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Patented Sept. 26, 1899.

L. W. DOWNES.

CASING FOR AND MOUNTING OF ELECTRICAL FUSES OR CUT-OUTS.

(Application filed Jan. 28, 1898.)

(No Model.)

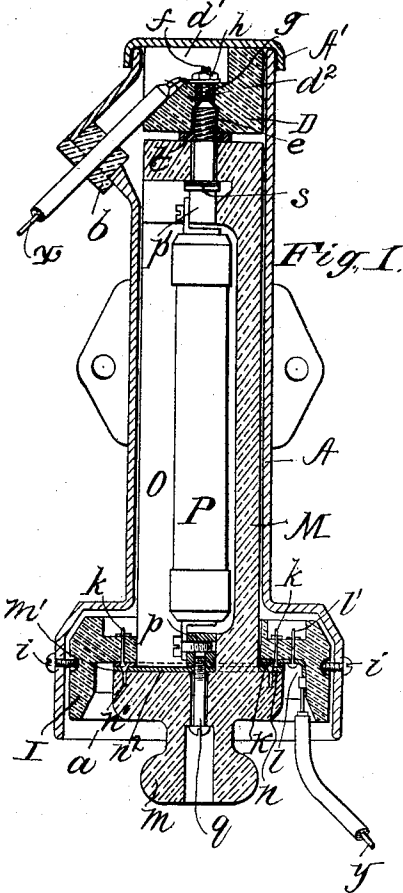


Fig. 1.

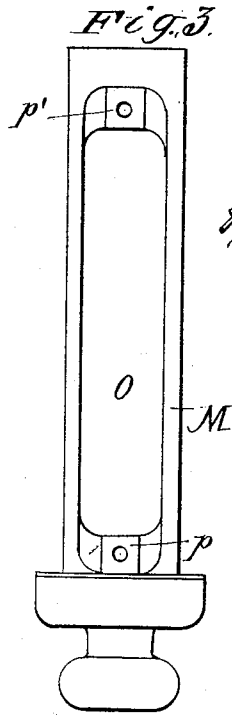


Fig. 3.

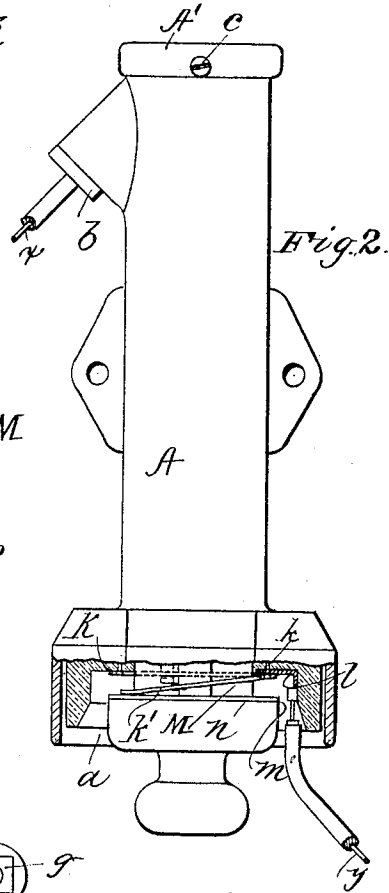


Fig. 2.

Fig. 4.

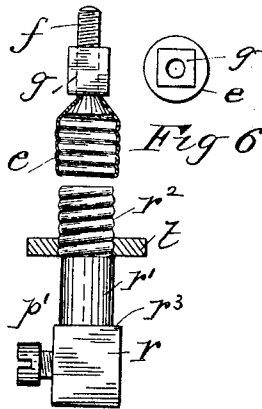
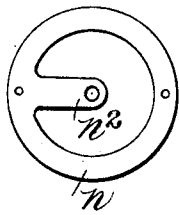


Fig. 6.

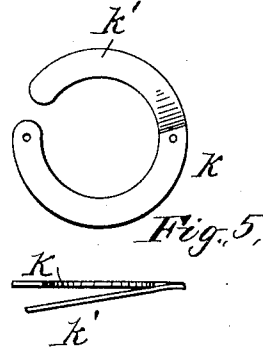


Fig. 5.

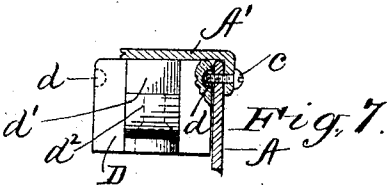


Fig. 7.

Witnesses.
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UNITED STATES PATENT OFFICE.

LOUIS W. DOWNES, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
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CASING FOR AND MOUNTING OF ELECTRICAL FUSES OR CUT-OUTS.

SPECIFICATION forming part of Letters Patent No. 633,577, dated September 26, 1899.

Application filed January 28, 1899. Serial No. 703,728. (No model.)

To all whom it may concern:

Be it known that I, LOUIS W. DOWNES, a resident of the city of Providence, State of Rhode Island, have invented a new and useful Improvement in Casings for and the Mounting of Electrical Fuses or Cut-Outs, which invention is fully set forth in the following specification.

This invention relates to inclosing casings for and the mounting of electrical fuses or cut-outs, and has particular reference to what is known to the trade as the "plug type" of cut-out.

With the object of generally improving this form of device the principal features of my invention are a casing or socket in which the live terminals of the circuit are mounted and a plug carrying terminals between which the fuse or cut-out is connected and which are adapted when the plug is fully inserted into the socket or casing to make contact with the live terminals in the latter, and thus complete the circuit through the fuse. When the plug is removed from the socket, the terminals on the plug become "dead," and a burned-out fuse may be replaced by a new one, or, in other words, the line may be re-fused, without liability of the lineman coming into contact with live terminals, which is particularly dangerous when high-tension alternating currents of, say, from one thousand to two thousand volts are used on the line.

The features above referred to, as well as others of importance, will be best understood by reference to the accompanying drawings, wherein I have illustrated what I deem to be the best embodiment of my invention in practical form, and wherein—

Figure 1 is a longitudinal section view through the plug and its socket or casing, the fuse being shown in elevation. Fig. 2 is an elevation with part of the socket broken away and part of the plug shown in section. Fig. 3 is an elevation of the plug with the fuse and other parts removed. Fig. 4 is a detail view of the contact-ring on the plug. Fig. 5 shows detail views of the arc-shaped spring contact-plate at the mouth of the socket. Fig. 6 shows in detail the screw and its screw-threaded sleeve, whereby the plug is held in

the socket and through which the electrical connection is completed. Fig. 7 is a detail view in elevation from the left of Fig. 1 of the block that is secured in the upper end of the socket, a portion of the socket being also shown in section.

Referring to the drawings by reference-letters, A is a casing in the form of an elongated cup or socket having an enlarged mouth at its lower end covered by hood *a* and an opening in the side wall thereof, in which fits a porcelain bushing *b* and through which bushing line-wire *x* enters the casing. At its upper end casing A is closed by a cap A', held in place by screws *c*, (see Fig. 7,) passing through the depending flange, around the edge of the cup, through openings in the casing A, and into recesses *d* in a block D of porcelain or other insulating or non-conducting material, the screws thus holding the block in place in the upper end of the socket. Block D is recessed at *d'*, said recess being intersected by a vertical central opening *d*² through the block, said opening being square at its upper end. In the lower end of opening *d*² fits a spun interiorly-screw-threaded cup or sleeve *e*, held in place by a flat-headed machine-screw *f*, which passes through a square nut *g*, occupying the square upper end of opening *d*². Above nut *g* the screw *f* passes through the terminal of wire *x* and is engaged by a clamping-nut *h*, Fig. 1. It will therefore be seen that when the several parts are tightly adjusted in position the screw-threaded sleeve *e* is prevented from turning by reason of the square nut *g* engaging in the square upper end of opening *d*².

I is an annular block of porcelain or other insulating material secured in the hood *a* of the casing A by screws *i*, Fig. 1. On the under side of the block I there is secured by bolts *k* *k* an arch-shaped contact-plate K, Fig. 5, the free end *k'* of which constitutes a spring-tongue. Plate K rests against and is in electrical contact with an angle-piece *l*, held in place by a bolt *l'*, to which piece line-wire *y* connects, as shown in Fig. 1.

From the preceding description it will be understood that when current is turned onto the line-wires *x* and *y* the screw-threaded

sleeve *e* at the upper end of socket A and the plate K at the lower end thereof become live contacts or terminals.

M represents a cylindrical plug of porcelain or other suitable insulating material adapted for insertion into the socket A, as clearly shown in Fig. 1. At the lower end of the plug is formed a knob *m*, which the operator grasps in inserting it into and removing it from the socket. Above the knob the plug is enlarged, so as to form a shoulder *m'* about the periphery thereof, against which shoulder is secured a contact-ring *n* by screws *n'*. A deep longitudinal recess O is formed in one side of plug M for receiving the fuse P, removably held in place between binding-posts *p p'*. Binding-post *p* rests against and in electrical contact with the inner end of a radial arm *n²* on contact-ring *n*, said arm projecting into and resting against the lower end wall of recess O. A screw *g*, located in a vertical central opening through knob *m*, passes through the arm *n²* and takes into a screw-threaded opening in binding-post *p*, thus holding the several parts firmly in place. Binding-post *p'* consists of a part *r*, square in cross-section, above which is a cylindrical part *r'*, projecting through a central opening formed through the upper end wall of plug M and having a screw-thread *r²* thereon for a part of its length.

s s are a number of felt washers interposed between the shoulders *r³* on the binding-post *p'* (at the junction of the parts *r* and *r'*) and the inner face of the end wall of the plug M, serving to compensate for any inequalities that may occur in the length of the porcelain, it being found almost impossible in practice to get any two pieces of porcelain of exactly the same dimensions. A nut *l*, engaging screw *r²* and turned down tightly against the end of plug M, serves to hold the several parts tightly in place.

In operation the lineman in re-fusing the line or in withdrawing the plug for other purposes, as for inspection of the device, first grasps knob *m* and turns the plug to the left, thereby unscrewing screw *r²* from engagement with sleeve *e*. This unscrewing of the parts causes the contact-ring *n* on the plug to slowly recede from the fixed part of contact K, against which it was seated, before contact between the screw *r²* and sleeve *e* is broken; but to prevent the complete separation of one set of terminals before contact is broken between the other set the spring-tongue *k'* follows the plug, as clearly shown in Fig. 2, and preserves the contact between the lower terminals until the screw *r²* is entirely disengaged from sleeve *e*, at which time by rapidly withdrawing the plug both sets of contacts may be simultaneously and instantaneously separated. The preservation of the engagement between the two sets of contacts until they can be simultaneously separated avoids a dangerous and destruc-

tive arc which might otherwise form between the slowly-receding contacts at the lower end of the casing before the screw-connected contacts at the upper end thereof could be so far disengaged as to permit withdrawal of the plug. Furthermore, in inserting the plug the spring-tongue *k'* enables the circuit to be completed between the lower contact simultaneously with its completion between the upper contacts. The plug M being thus removed, the binding-posts *p* and *p'* become dead terminals, and the burned-out fuse may be removed and a new one connected between said binding-posts without any danger to the lineman, such as he would be subjected to in having to connect the fuse between live line-terminals. The new fuse having been secured in place, the plug is now inserted into socket A and turned to engage screw *r²* with sleeve *e*, the circuit being thus completed from line-wire *x* through screw *f*, sleeve *e*, binding-post *p'*, fuse P, binding-post *p*, arm *n²*, ring *n*, arc-shaped contact K, and angle-piece *l* to line-wire *y*.

Modifications may of course be made within wide limits without departing from my invention, which is not limited to the exact construction shown and described.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a plug having a projecting screw-contact at one end, a contact at its other end, and a fuse connected between said contacts, of a socket having an interiorly-screw-threaded sleeve-contact in its closed end adapted to be engaged by the screw-contact on the plug, and a spring-contact at its open end adapted to bear against contact-plate on the plug and to form and maintain such contact so long as the screw and sleeve contacts are in engagement.

2. The combination with a hollow plug having a projecting screw-contact at one end thereof and a flat metallic ring-contact around its other end, of a fuse located in said plug and connected between binding-posts which are in electric connection respectively with the screw and ring contacts, of a socket, an interiorly-screw-threaded sleeve mounted within the socket at the closed end thereof and constituting a live contact with which the screw-contact on the plug is adapted to engage, an arc-shaped plate having a spring-tongue at one end thereof mounted in the open end of the socket and constituting a second live terminal with which the ring-contact on the plug is adapted to engage, whereby the circuit is completed through the fuse, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LOUIS W. DOWNES.

Witnesses:

HENRY W. HAYES,
HENRY A. PALMER.