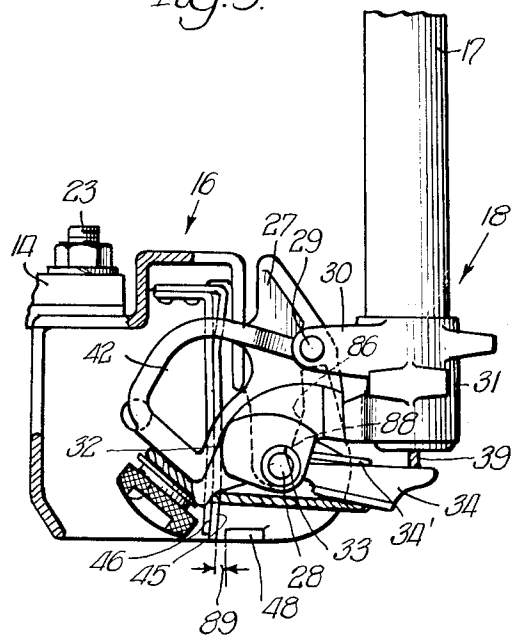

Fig. 6.

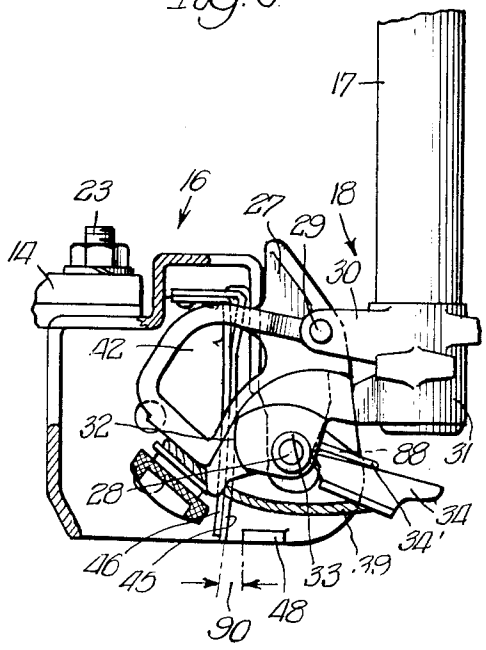

Fig. 7.

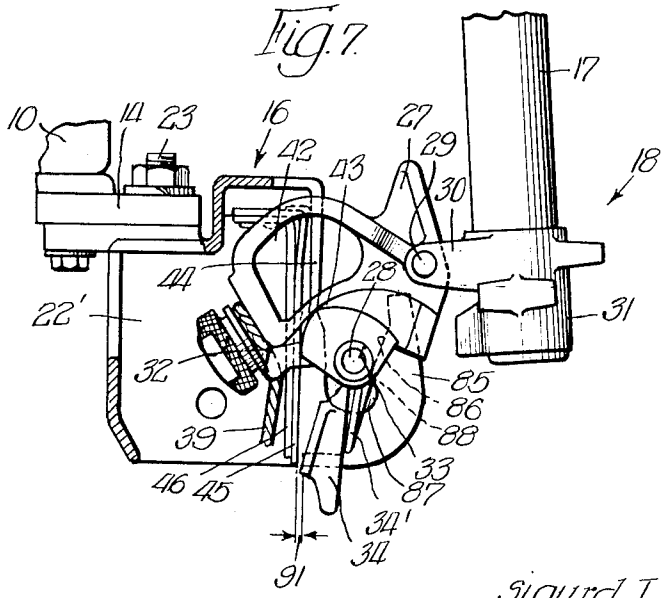

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Fig. 8

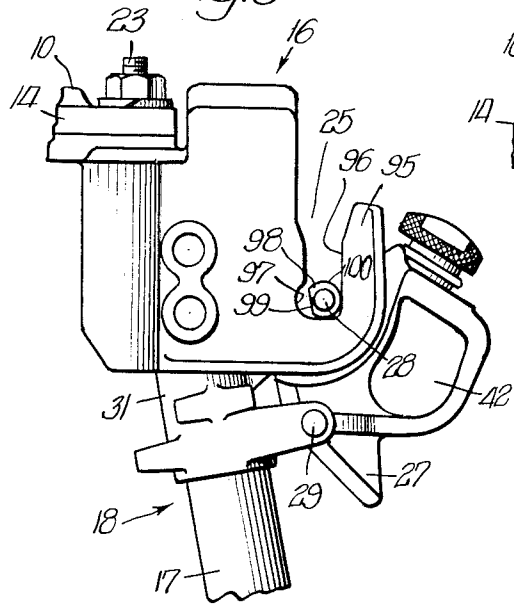


Fig. 9

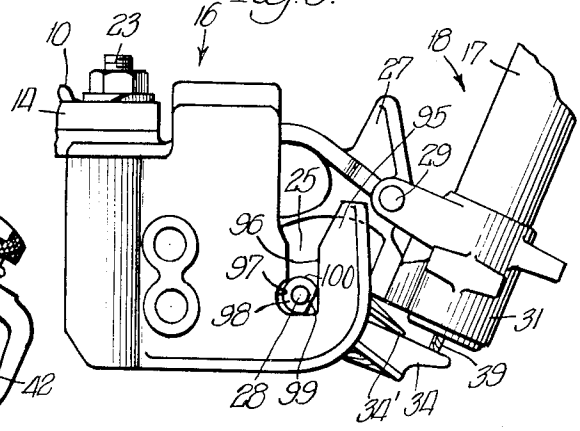


Fig. 10

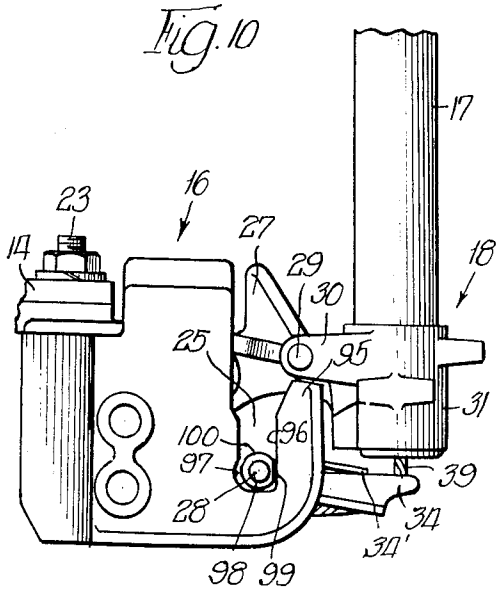
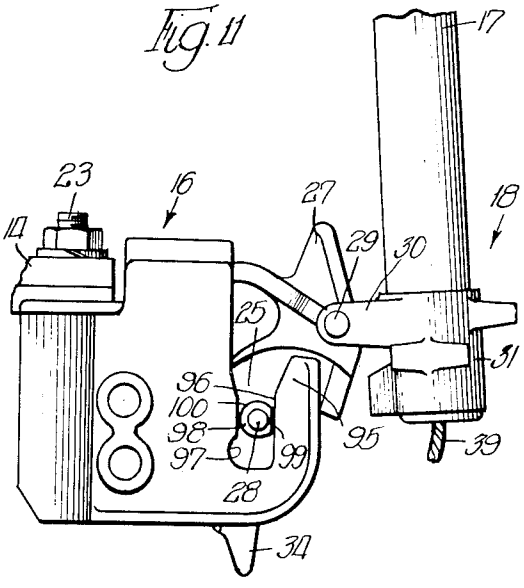


Fig. 11



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United States Patent Office 2,745,921 Patented May 15, 1956

2,745,921

DROP OUT FUSE CONSTRUCTION

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Application June 10, 1954, Serial No. 435,747

8 Claims. (Cl. 200—114)

This invention relates, generally, to circuit interrupters and it has particular relation to drop out fuse cutouts. The invention disclosed herein is an improvement over the invention disclosed in Lindell application Serial No. 367,801, filed July 14, 1953, and assigned to the assignee of this application.

In the copending application just referred to a fuse tube is pivotally mounted at its lower end on a lower terminal member and is arranged to be latched at its upper end to an upper terminal member. Generally U-shaped slots are provided in the lower terminal member for receiving trunnions that extend from a terminal assembly at the lower end of the fuse tube. The upper terminal member is constructed to receive and absorb the upward recoil of the fuse tube that may result from blowing of a fuse link therein. It is desirable that the trunnions remain at the bottoms of the slots in the lower terminal member when the fuse tube is swung to the closed position in order to permit proper engagement of an upper terminal assembly at the upper end of the fuse tube with the upper terminal member.

When the force for swinging the fuse tube to the closed position was applied at an angle greater than 20° away from the position occupied by it in the closed position, no difficulty was encountered in the use of the construction disclosed in the copending Lindell application. However, when the force was applied at an angle less than 20° or generally parallel to the closed position of the fuse tube, there was a tendency for the trunnions to be lifted from the bottoms of the slots and the fuse tube to be moved bodily upwardly when it was swung toward the closed position with the result that the terminal assembly at the upper end of the fuse tube would not register properly with the upper terminal member thereby increasing the required closing torque and causing difficulty to be encountered in swinging the fuse tube to the fully closed position.

Accordingly, among the objects of this invention are: To provide for restraining upward movement of the fuse tube when it is swung to the closed position by application of force generally parallel to the fuse tube in the closed position; to increase the contact pressure applied to the lower fuse tube terminal assembly when the fuse link in the fuse tube blows and the recoil causes the fuse tube to move upwardly and overcome this restraining action; to mount trunnions on the lower fuse tube terminal assembly in U-shaped slots having rearwardly opening notches in their forward branches for receiving the trunnions; to bias the trunnions into the notches when the fuse tube is swung toward the closed position; to employ the biasing force of the contact springs on the lower terminal member to bias the trunnions into the notches; and to increase the contact pressure when the fuse tube recoils upwardly on blowing of the fuse link.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed and the embodiments thereof shown in the accompanying drawings and it comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the constructions hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention, reference can be had to the following detailed description, taken together with the accompanying drawings, in which:

Figure 1 is a perspective view of a drop out fuse construction in which the present invention is incorporated;

Figure 2 is a vertical longitudinal sectional view showing the details of construction of the fuse tube and certain details of construction of the upper and lower terminal assemblies thereon;

Figure 3 is a view, partly in side elevation and partly in section, showing the lower terminal member and the position of the fuse tube when the trunnions on the lower fuse tube terminal assembly are first positioned in the slots in the lower terminal member;

Figure 4 is a view, similar to Figure 3, showing the relative positions of the parts as the fuse tube is swung toward the closed position;

Figure 5 is a view, similar to Figure 4, but showing the fuse tube in the fully closed position;

Figure 6 is a view, similar to Figure 5, showing the relative positions of the parts immediately after the fuse link has blown and the recoil has started to move the fuse tube and trunnions upwardly;

Figure 7 is a view, similar to Figure 6, but showing the relative positions of the parts after the toggle linkage has been partly broken and the fuse tube and trunnions have been moved upwardly under conditions of maximum recoil;

Figure 8 is a view, in side elevation, of the lower terminal member employing a modified shape of slot and a modified configuration for the trunnions, the arrangement being shown with the fuse tube occupying the initial position in the lower terminal member and before it has been swung upwardly toward the closed position;

Figure 9 is a view, similar to Figure 8, but showing the fuse tube in a position in advance of the closed position with the notches in the lower terminal member and the trunnions cooperating to restrain upward movement of the fuse tube and trunnions;

Figure 10 is a view, similar to Figure 9, but showing the relationship of the parts with the fuse tube in the closed position; and

Figure 11 is a view, similar to Figure 10, but showing the relationship of the parts with the toggle broken and the fuse tube in position of maximum recoil.

Referring now particularly to Figure 1 of the drawings, it will be observed that the reference character **9** designates a support bracket which constitutes one of a pair of brackets that is employed for mounting devices on a cross arm carried at the upper end of a pole that is employed for supporting an electrical transmission line. The support bracket **9** is arranged to carry an insulator mounting as indicated, generally, at **10** which may be of the type shown in Baker Patent No. 2,606,954, issued August 12, 1952, and assigned to the assignee of this application. It will be understood, however, that other insulator mountings can be employed in practicing the present invention. The insulator mounting **10** includes a rearwardly extending support arm **11** which is secured, as shown, to the lower forwardly extending portion of the support bracket **9**. Upper and lower metallic terminal supports **13** and **14** are provided, as shown, at the upper and lower ends of the insulator **12**. It will be observed that the metallic terminal supports **13** and **14** ex-

tend forwardly of the insulator 12 which, preferably, is formed of porcelain.

It will be observed that these terminal supports carry, respectively, upper and lower terminal members 15 and 16 and a fuse tube that is indicated, generally, at 17. In accordance with conventional practice the fuse tube 17 is removable. At its lower end it is provided with a lower terminal assembly, shown generally at 18, that is pivotally and slidably mounted on the lower terminal member 16. At its upper end the fuse tube 17 has an aupper terminal assembly, shown generally at 19, which cooperates with the upper terminal member 15.

The lower terminal member 16 comprises a hinge casting, shown generally at 22, that is formed of suitable good conducting metal, such as brass, and has an inverted U shape. It is secured by a bolt 23 to the terminal support 14 at the lower end of the insulator 12. A split bolt connector 24 extends rearwardly from the hinge casting 22 and serves to receive a line conductor. At the opposite end of the hinge casting 22, slots 25 are provided in the opposite sides 22' for sildably and pivotally receiving circularly shaped trunnions 26 that extend from opposite sides of a toggle member 27 through which a shaft 28 extends. As will be set forth in detail hereinafter, the present invention has to do particularly with the shape of these slots 25 and their cooperation with the trunnions 26 in controlling the movement of the fuse tube 17. The toggle member 27 is preferably formed of a brass casting and a more detailed description of its construction and operation is set forth in Lindell Patent No. 2,553,098, issued May 15, 1951. The toggle member 27 is pivotally secured by a hinge pin 29 to arms 30 that extend rearwardly from a lower brass ferrule 31 which forms a part of the lower terminal assembly 18 and is provided on opposite sides with cylindrical contact surfaces 32, the center of which is indicated at 33, eccentric to the axis of the shaft 28.

As shown more clearly in Figure 2 of the drawings, a flipper 34 is rockably mounted on the shaft 28. As described in more detail in Lindell Patent No. 2,553,098, the flipper 34 biased by a spring 34' is arranged to withdraw the flexible lead of a fuse link, to be referred to hereinafter, from the fuse tube 17 and also is arranged to keep the toggle linkage, of which the toggle member 27 forms a part, in the operative position until the fuse link blows. For this latter purpose the flipper 34 has a shoulder 35 which is arranged to engage a shoulder 36 on a detent 37 that extends rearwardly from the lower ferrule 31.

Within the fuse tube 17, as shown in Figure 2, there is provided a fuse link 38 of conventional construction which has a flexible lead 39 extending therefrom and out of the lower end of the fuse tube 17. It will be observed that the lower end of the flexible lead 39 extends over the flipper 34 and, as long as the fuse link 38 remains intact, it serves to hold the flipper 34 in the position where the shoulder 35 engages the shoulder 36. The extreme lower end of the flexible lead 39 extends around a stud 40 and is clamped securely thereto by a clamp nut 41.

The toggle member 27 has an eye portion 42 that is arranged to receive a prong of a switch stick. The purpose of this is to facilitate the handling of the fuse tube 17 for removing it from the mounting and replacing the same.

With a view to positively limiting the upward movement of the fuse tube 17, when it is subjected to the highest fault current that the device is intended to clear, the toggle member 27 has integrally formed therewith shoulders 43 on opposite sides above the cylindrical contact surfaces 32 that are arranged, as shown more clearly in Figure 7 of the drawings, to engage with a pair of inwardly extending shoulders 44 that are formed integrally with the hinge casting 22. When the recoil applied to the fuse tube 17 to move the same upwardly is sufficient to cause it to move to the position shown in Figure 7, the shoulders 43 on the toggle member 27 engage the lower edges of the shoulders 44 and prevent further upward movement. However, before the fuse tube 17 can move to the position shown in Figure 7, it is necessary that the force of the recoil overcome the downwardly biasing forces applied by two serially arranged springs which form a part of the upper terminal member 15.

Contact engagement is maintained with the contact surfaces 32 by auxiliary contacts 45, formed of copper strips, which are backed up by auxiliary contact springs 46, formed of stainless steel strips. The contacts 45 and springs 46 are generally L-shaped, are nested together, as shown in Figure 3, and are secured to the underside of the upper portion of the hinge casting 22. When the contact surfaces 32 are swung out of engagement with the contacts 45, the lower end of each bears in prestressed relation against the rear edge of the respective stop shoulder 48 formed integrally with and extending inwardly from the sides 22' of the hinge casting 22. As the toggle member 27 moves upwardly along with the fuse tube 17, as shown in Figures 6 and 7, the contact surfaces 32 slide upwardly along and in spring pressed contact engagement with the contacts 45, thereby maintaining the circuit between the lower terminal assembly 18 on the fuse tube 17 and the lower terminal member 16. Since the center of the cylindrical contact surfaces 32 is located at 33 above the axis of the shaft 28, the forces exerted by the contacts 45 and springs 46 bias the toggle member 27 in a clockwise direction as viewed in Figures 6 and 7 and thereby assist in the drop out action of the fuse tube 17. Moreover, because of the eccentric relation between the center 33 and the shaft 28, as the toggle member 27 swings about the latter, the contact surfaces 32 recede from the contacts 45, the springs 46 are correspondingly less stressed and the frictional resistance between the contact surfaces 32 and the contacts 45 is reduced. There is then a continuous reduction in the frictional resistance incident to opening of the drop out fuse that must be overcome insofar as the contacts 45 are concerned. It will be pointed out hereinafter wherein advantage is taken of the biasing action of the springs 46 to restrain upward movement of the trunnions 26 and of the fuse tube 17 when the latter is swung to the closed position.

The upper terminal assembly 19 at the upper end of the fuse tube 17 includes a brass ferrule 49. An eye 50 extends from the ferrule 49 to receive the prong of the switch stick, previously referred to, for the purpose of manipulating the fuse tube 17 into or out of the closed position. Threaded on the upper end of the upper ferrule 49 is a cap 51 which has a convex head 52 that engages the underside of a seat 53 formed integrally in the lower arm of a U-shaped top contact 54. A top contact strip 55 is connected by rivets 56 to the upper arm of the top contact 54. At its rear end the contact strip 55 is positioned underneath a leg of an L-shaped terminal pad 58 which carries a split bolt connector 59 for receiving the other line conductor. A bolt 60 extends through the terminal support 13 together with the contact strip 55 to hold these elements securely in position.

With a view to providing a relatively stiff spring for resisting the upward recoil of the fuse tube 17 when it is subjected to shock incident to the interruption of the flow of a relatively high fault current, there is provided a recoil bar 63 that is clamped by the bolt 60 to the terminal support 13. The recoil bar 63 extends forwardly in cantilever fashion over the upper end of the fuse tube 17. Preferably the recoil bar 63 is formed of magnetic material such as cold rolled steel. Near the outer end of the recoil bar 63, there is a tapped opening for receiving a hollow threaded bushing 64. The bushing 64 is screwed into the recoil bar 63 and a portion projects above it for receiving a lock nut 65. It is desirable to interconnect the rearwardly extending

arms of the U-shaped top contact 54. For this purpose a contact stud 66 is employed. It is formed of good conducting material, such as brass, and its upper end 67 extends through the upper arm of the top contact 54 and is headed over within a suitable opening in the forward end of the contact strip 55. Surrounding the lower end of the contact stud 66 is a guide washer 69 having a central raised portion 70 which overlies the upper side of the seat 53. The outer portion of the guide washer 69 serves as a seat for the lower end of a coil compression spring 71, which is disposed coaxially with the contact stud 66 located, as shown, so as to be coaxial with the vertical axis of fuse tube 17. The upper end of the coil compression spring 71 extends around the lower end of the hollow bushing 64 and bears against the underside of the outer end of the recoil bar 63. The coil compression spring 71 is held in prestressed condition by the contact stud 66 and can be readily further stressed as compared to the recoil bar 63 so that the initial upward movement of the fuse tube 17 acts first to compress further the spring 71 without causing any substantial upward movement of the outer end of the recoil bar 63. Where only relatively small fault current is required to be interrupted, only the coil compression spring 71 will be stressed to any appreciable extent.

It will be observed that an L-shaped reinforcing bar 72 is mounted on the underside of the recoil bar 63 and below the terminal support 13. The horizontal arm 73 of the reinforcing bar 72 extends underneath the terminal support 13 and is secured thereto by the bolt 60. The downwardly extending arm 74 of the reinforcing bar 72 extends parallel to the vertical axis of the fuse tube 17 and is positioned rearwardly thereof between it and the insulator 12. Under certain conditions it is desired that there be conjoint movement of the reinforcing bar 72 and the recoil bar 63. For this purpose a pin 75 is employed.

At the lower end of the downwardly extending arm 74, there is provided a guide, shown generally at 79. The guide 79 includes forwardly extending arms 80, Figure 1, at the outer ends of which are rearwardly curved arms 81. The forwardly extending arms 80 serve to guide the upper ferrule 49 of the fuse tube 17 into proper position generally regardless of the direction from which force is applied to the eye 50 to swing the fuse tube 17 to the closed position so that the contact head 52 will register with the seat 53. Preferably the guide 79 is formed of good conducting material, such as brass, since it may be called upon to conduct current when the fuse tube 17 is moved out of the circuit closed position while it is carrying load current as described in more detail in Lindell Patent No. 2,671,142 issued March 2, 1954, and in the copending application of Lindell, Serial No. 412,182, filed February 24, 1954, and assigned to the assignee of this application.

When the fuse link 38 is assembled in the fuse tube 17, as shown in Figure 2, with the flexible lead 39 overlying the flipper 34 and clamped to the toggle member 27 by the clamp nut 41, the shoulder 35 is held in engagement with the shoulder 36 and a rigid construction is provided which can be handled as a unit. The prong of a live line tool or switch stick is inserted in the eye 42 and the fuse tube 17 is lifted to position the trunnions 26 in the slots 25. When so manipulated the fuse tube 17 hangs downwardly as shown in Figure 3. The trunnions 26 occupy positions at the bottoms of the slots 25. Then the prong of the live line tool or switch stick is inserted in the eye 50 and the fuse tube 17 is swung upwardly to the position shown in Figure 1 or to the closed position.

As pointed out hereinbefore, when the handle of the live line tool or switch stick is located at an angle greater than 20° away from the longitudinal axis of the fuse

tube 17 when the latter has been swung to the closed position, no difficulty was encountered in swinging the fuse tube 17 to the closed position shown in Figure 1. However, when the lineman was located immediately underneath the lower terminal member 16 and, from this position, attempted to swing the fuse tube to the closed position, the direction of application of force as the fuse tube 17 approached the closed position was such as to tend to lift the fuse tube 17 upwardly, thereby causing upward movement of the trunnions 26 away from the bottoms of the slots 25. In such case the convex head 52 of the cap 51 was too high to register properly with the lower branch of the U-shaped top contact 54. In accordance with the present invention provision is made for restraining such upward movement of the fuse tube 17 and trunnions 26 to the end that a substantially greater force than normal must be exerted upwardly on the fuse tube 17 by the live line tool or switch stick than ordinarily is exerted in merely swinging it to the closed position.

It will be observed that the slots 25 are defined, in part, by forward branches 85 each of which has an inclined shoulder 86 at its lower ends of which a rearwardly opening notch 87 is provided the configuration of which is shown more clearly in Figure 7 of the drawings. Now, when the fuse tube 17 is swung upwardly to the position shown in Figure 4 the cylindrical contact surfaces 32 on opposite sides of the toggle member 27 engage the auxiliary contacts 45 which are spring pressed by the auxiliary contact springs 46. The reaction is such that, as shown in Figure 4, the trunnions 26 are moved forwardly into the notches 87. Shoulders 88 at the upper ends of the notches 87 cooperate with the trunnions 26 to restrain upward movement thereof as long as sufficient force is not exerted upwardly on the fuse tube 17 to overcome the biasing action of the auxiliary contact springs 46 and move the trunnions 26 upwardly past the shoulders 88. The radius of the trunnions 26 is greater than the depth of the notches 87 to permit this action. There is then sufficient restrain applied to the trunnions 26 to hold them in the bottoms of the slots 25 even though the force applied for swinging the fuse tube 17 to the closed position is exerted from a position immediately below the lower terminal member 16.

As shown in Figure 5, when the fuse tube 17 is swung to the fully closed position, the cylindrical contact surfaces 32, because their center of curvature is located at 33 eccentric to the axis of the shaft 28, cause the auxiliary contacts 45 to move rearwardly a distance indicated at 89 away from the stop shoulders 48 and against the biasing action of the auxiliary contact springs 46. Since these springs are prestressed, the full force thereof is exerted to apply a relatively high contact pressure to the cylindrical contact surfaces 32.

Figure 6 of the drawings shows the relative positions of the parts just after the fuse link 38 has blown and the upward recoil of the fuse tube 17 is started. Since the flexible lead 39 no longer is restrained, the flipper 34 is freed to swing under the influence of the spring 34'. It acts to withdraw the remaining portion of the flexible lead 39 from the fuse tube 17 and, since the shoulder 35 moves out of engagement with the shoulder 36, Figure 2, the toggle member 27 no longer is restrained and it starts to swing, influenced in part by the biasing action of the auxiliary contact springs 46. The recoil applied upwardly to the fuse tube 17 as result of blowing of the fuse link 38 is sufficient to overcome the restraining force applied to the trunnions 26 by the shoulders 88 at the upper ends of the notches 87 and to force the auxiliary contacts 45 further away from the stop shoulders 48 as indicated at 90. Thus, during the initial stages of the recoil action, the contact pressure applied to the cylindrical contact surfaces 32 is increased. As shown in Figure 6 the trunnions 26 have moved upwardly a slight distance from the bottoms of the slots 25 and in a position in registry

with the shoulders 88 where there is a maximum deflection of the auxiliary contact springs 46.

Figure 7 shows a further stage in the operation of the fuse tube 17 and in the movement of the toggle member 27, the trunnions 26 and the flipper 34. As shown here the trunnions 26 have moved upwardly along the lower portions of the inclined shoulders 86 and, as a result, the contact springs 46 move the auxiliary contacts 45 forwardly to position them at a lesser distance 91 away from the stop shoulders 48. However, even though the toggle member 27 has started to move away from the position shown in Figure 5, the contacts 45 are held under substantial pressure by the springs 46 against the contact surfaces 32 and the likelihood of arcing and resulting pitting of the contacts is minimized.

After the upwardly reacting forces applied to the fuse tube 17 have been spent, the trunnions 26 return to the bottoms of the slots 25 under the downward thrust applied by the springs 63 and 71 and force of gravity. The toggle joint breaks fully and allows the fuse tube 17 to swing downwardly away from the upper terminal member 15 where it occupies an underhung position generally as shown in Figure 3 except that, since the flipper 34 no longer is restrained, the fuse tube 17 is inclined at a slightly different angle to the vertical than is shown here.

In Figures 8, 9, 10 and 11 of the drawings a modified construction is illustrated. It will be observed that the notches 25 in the lower terminal member 16 are defined by forward branches 95 having vertical rear walls 96. A forwardly opening notch 97 is located at the bottom of each of the notches 25 opposite the vertical rear walls 96. The notches 97 cooperate with trunnions 98, corresponding to the trunnions 26, modified by the provision of a slabbed off or flat side 99 on each trunnion.

Initially the fuse tube 17 is placed in the slots 25 by the live line tool or switch stick as previously described. The width of the slots 25 is such that the trunnions 98 each with a slabbed off side 99 will readily fit therein. Figure 8 shows the initial position of one of the trunnions 98 after the fuse tube 17 has been installed and before it is swung toward the closed position.

Figure 9 shows the fuse tube 17 being swung toward the closed position. A corresponding rotation of the trunnions 98 takes place. In the positions of the trunnions 98 as here shown with the circular portions 100 interfitting with the notches 97 on opposite sides of the lower terminal member 16, the lifting of the trunnions 98 out of the bottoms of the slots 25 is prevented. It will be apparent that the trunnions 98 can be inserted in and lifted out of the lower portions of the slots 25 only in two positions and that these are about 180° apart.

Figure 10 shows the fuse tube 17 in the fully closed position where the trunnions 98 are turned so that the flat sides 99 bear against the rear walls 96 and are biased to this position by the contact springs 46. This is the normal operating and current carrying position.

In Figure 11 it will be observed that, when the fuse tube 17 recoils upwardly on blowing of the fuse link 33, previously described, the trunnions 98 are free to move upwardly in the slots 25. Here the trunnions 98 have been turned through about 180° from their position shown in Figure 8. After the recoil forces have been spent, the trunnions 98 return to the bottoms of the slots 25 and the fuse tube 17 falls to the open position generally as shown in Figure 8.

Since certain further changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matter shown on the accompanying drawings and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. A drop out fuse cutout comprising, in combination, upper and lower terminal members in insulated spaced relation, said lower terminal member including a pair of vertically extending spaced apart walls each having an upwardly opening slot with a rearwardly opening notch at the lower end of each forward branch, a fuse tube having terminals at its ends for interconnection by a fuse link and adapted to recoil upwardly on blowing thereof, the upper fuse tube terminal being latched to said upper terminal member and the lower fuse tube terminal having a pair of trunnions the radius of which is greater than the depth of said notches interfitting with said upwardly opening slots, and spring means carried by said lower terminal member and reacting against said lower fuse tube terminal to bias said trunnions outwardly into said notches whereby the upper shoulders thereof act in cooperation with said trunnions and said spring means to restrain upward sliding movement of said trunnions when said fuse tube is swung to the latched position and application of predetermined upward force to said fuse tube is capable of overcoming said spring means and moving said trunnions out of said notches and said fuse tube and said trunnions upwardly in said slots.

2. A drop out fuse cutout comprising, in combination, upper and lower terminal members in insulated spaced relation, said lower terminal member including a pair of vertically extending spaced apart walls each having a U-shaped slot with a rearwardly opening notch at the lower end of each forward branch, a fuse tube having terminals at its ends for interconnection by a fuse link, the upper fuse tube terminal being latched to said upper terminal member and the lower fuse tube terminal having a pair of trunnions for interfitting with said U-shaped slots and a pair of contact surfaces eccentrically positioned with respect to said trunnions, and spring biased contact means carried by said lower terminal member and reacting against said contact surfaces to maintain electrical contact therewith and to bias said trunnions outwardly into said notches when said fuse tube is swung toward the latched position whereby the upper shoulders of said notches act in cooperation with said trunnions and said spring biased contact means to restrain upward sliding movement of said trunnions when said fuse tube is swung as aforesaid.

3. The invention, as set forth in claim 2, wherein the trunnions are circular and of such diameter that they freely fit in the U-shaped slots.

4. A drop out fuse cutout comprising, in combination, upper and lower terminal members in insulated spaced relation, said lower terminal member including a pair of vertically extending spaced apart walls each having a U-shaped slot with a rearwardly opening notch at the lower end of each forward branch, a fuse tube having terminals at its ends for interconnection by a fuse link, the upper fuse tube terminal being latched to said upper terminal member and the lower fuse tube terminal having a pair of trunnions for interfitting with said U-shaped slots and a pair of contact surfaces eccentrically positioned with respect to said trunnions, and a pair of spring biased contact fingers carried by said lower terminal member and reacting against said contact surfaces to maintain electrical contact therewith and to bias said trunnions outwardly into said notches when said fuse tube is swung toward and while it is in the latched position whereby the upper shoulders of said notches act in cooperation with said trunnions and the spring biased contact means to restrain upward sliding movement of said trunnions when said fuse tube is swung as aforesaid and to move said contact surfaces rearwardly when said fuse tube is moved upwardly as a result of recoil on blowing of said fuse link to increase the contact pressure exerted by said contact fingers on said contact surfaces.

5. The invention, as set forth in claim 4, wherein stop means are provided on the lower terminal member for limiting the outward movement of the contact fingers whereby substantial contact pressure is applied to the

contact surfaces immediately upon moving said contact fingers away from said stop means.

6. A drop out fuse cutout comprising, in combination, upper and lower terminal members in insulated spaced relation, said lower terminal member including a pair of vertically extending spaced apart walls each having a U-shaped slot with a forwardly opening notch at the lower end, a fuse tube having terminals at its ends for interconnection by a fuse link, the upper fuse tube terminal being latched to said upper terminal member and the lower fuse tube terminal having a pair of trunnions for interfitting with said U-shaped slots, each trunnion having a flat side with the minimum trunnion thickness being less than the space between the arms of the U-shaped slots whereby said trunnions can be inserted in and removed from the lower portions of said slots only when said trunnions are disposed in either of two positions about 180° apart and upward sliding movement of said trunnions is prevented while said fuse tube is being swung to the latched position.

7. A drop out fuse cutout comprising, in combination, upper and lower terminal members in insulated spaced relation, a fuse tube adapted to receive a fuse link and to recoil upwardly when the same blows, means pivotally and upwardly slidably mounting the lower end of said fuse tube on said lower terminal in operative position, means latching the upper end of said fuse tube to said upper terminal, means responsive to the blowing of said fuse link for releasing said upper end of said fuse tube from said upper terminal to swing downwardly to open circuit position, spring means reacting between said upper terminal member and said fuse tube to bias the latter downwardly against its pivot mounting on said lower terminal member, said fuse tube being slidable upwardly against said spring means as a result of the recoil resulting from blowing of said fuse link, and means restraining upward sliding movement of said fuse tube relative to said lower terminal while it is being swung from an underhung open position to an upright closed position, the last named means being ineffective to prevent upward sliding movement of said fuse tube in said upright closed position on recoil thereof.

8. A drop out fuse cutout comprising, in combination, upper and lower terminal members in insulated spaced relation, said lower terminal member having a pair of upwardly opening slots, a fuse tube having terminals at its ends for interconnection by a fuse link and adapted to recoil upwardly when the same blows, trunnions on the lower fuse terminal interfitting with said slots and permitting said fuse tube to recoil upwardly on blowing of said fuse link with the upper fuse tube terminal connected to said upper terminal member, spring means reacting between said upper terminal member and said fuse tube and biasing the latter downwardly against its upward recoil and acting to absorb the force incident thereto, and means restraining upward movement of said trunnions in said slots while said fuse tube is being swung from an underhung open position to an upright closed position, the last named means being ineffective to prevent upward movement of said fuse tube on recoil.

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