June 24, 1947. M. G. CHITTUM 2,422,886

INDICATOR FUSE PLUG

Filed Sept. 28, 1945

FIG. 1

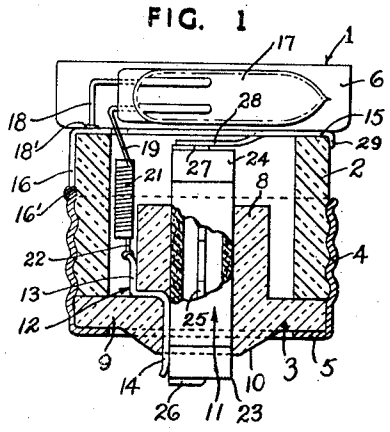


FIG. 2

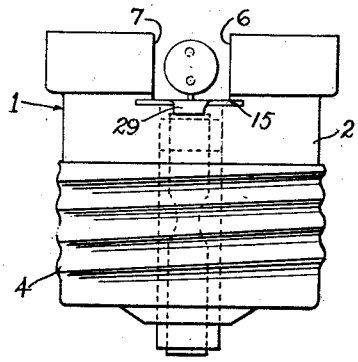


FIG. 3

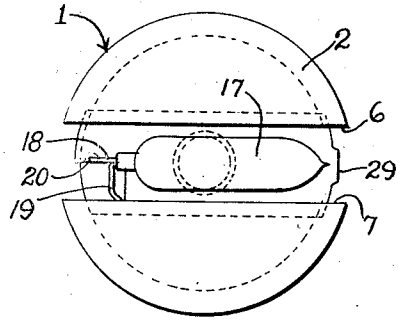


FIG. 4

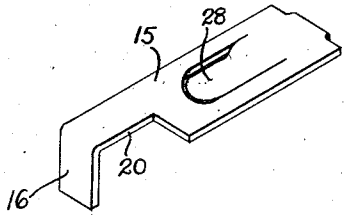
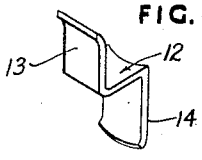


FIG. 5



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INDICATOR FUSE PLUG

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4 Claims. (Cl. 200—121)

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My invention relates to electrical plug fuse constructions and novel improvements therein. It is an object of my invention to provide a simple construction that is sturdy in structure including a unique compact and reliable electrical connection for a glow lamp or light to indicate the burning out or blowing of the fuse element.

It is an object of my invention to construct a sectional plug body of insulating material that is sturdy, easily assembled and so constructed as to afford an efficient shield or protecting means for the glow lamp.

It is also an object of this invention to provide a plug fuse construction provided with an unique arrangement or combination with a removable cartridge which carries the destructible fuse element.

Other objects and advantages of construction will be revealed in the detailed description of the accompanying drawings which constitute a part of this specification.

In the drawings:

Figure 1 is a longitudinal sectional view taken substantially centrally of my new plug fuse,

Figure 2 is a side elevational view showing the shielded position of the glow lamp,

Figure 3 is a plan view of my new plug fuse,

Figure 4 is a perspective view of a terminal conductor for the fuse element and one side of the glow lamp, and

Figure 5 is a perspective view of a terminal conductor for the other side of the glow lamp.

The drawings are merely illustrative of my invention and not definitive thereof except as claimed herein.

The reference characters of the specification and drawings identify the particular details essential to carry out the principles of my new invention.

In my invention the complete plug 1 comprises the sections 2 and 3 which are secured together by the screw-threaded terminal thimble 4 having the inturned flange 5. The section 2 includes a deep recess flanked by the protecting walls 6 and 7.

Section 3 is provided with a tubular extension 8 located in concentrically spaced relation within the section 2. It is noted that the extension 8 is integral with an apertured disc portion 9 having an integral apertured boss 10. The boss 10 is tapered outwardly to its aperture. The apertured disc 9 and its boss 10 are in alignment with the tubular extension 8 and are adapted to frictionally receive the cartridge 11 and removably retain it in position.

The sections 2 and 3 may be made preferably

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of any suitable moldable insulating material. The offset conductor 12 is provided with a leg constituting a contact terminal 14 and a leg 13 which extend in opposite directions from each other. The offset conductor 12 may be molded in position on the inner section while the inner section is being molded. The walls 6 and 7 of the recess are undercut to receive and retain a transversely arranged conductor 15 having the depending leg 16 which is electrically connected with the flanged thimble 4.

The glow lamp 17 is located in the recess between the walls 6 and 7 and is amply protected by said walls. One terminal of the glow lamp is connected electrically directly with the transverse conductor 15 by the conductor 18.

The other terminal of glow lamp 17 is connected by a conductor 19 leading through a recess 20 in the transverse conductor 15 to one end of a resistance element 21. The opposite end of the resistance element 21 is connected to the leg 13 of the offset conductor 12 by the conductor 22.

The tubular fibrous cartridge 11 is provided with slotted end caps 23 and 24 to receive the flat ends of the meltable conductor fuse element 25. The flat ends 26 and 27 are bent over in the same direction. These bent ends 26 and 27 hold the caps 23 and 24 on the fibrous tube 11 and supports itself in place in the tube. The bent ends 26 and 27 constitute electrical contacts.

When the fuse is burned out, melted or blown out, the cartridge can readily be removed after the plug 1 has been removed from its socket. After the line connected to the socket (not shown) has been placed in working condition, a new cartridge may be placed in the plug 1.

Since the caps 23 and 24 are removable both from the fibrous tube 11 and the fuse element 25, it is feasible to place a new fuse element 25 in the fibrous tube and through the slotted caps 23 and 24 and thereby produce a rebuilt cartridge 11.

The transverse conductor is provided with a struck-up yieldable tongue 28 deflected to the same side of the transverse conductor 15 as the leg 16. The transverse conductor also includes a depending lug 29 which together with the leg 16 prevents endwise displacement of the transverse conductor 15 relative to the section 2.

To assemble the fuse plug 1 and its glow lamp 17, it is feasible to take the inner section 3 with its in situ offset conductor 12, and connect the leg 13 of the conductor 12 to the lower end of the resistance element 21 by means of the conductor 22. The other end of the resistance element 21 is then connected to the complemental end of

the conductor 19. The outer section 2 is next taken and shifted to a position such that the transverse conductor 15 may be slid endwise between the walls 6 and 7, with the leg 16 and lug 29 depending from the opposite ends of said conductor in engaging contact with the complemental circumferential edges of the section 2. In sliding the conductor 15 endwise between the walls 6 and 7 of the outer section 2, the other end of the conductor 19 is inserted through the recess 20 in the conductor 15. The outer section 2 is then placed over the inner section, whereupon the thimble 4 is threaded onto the section 2 until the flange 5 is in abutting engagement with the exterior face of the section 3, clamping the sections 2 and 3 together. The end of the conductor 19 projecting through the recess 20 of the transverse conductor 15 is connected to one of the terminals for the glow lamp 17. The end of the leg 16 and the edge of the thimble 4 are then electrically connected together by means of suitable solder 16'. The end of the other terminal 18 from the glow lamp 17 is likewise electrically connected to the transverse conductor 15 by the use of solder, as at 18'. With the sections 2 and 3 thus assembled, the glow lamp 17 is inserted in the recess formed by the spaced walls 6 and 7, and mounted in the socket provided therefor.

The glow lamp 17 is preferably a neon tube light, but any other suitable light could be used.

When the fuse plug is in normal operation, no appreciable amount of electric current passes through the resistance element and the lamp so that no light is produced until the fuse burns out. When the fuse element burns out the conductor 14 being in contact with the cap 23 provides a path for the current to pass through the lamp to indicate that the fuse element is burned out.

The transverse conductor 15 is preferably made of resilient brass stock, that is, it should be elastic yet bendable so that the essential bends and deflections can be successfully made.

The thimble 4, the offset conductor 12 and the caps 23 and 24 are preferably made of brass. Of course, other suitable electrical conducting material may be used.

It is noted that the tube of cartridge 11 is preferably made of fibrous insulating material but suitable plastic compositions may be substituted if found to be feasible.

Having fully described my invention, what I claim is:

1. An indicator fuse plug comprising an inner section, an outer section having a recess in its outer portion, a flanged thimble for securing said sections together, means on said inner section adapted to receive and support a fuse cartridge therein, a fuse cartridge provided with an inlet and an outlet terminal mounted within said means, a transversely arranged conductor within said recess and supported by the outer section, said conductor having a depending leg and a tongue deflected toward the inner section and located in the path of said cartridge, said tongue being in engagement with the outlet terminal of said cartridge, the depending leg of said transversely arranged conductor being electrically connected to said thimble, a glow lamp having a pair of terminals mounted within said recess, one of the pair of terminals of said glow lamp being directly connected to said transversely arranged conductor, a resistance element, a conductor on said inner section having an end thereof in contact with the inlet terminal of said cartridge and its opposite end connected to the complemental end of said resistance element, and a second conductor leading from the other of the pair of terminals of said glow lamp and connected to the other end of said resistance element.

2. The construction set forth in claim 1, in which the thimble and the outer section are provided with associated complemental screw-threads whereby the inner section may be clamped to the outer section.

3. An indicator fuse plug construction comprising an inner section provided with a hollow tubular extending portion, an outer section having a hollow tubular portion provided with screw threads about its exterior peripheral surface, the hollow tubular portion of the outer section enclosing the hollow tubular portion of the inner section and spaced from the latter, a flanged thimble provided with screw threads therealong and having its screw threads in engagement with the screw threads of the tubular portion of said outer section for securing the inner and outer sections together, said outer section including spaced walls defining a recess, a transversely arranged conductor within said recess, there being a portion of reduced width on said conductor to provide a recess said walls being undercut to retain said conductor accurately in position in said recess, a glow lamp provided with a pair of terminals mounted within the recess of said outer section, a fuse cartridge provided with an inlet and an outlet terminal extending through the hollow tubular portion of said inner section and having its outlet terminal adjacent said transversely arranged conductor, said transversely arranged conductor having a depending leg and a spring tongue cut therefrom and deflected to the same side as the depending leg and located in the path of said cartridge, said tongue being in engagement with the outlet terminal of said cartridge, the depending leg of said transversely arranged conductor being electrically connected to the complemental edge of said thimble, a resistance element, an offset conductor on said inner section having an end thereof in contact with the inlet terminal of said cartridge and its opposite end connected to the complemental end of said resistance element, a conductor leading from one of said pair of terminals of said glow lamp and extending through the recess in said transversely arranged conductor and connected to the other end of said resistance element, and a second conductor leading from the other of said pair of terminals of said glow lamp and electrically connected to said transversely arranged conductor.

4. An indicator fuse plug construction comprising an inner section provided with a hollow tubular extending portion, an outer section having a hollow tubular portion, the hollow tubular portion of the outer section enclosing the hollow tubular portion of the inner section and spaced from the latter, a thimble for securing the said sections together, said outer section including spaced walls defining a recess, a transversely arranged conductor within said recess and supported on said outer section, a glow lamp provided with a pair of terminals mounted within said recess, a fuse cartridge provided with an inlet and an outlet terminal extending through the hollow tubular portion of said inner section and having its outlet terminal adjacent said transversely arranged conductor, said transversely arranged conductor hav-

ing a depending leg and a spring tongue cut therefrom, said tongue being in engagement with the outlet terminal of said cartridge, the depending leg of said transversely arranged conductor being electrically connected to said thimble, a resistance element, a conductor on the inner section having an end in contact with the inlet terminal of said cartridge and its opposite end connected to the complemental end of said resistance element, a second conductor leading from one of said pair of terminals of said glow lamp and connected to the other end of said resistance element and a third conductor leading from the other of said pair of terminals of said glow lamp and electrically connected to said transversely arranged conductor.

MELVIN G. CHITTUM.

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