Feb. 11, 1941. W. O. SCHULTZ 2,231,510

FUSE CONSTRUCTION

Filed Aug. 26, 1939 4 Sheets-Sheet 1

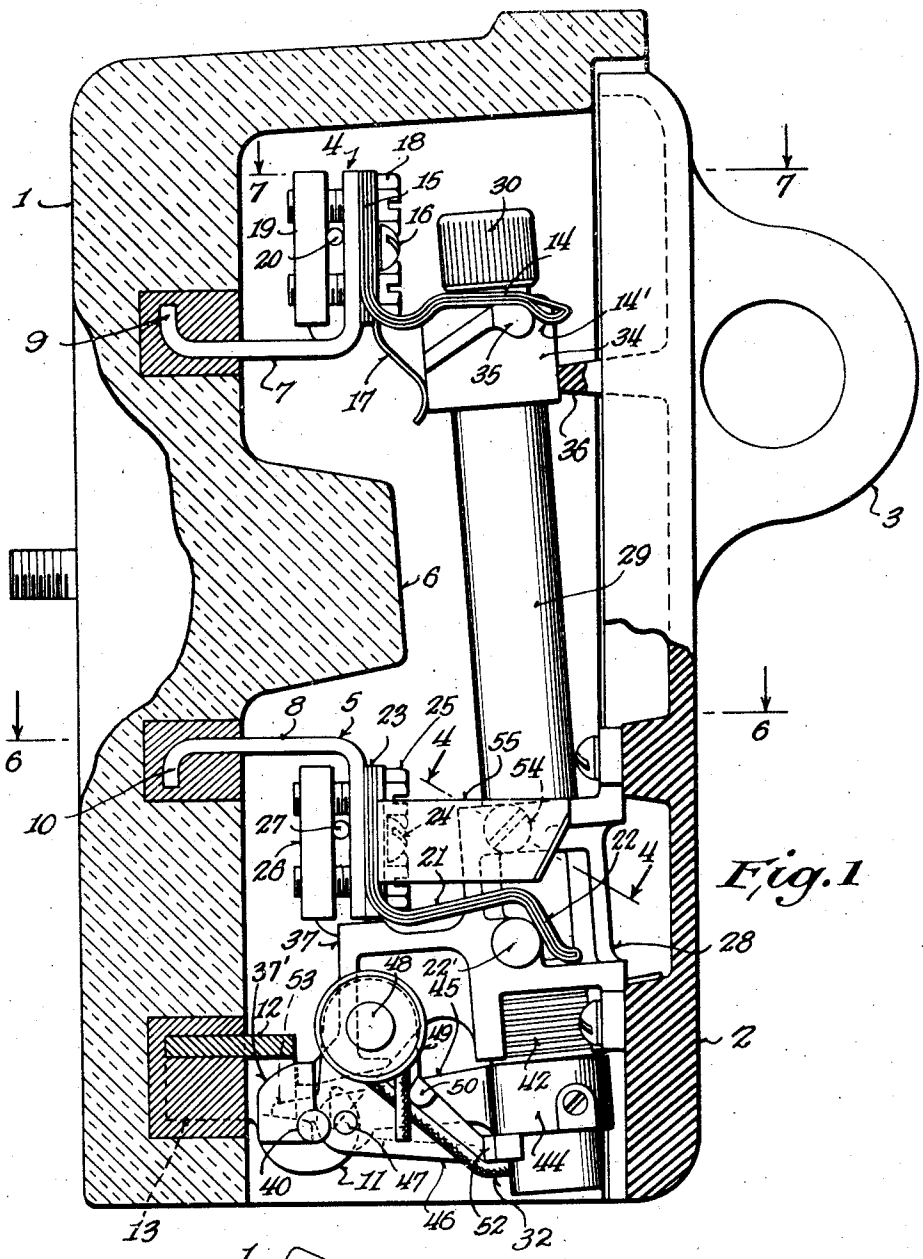


Fig. 1

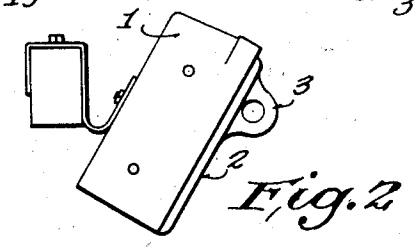


Fig. 2

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FUSE CONSTRUCTION

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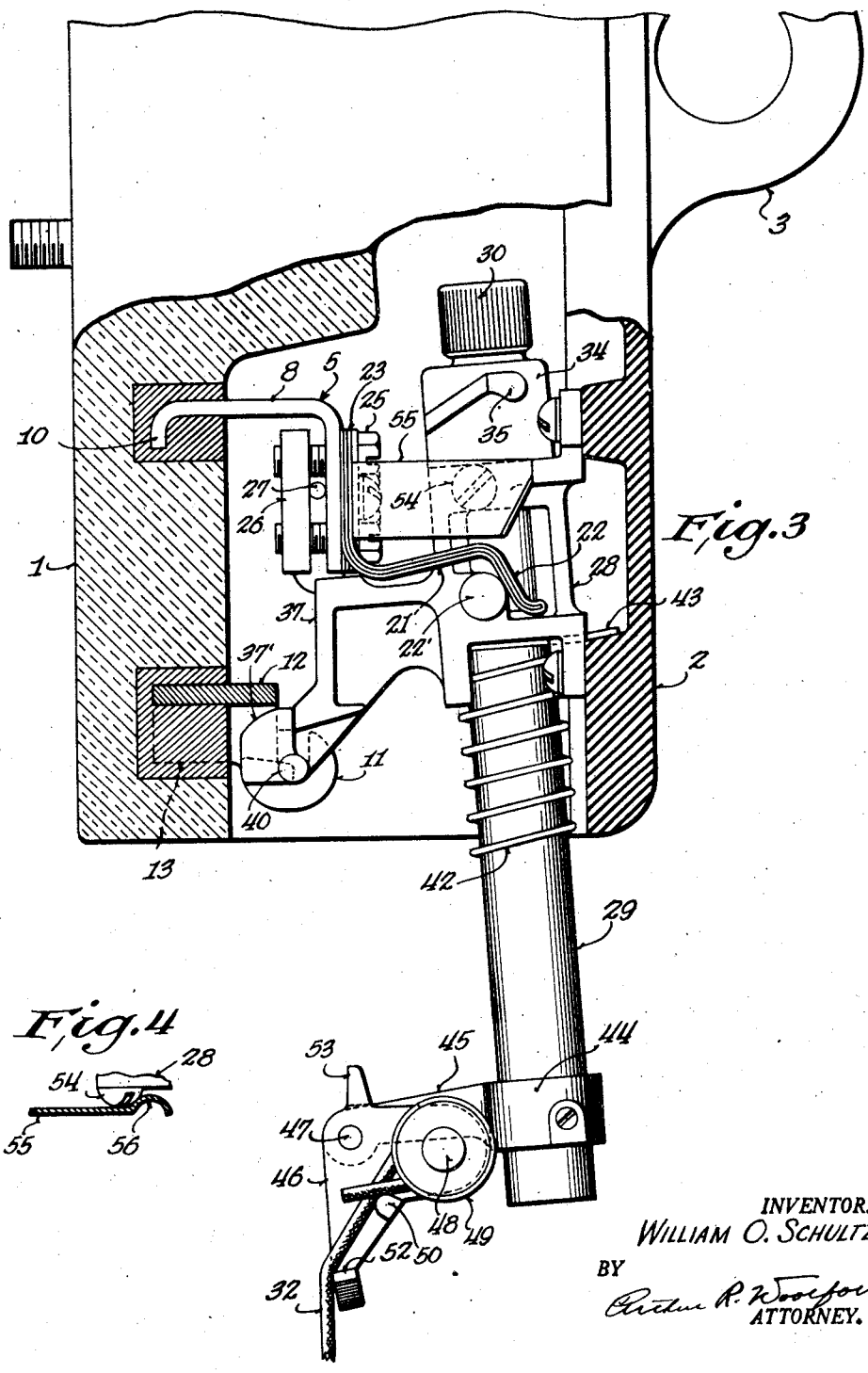


Fig. 3

Fig. 4

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FUSE CONSTRUCTION

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Fig. 5

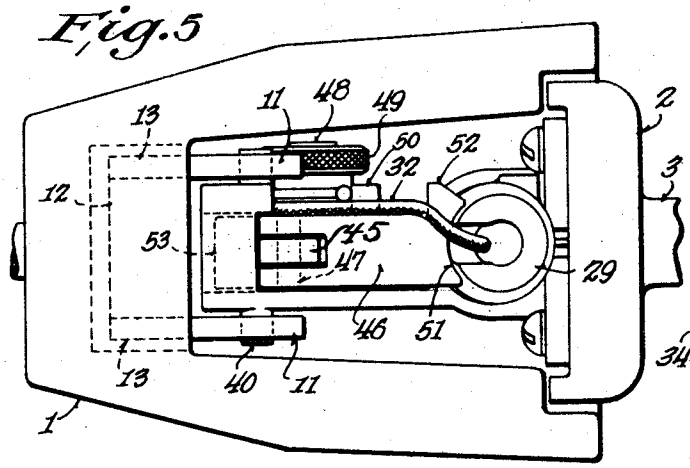


Fig. 8

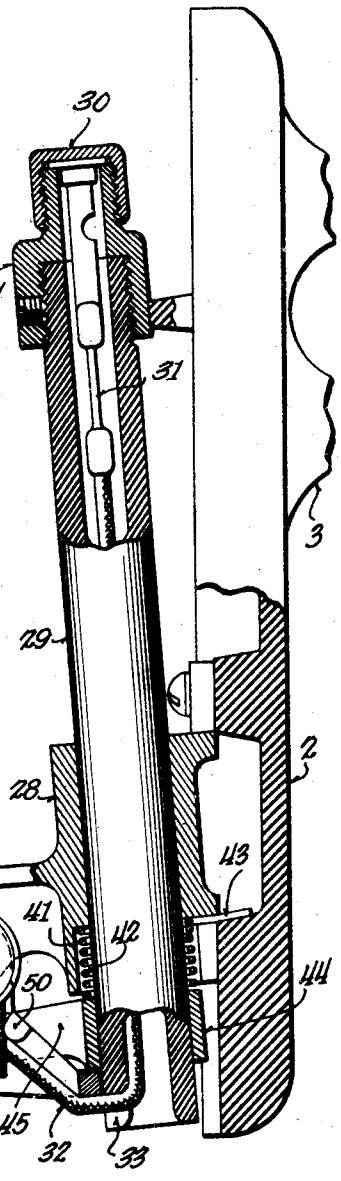


Fig. 6

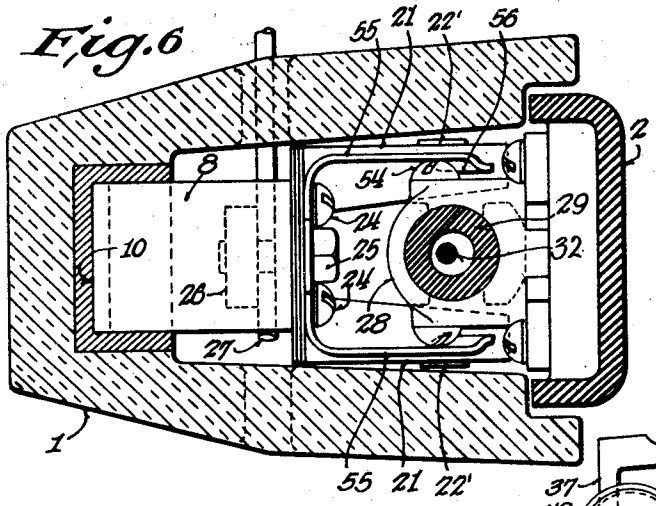
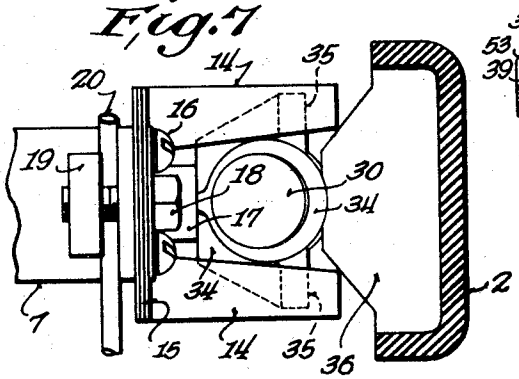


Fig. 7



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FUSE CONSTRUCTION

Filed Aug. 26, 1939 4 Sheets-Sheet 4

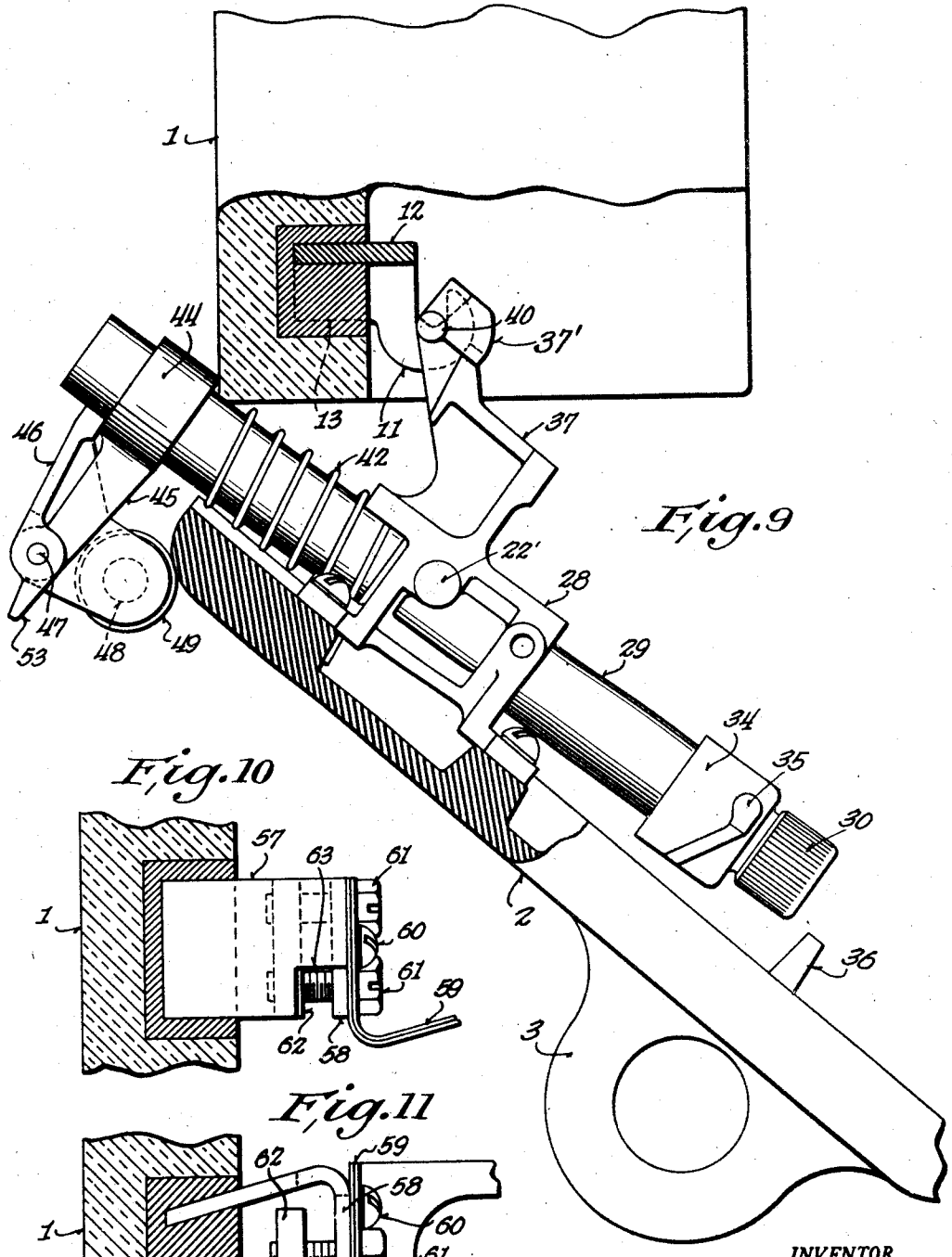
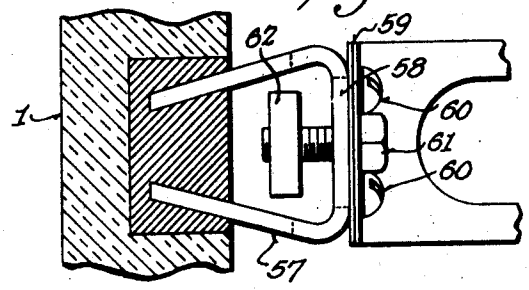


Fig. 9

Fig. 10

Fig. 11



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Patented Feb. 11, 1941 2,231,510

UNITED STATES PATENT OFFICE

2,231,510

FUSE CONSTRUCTION

William O. Schultz, South Milwaukee, Wis., assignor to Line Material Company, South Milwaukee, Wis., a corporation of Delaware

Application August 26, 1939, Serial No. 292,040

20 Claims. (Cl. 200—114)

This invention relates to fuse constructions and is particularly directed to a drop-out fuse.

Objects of this invention are to provide a housed type of drop-out fuse which is so made that it may be caused to operate in either of two different ways so that the fuse tube may slide downwardly and project from the housing, the door remaining closed, or which, by a simple change, may be made to operate in a different manner to cause the fuse tube to slide downwardly and the door to fall to open position, in both instances giving a visual indication of the fact that the fuse has blown.

Further objects are to provide a housed type of drop-out fuse which is so made that when the fuse tube slides downwardly, the lower portion of the fuse tube assembly is dead, and in which when the door either automatically drops open or is manually pulled open, the lower support for the fuse tube and door assembly and all parts of the fuse tube and door assembly are dead so as to provide for the safe removal of the fuse tube and door assembly and its safe replacing after refusing.

Further objects are to provide a drop-out type of fuse in which a spring encircles the fuse tube and urges the fuse tube downwardly, such spring, however, being of such length that it does not connect the lower portion of the fuse tube assembly with the lower stationary terminal but instead in which the spring is effective during the major portion of the sliding motion, but during the latter portion of the sliding motion is ineffective and is so held that the electrical connection to the lower part of the fuse tube assembly is interrupted.

Further objects are to provide a drop-out type of fuse in which a fuse link extracting means is carried by the fuse tube adjacent the open end, in which the coiled spring surrounding the fuse tube operates to urge the fuse tube downwardly and to cause fuse link extracting motion of the fuse link extracting means, the fuse link extracting means being carried by the fuse tube itself and being electrically dead after the fuse has blown.

Further objects are to provide a drop-out fuse construction in which a slidably mounted fuse tube is provided and in which the fuse extracting member is carried by the fuse tube and engages a relatively stationary member, the fuse link extracting means being normally held by the fuse link and holding the fuse tube in its elevated or operative position and upon blowing of the fuse link first operating as a fuse link extracting means and thereafter detaching itself from the relatively stationary member and becoming electrically dead, the fuse link extracting means being pivoted closely adjacent the relatively stationary member so that a small motion of the fuse tube results in a rapid withdrawal of the fuse link to thereby insure interruption of the circuit within the fuse tube prior to the time that the terminals of the fuse tube move away from the stationary terminals.

Further objects are to provide a construction in which the same spring actuates the fuse tube for sliding motion and also actuates the fuse link extracting member, the fuse link extracting member being, as stated, carried by the fuse tube itself and detachably interlocking with a relatively stationary portion of the apparatus.

Further objects are to provide a fuse construction in which novel forms of stationary contacts are provided which are so made that a very simple lead-in attaching member is furnished and is arranged for easy manipulation from directly in front of the fuse box so that the lineman may attach the lead-in conductors with ease, the construction also being relatively cheap and easy to produce.

Embodiments of the invention are shown in the accompanying drawings, in which:

Figure 1 is a side elevation, partly in section with parts broken away, showing the device in operative position and mounted vertically.

Figure 2 is a small side elevation showing the device mounted in a slanting position.

Figure 3 is a fragmentary sectional detail of the lower portion of the device, showing the position of the parts after rupture of the fuse link when the device is adjusted to hold the door closed.

Figure 4 is a sectional detail on the line 4—4 of Figure 1.

Figure 5 is a bottom view of the device.

Figure 6 is a sectional view on the line 6—6 of Figure 1.

Figure 7 is a fragmentary sectional view on the line 7—7 of Figure 1.

Figure 8 is a view of the fuse tube and door assembly removed from the housing and partly in section and partly broken away.

Figure 9 is a view corresponding to Figure 3, showing the position of the parts when the device is so adjusted as to have the door and fuse tube assembly drop to open position upon blowing of the fuse link.

Figure 10 is a fragmentary vertical sectional

view showing a further form of stationary contact.

Figure 11 is a horizontal sectional view of the structure shown in Figure 10.

Referring to the drawings, it will be seen that the device comprises a porcelain housing 1 provided with a door 2 formed of insulating material, such as a phenolic condensation compound. The door may be provided with a handle or eyelet portion 3. The housing is provided with an upper stationary contact indicated generally at 4 and a lower stationary contact indicated generally at 5 and with the usual intermediate barrier 6.

The upper and lower contacts are provided with reversely turned L-shaped members 7 and 8 respectively which may be of strap metal and which have angularly turned ends 9 and 10 cemented, leaded, or otherwise secured within recesses formed in the housing. The housing also carries a lower support which includes a pair of hook-shaped trunnion supporting members 11 joined by a transverse web 12 and vertical end walls 13.

The upper stationary contact includes a pair of spaced laminated spring fingers 14 joined by a transverse portion 15. This transverse portion is secured by means of screws 16 to the member 7 and preferably a downwardly extending, forwardly turned spring finger 17 is provided for a purpose hereinafter to appear.

A pair of bolts or screws 18 extend through the portions 15 and 7 and are threaded into a clamping plate 19, the clamping plate clamping the incoming lead 20 in place in a very simple manner. It is preferable to form the members 18 with polygonal heads and also to provide a slot in such members for the reception of a screw driver so that the lineman may use either a socket whench or a screw driver in securing the line wires in place.

The lower stationary contact includes the spaced laminated spring fingers 21 which are provided with downwardly turned portions 22 having rounded outwardly turned ends. These spring fingers are joined by a transverse portion 23 which, similarly to the upper stationary contact, are held in place by means of screws 24. Bolts or screws 25 extend through the portions 23 and 8 and are threaded into the clamping plate 26 which clamps the lower lead-in conductor 27 in place.

It is to be noted that the incoming leads may be easily inserted in between the clamping plates and the adjacent portion of the contacts, and that the lineman may, by means of a screw driver or a socket wrench, manipulate such bolts or screws from the front of the housing in a very simple and easy manner to clamp the conductors in place.

The door carries a sleeve or guide 28 which slidably receives the expulsion fuse tube 29, such fuse tube being provided with an upper screw cap 30 which clamps the upper button-head of the fuse link in place in the usual manner as shown in Figure 8.

The sleeve 28 is provided with a pair of laterally projecting lugs 22' which are received behind the downwardly turned portion 22 of the spring fingers 21. It is preferable to have the line of pressure between the portions 22 and the lugs 22' approximately in line with the trunnions 40 hereinafter described.

The fuse link is provided with a fusible section 31 adjacent its upper end and with a flexible leader 32 which projects outwardly through the bottom end of the fuse tube and is preferably guided through a notched portion 33, see Figure 8.

The upper contact of the fuse tube is indicated at 34 and is provided with a pair of lugs or ears 35 which project outwardly and are received beneath the spring fingers 14. The contact 34 also bears against the spring finger 17, see Figure 1, and this spring finger holds the lugs 35 against the slightly downwardly turned cam like portions 14' of the spring fingers 14. Further, it will be seen from reference to Figures 1 and 7 that the upper contact 34 of the fuse tube has a flat rear face and that the spring finger 17 has relatively extensive contact area with this flat face and consequently serves to carry some of the current from the upper stationary contact to the upper contact of the fuse tube.

The guiding sleeve 28 is secured to the door as stated and slidably receives the fuse tube 29. Normally the upper contact 34 of the fuse tube bears against a projecting portion 36 of the door. The guiding sleeve 28 extends rearwardly as indicated at 37, see Figures 1, 3, 8 and 9. This rearwardly extending portion or arm 37 of the sleeve 28 is provided with an aperture 38, see Figure 8, which has a lower wall or abutment 39 for a purpose hereinafter to appear. The arm is also provided with a pair of outwardly projecting trunnions 40 which are removably received within the hook supports 11 of the housing.

The sleeve 28 is also provided with a socket portion 41, see Figure 8, within which a coiled spring 42 is normally housed, such coiled spring loosely surrounding the fuse tube and having a projecting arm 43 bearing against a shouldered portion on the door 2 to prevent the spring from sliding downwardly on the fuse after the fuse has blown and after the parts have moved to the position shown in Figure 3 for example. The lower end of the spring bears against a collar 44 rigidly secured to the fuse tube adjacent its lower open end.

The collar 44 is integral with a rearwardly projecting arm 45 which fits into a slot formed in a lever 46 and is pivoted to such lever by means of the pintle pin 47. The lever 46 is provided with a projecting threaded stud 48 upon which a thumb nut 49 is carried to clamp the flexible leader 32 in place, such lever being preferably provided with a lug 50, see Figure 8, behind which the free end of the leader may be positioned. The lever 46 is cut out to provide a rounded or recessed portion 51 at its outer end which conforms approximately to the fuse tube, as shown most clearly in Figure 5. This outer end of the lever 46 bears against the lower portion of the collar 44 under normal conditions, as shown in Figures 1 and 8.

Upon reference to Figures 1, 5 and 8, it will be seen that the leader 32 of the fuse link is passed over the outer end of the lever 46 and over the laterally projecting lug 52 of such lever, as shown in Figure 5. The leader extends up the side of the lever 46 and is clamped beneath the thumb nut 49, as is apparent from an inspection of Figures 1, 5 and 8.

It is to be noted particularly that the outer end of the lever 46 is protected by the fuse tube against the incandescent gases projected from the bottom of the fuse tube upon blowing of the fuse, and also it is to be noted that the motion of the lever 46, which constitutes a fuse link extracting member, is downwardly as it rocks about the pivot pin 47, and thus any remaining portion of the

fuse link is drawn substantially downwardly from the open lower end of the fuse tube.

It is apparent from the description thus far given that upon rupture of the fuse link, the spring **42** bearing against the collar **44**, see Figure 8, will force the fuse tube downwardly and thus will carry the pivot pin **47** downwardly. However, the lever **46** is provided with a rearwardly projecting tongue **53** which fits within the aperture **38** of the arm **37**, which latter is rigid with the sleeve **28**. This tongue **53** bears against the supporting surface **39**.

As the fuse tube is forced downwardly by the action of the spring **42** assisted by gravity, it is apparent that the fuse link extracting member or lever **46** will be caused to rock about the pin **47** during the initial downward motion of the fuse tube, and it will be seen further that a very slight travel of the fuse tube downwardly, insufficient to remove the lug **35** of the upper contact **34** of the fuse tube from the spring fingers **14**, will result in a very extensive and rapid motion of the outer end of the lever **46**, thus quickly withdrawing any remaining portion of the fuse link and interrupting the circuit within the fuse tube prior to the parting of the upper stationary contact and the upper contact of the fuse tube.

The fuse tube is projected downwardly by the action of the spring **42** and continues downwardly, due to the momentum that it acquires and also due to the action of gravity, to the position shown in Figure 3, the door either remaining closed as shown in Figure 3 or falling open as shown in Figure 9, depending on the adjustment hereinafter described. As the fuse tube continues downwardly, the rear end **53** of the combined fuse link extracting and fuse tube restraining member **46** moves away from the abutment **39**.

It is to be noted particularly from reference to Figures 1 and 6, that the sleeve **28** is adapted to receive a pair of screws **54** which are left in place when it is desired to have the door remain closed and only the fuse tube to slide downwardly and outwardly to the position shown in Figure 3.

In order to retain the door closed, a U-shaped latch spring **55** is provided and is carried by the lower stationary contact indicated generally at **5**. The forward ends of the latch spring or latch member **55** are inturned as indicated at **56** in Figures 4 and 6. These inturned portions are positioned in front of the screws **54** and thus keep the door from falling open. However, it is apparent that the door may be pulled open either when the fuse link is intact or after the fuse link has blown, as in the first case the latch spring **55** and the upper spring contact **14** and the lower spring contact **21** will yield to allow the opening of the door.

If it is desired to have the door drop open upon blowing of the fuse link, the screws **54** are removed and consequently the door is held closed by the engagement of the upper spring fingers **14** with the lugs **35**, see Figure 1, and when the fuse tube drops downwardly, the door is released and the fuse tube and door assembly will rock open to the final position shown in Figure 9.

It is obvious that when the fuse tube and door assembly drop to open position, that the lower supports **11** and the entire fuse tube assembly is electrically dead. It is also clear that when the door stays closed and the fuse tube slides downwardly, as shown in Figure 3, that the lower portion of the fuse tube assembly, that is to say, the collar **44**, the arm **45** and the lever **46**, are electrically dead, and therefore after the fuse blows, no matter which adjustment is provided, there is no live part projecting outwardly from the housing.

A further form of stationary contact which may be used for either the upper or lower stationary contact is shown in Figures 10 and 11. This form differs from that previously described in that the supporting member constituting a part of the stationary contact is of roughly U-shape, as shown most clearly in Figure 11, and is indicated by the reference character **57**. It has rearwardly projecting arms which are cemented, leaded or otherwise secured to the housing **1**. The supporting member **57** is formed from strap metal and is provided with the transverse, relatively flat portion **58** to which the laminated contact is secured, such contact being indicated by the reference character **59**. The contact may be similar to those previously described and may be either the upper or the lower contact, or of any other type desired.

The U-shaped supporting member **57** is relatively heavy and receives the screws **60** which secure the contact **59** in place. Further, bolts **61** pass through the contact and through the supporting member **57** and are threaded into the conductor clamping plate **62** corresponding identically to that previously described so that when the screws or bolts **61** are tightened, they draw the clamping plate forwardly and thus serve to clamp a lead-in conductor in place.

It is preferable to notch out the lower portion of the supporting member **57** as indicated at **63** to facilitate insertion of the lead-in conductor.

In both forms of supporting member it is apparent that a small bent strip of strap metal may be employed. In the form previously described, the strap metal is generally horizontal, whereas in the form shown in Figures 10 and 11 the strap metal is essentially vertical.

It is to be noted that whichever type of supporting means is employed for the stationary contacts, that such supporting means is very easy to form and may be cheaply produced.

It is to be noted from reference to Figures 1 and 3 that the rearwardly projecting arm **37** of the sleeve **28** is positioned beneath the lower stationary contact and consequently resists upward recoil and prevents the upper portion of the door from striking against the adjacent portion of the housing. Further it will be seen that the arm **37** is provided with a rounded portion **37'** which fits beneath the overhanging portion **12** of the hook supports **11** under normal conditions and consequently prevents inadvertent detachment of the trunnions **40** from the hook supports **11**. However, when the fuse tube and door assembly are rocked to open position, this rounded portion clears the overhanging portion **12**, as shown in Figure 9, and allows the trunnions to be readily detached from the hook supports.

It is apparent that when the fuse tube projects downwardly from the housing, as shown in Figure 3, although the door remains closed, that a visual indication is given that the fuse has blown. Similarly when the door and fuse tube assembly drop to open position, as in Figure 9, a visual indication is given that the fuse has blown.

It will be seen that the fuse link extracting means moves during a slight downward motion of the fuse tube at the initial portion of the operation of the device, and that the fuse link extracting means rapidly withdraws any remaining portion of the fuse link. Also it will be seen that this fuse link extracting member is protected

from the incandescent blast of gases from the fuse tube, and that it does not obstruct the bore of the fuse tube in any manner whatsoever. Further, the motion of the outer end of the fuse link extracting member or lever is substantially downwardly and thus there is very little frictional drag on the leader against the side of the fuse tube.

It will be seen that this fuse device can be supplied to customers and the customers can adjust such devices so that either the door stays closed or drops open, depending upon the desire of the particular customer.

Although this invention has been described in considerable detail, it is to be understood that such description is intended as illustrative rather than limiting, as the invention may be variously embodied and is to be interpreted as claimed.

I claim:

1. A drop-out fuse construction comprising supporting means, stationary means carried by said supporting means and including stationary contacts, an expulsion fuse tube having an open end, fuse link extracting means carried by the fuse tube adjacent said open end, a sleeve supported from said supporting means and slidably holding said fuse tube, said fuse link extracting means engaging a part of said supporting means distinct and separate from said sleeve and detachably interlocking with said part and moving away from said part when said fuse tube slides with reference to said sleeve, and a fuse link within said fuse tube normally electrically connecting said stationary contacts and restraining said fuse link extracting means against motion.

2. In a drop-out fuse construction, stationary means having stationary contacts, an expulsion type fuse tube, a fuse link within said fuse tube normally electrically connecting said stationary contacts, supporting means including a sleeve slidably holding said fuse tube, an abutment carried by said supporting means and distinct and separate from said sleeve, and a combined fuse link extracting and fuse tube restraining member movably carried by said fuse tube and normally restrained by said fuse link and directly detachably interlocking with said abutment, said combined fuse link extracting and fuse tube restraining member being bodily movable with said fuse tube when said fuse tube slides through said sleeve and moving away from engagement with said abutment.

3. In a drop-out fuse construction, stationary means having stationary contacts, an expulsion type fuse tube, a fuse link carried within said fuse tube and normally electrically connecting said stationary contacts, a sleeve slidably carrying said fuse tube, said fuse tube having an open end, an arm carried by said fuse tube adjacent the open end and projecting laterally from said fuse tube, a combined fuse link extracting and fuse tube restraining member including a lever pivotally carried by said arm and having a forwardly projecting end adjacent said fuse tube and normally held by said fuse link, and an abutment supported from said stationary means and laterally spaced from said sleeve, said lever having a rearwardly projecting end normally engaging said abutment and restraining said fuse tube against sliding motion within said sleeve until released upon rupture of said fuse link.

4. In a drop-out fuse construction, stationary means having stationary contacts, an expulsion type fuse tube, a fuse link carried within said fuse tube and normally electrically connecting said stationary contacts, a sleeve slidably carrying said fuse tube, said fuse tube having an open end, a rigid arm carried by said fuse tube adjacent the open end and projecting laterally from said fuse tube, a combined fuse link extracting and fuse tube restraining member including a lever pivotally carried by said arm and having a forwardly projecting end adjacent said fuse tube and normally held by said fuse link, and an abutment supported from said stationary means and laterally spaced from said sleeve, said lever having a rearwardly projecting end normally engaging said abutment and restraining said fuse tube against sliding motion within said sleeve until released upon rupture of said fuse link.

5. In a drop-out fuse construction, stationary means having stationary contacts, an expulsion type fuse tube, a fuse link carried within said fuse tube and normally electrically connecting said stationary contacts, a sleeve slidably carrying said fuse tube, said fuse tube having an open end, an arm carried by said fuse tube adjacent the open end and projecting laterally from said fuse tube, a combined fuse link extracting and fuse tube restraining member including a lever pivotally carried by said arm and having a forwardly projecting end adjacent said fuse tube and normally held by said fuse link, and an abutment supported from said stationary means and laterally spaced from said sleeve, said lever having a rearwardly projecting end normally engaging said abutment and restraining said fuse tube against sliding motion within said sleeve until released upon rupture of said fuse link, said lever having means for the attachment thereto of said fuse link.

6. In a drop-out fuse construction, an expulsion fuse tube having an open end, a fuse link extracting member carried by the fuse tube adjacent said open end, stationary contacts, a sleeve slidably holding said fuse tube, means spaced from said sleeve and detachably interlocking with said fuse link extracting member for restraining said fuse tube against sliding, and a fuse link within said fuse tube normally electrically connecting said stationary contacts and restraining said fuse link extracting member against motion, said fuse link extracting member being moved by the sliding motion of said fuse tube upon rupture of said fuse link to extract any remaining portion of the fuse link.

7. In a drop-out fuse construction, an expulsion fuse tube having an open end, a fuse link extracting member carried by the fuse tube adjacent said open end, stationary contacts, a sleeve slidably holding said fuse tube, a spring biasing said fuse tube for sliding motion through said sleeve, means spaced from said sleeve and detachably interlocking with said fuse link extracting member for restraining said fuse tube against sliding, and a fuse link within said fuse tube normally electrically connecting said stationary contacts and restraining said fuse link extracting member against motion, said fuse link extracting member being moved by the sliding motion of said fuse tube upon rupture of said fuse link.

8. In a housed drop-out fuse construction, a housing, a door for said housing, supporting means supported from said housing and carrying said door and including a sleeve, spring means biasing said fuse tube for sliding motion through said sleeve, said housing having stationary con-

tacts, a fuse tube slidably carried by said sleeve, a fuse link within said fuse tube normally electrically connecting said stationary contacts, an abutment carried by said supporting means and spaced from said sleeve, and a fuse link extracting member carried by said fuse tube and detachably interlocking with said abutment and controlled by said fuse link.

9. In a housed drop-out fuse construction, a housing, a door for said housing, supporting means supported from said housing and carrying said door and including a sleeve, a spring encircling said fuse tube and biasing said fuse tube for sliding motion through said sleeve, said housing having statonary contacts, a fuse tube slidably carried by said sleeve, a fuse link within said fuse tube normally electrically connecting said stationary contacts, an abutment carried by said supporting means and spaced from said sleeve, and a fuse link extracting member carried by said fuse tube and detachably interlocking with said abutment and controlled by said fuse link.

10. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube being mounted to drop outwardly from operative to inoperative position, restraining means carried by said fuse tube and movable therewith, and a fuse link within said fuse tube, said restraining means comprising a lever cooperating with said supporting means adjacent said pivot means and moving away from said supporting means when said fuse tube moves to inoperative position, said lever having fuse link clamping means.

11. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube being mounted to drop outwardly from operative to inoperative position, an arm rigidly carried by said fuse tube and projecting laterally therefrom, a fuse link within said fuse tube, and a lever pivotally mounted on said arm and normally restrained against motion by said fuse link and cooperating with said supporting means adjacent said pivot means to restrain said fuse tube against motion and moving away from said supporting means when said fuse tube moves to inoperative position.

12. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube being mounted to drop outwardly from operative to inoperative position, an arm rigidly carried by said fuse tube and projecting laterally therefrom, a fuse link within said fuse tube, and a lever pivotally mounted on said arm and having a forwardly extending portion beneath which said fuse link is looped and having fuse link attaching means and having a rearwardly projecting portion cooperating with said supporting means adjacent said pivot means and moving away from said supporting means when said fuse tube moves to inoperative position.

13. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube and door assembly being biased towards outward swinging motion with reference to said housing, an arm rigidly carried by said fuse tube and projecting laterally therefrom, a fuse link within said fuse tube, and a lever pivotally mounted on said arm and normally restrained against motion by said fuse link and cooperating with said supporting means adjacent said pivot means to restrain said fuse tube against motion and moving away from said supporting means when said fuse tube moves to inoperative position, said fuse tube and door assembly rocking outwardly from said housing after motion of said fuse tube.

14. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube being mounted to drop outwardly from operative to inoperative position, an arm rigidly carried by said fuse tube and projecting laterally therefrom, a fuse link within said fuse tube, a lever pivotally mounted on said arm and normally restrained against motion by said fuse link and cooperating with said supporting means adjacent said pivot means to restrain said fuse tube against motion and moving away from said supporting means when said fuse tube moves to inoperative position, and means holding said door closed after said fuse tube has moved to inoperative position.

15. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube and door assembly being biased towards outward swinging motion with reference to said housing, an arm rigidly carried by said fuse tube and projecting laterally therefrom, a fuse link within said fuse tube, and a lever pivotally mounted on said arm and normally restrained against motion by said fuse link and cooperating with said supporting means adjacent said pivot means to restrain said fuse tube against motion and moving away from said supporting means when said fuse tube moves to inoperative position, and means for selectively allowing or preventing said door from rocking outwardly when said fuse tube moves to inoperative position.

16. A housed type of drop-out fuse comprising a housing, a fuse tube and door assembly, supporting means including pivot means for supporting said fuse tube and door assembly from said housing, said fuse tube and door assembly being biased towards outward swinging motion with reference to said housing, an arm rigidly carried by said fuse tube and projecting laterally therefrom, a fuse link within said fuse tube, and a lever pivotally mounted on said arm and normally restrained against motion by said fuse link and cooperating with said supporting means adjacent said pivot means to restrain said fuse tube against motion and moving away from said supporting means when said fuse tube moves to inoperative position, and removable means for locking said door to said housing to retain said door in closed position after said fuse tube has moved to inoperative position.

17. In a drop-out fuse construction, an expulsion fuse tube having an open end, a collar carried by said fuse tube adjacent said open end, a fuse link extracting member supported from said collar, stationary contacts, a sleeve slidably holding said fuse tube, a spring surrounding said fuse tube and normally bearing

against said collar for urging said fuse tube towards sliding motion through said sleeve, means detachably interlocking with said fuse link extracting member for restraining said fuse tube against sliding, and a fuse link within said fuse tube normally electrically connecting said stationary contacts and restraining said fuse link extracting member against motion, said spring being held out of contact with said collar when said fuse tube has slid outwardly with reference to said sleeve.

18. In a drop-out fuse construction, an expulsion fuse tube having an open end, a collar carried by said fuse tube adjacent said open end, a fuse link extracting member supported from said collar, stationary contacts, a sleeve slidably holding said fuse tube, a spring surrounding said fuse tube and normally bearing against said collar for urging said fuse tube towards sliding motion through said sleeve, means detachably interlocking with said fuse link extracting member for restraining said fuse tube against sliding, and a fuse link within said fuse tube normally electrically connecting said stationary contacts and restraining said fuse link extracting member against motion, said spring being held out of contact with said collar when said fuse tube has slid outwardly with reference to said sleeve, said fuse link extracting member moving with said fuse tube out of engagement with said means and being electrically dead when said fuse tube has moved to inoperative position.

19. A stationary contact construction comprising a relatively rigid member adapted for attachment to a suitable supporting means and having a relatively flat end portion, yielding contact means secured to said relatively flat portion, a conductor clamping plate located adjacent said relatively flat end portion, and attaching means accessible from the front for drawing said plate towards said relatively flat end portion for clamping a conductor between said plate and said relatively flat end portion.

20. A stationary contact construction for an electrical device comprising a relatively rigid flat strap member adapted to be secured to a suitable supporting member and having an angularly bent relatively flat end portion, yielding contact means secured to the front side of said angularly bent end portion, a conductor clamping plate located rearwardly of said angularly bent end portion, and attaching means extending through said angularly bent end portion and accessible from the front and threaded into said clamping plate, whereby said clamping plate may clamp a conductor between itself and the rear face of said angularly bent end portion.

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