July 14, 1925. 1,545,781

F. M. LONG

RENEWABLE FUSE PLUG

Filed May 16, 1922

Fig. 1.

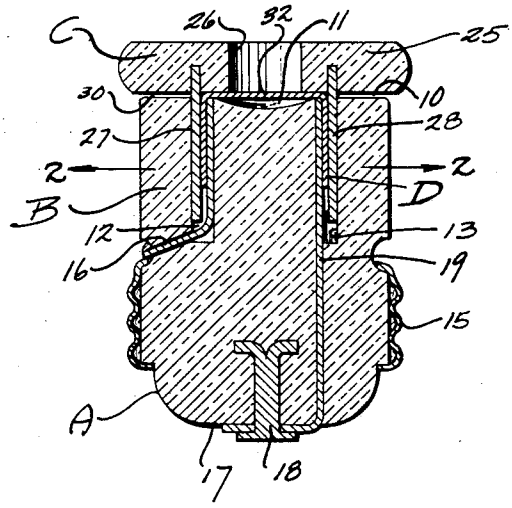


Fig. 2.

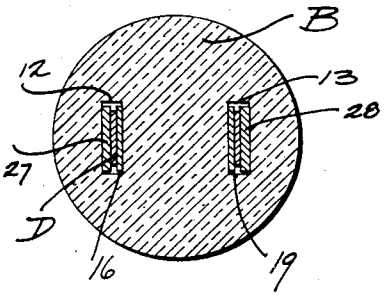


Fig. 3.

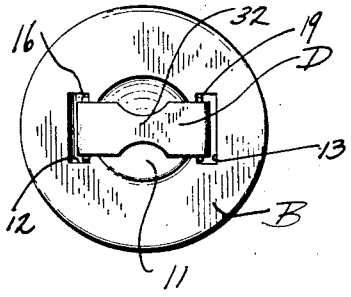


Fig. 4.

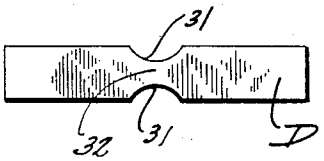
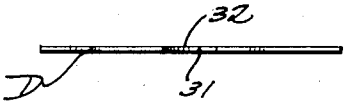


Fig. 5.



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Patented July 14, 1925. 1,545,781

UNITED STATES PATENT OFFICE.

FRANK M. LONG, OF PORTO ALEGRE, BRAZIL.

RENEWABLE FUSE PLUG.

Application filed May 16, 1922. Serial No. 561,394.

To all whom it may concern:

Be it known that I, FRANK M. LONG, a citizen of the United States, residing at Caixa 146, Porto Alegre, Brazil, South America, have invented certain new and useful Improvements in Renewable Fuse Plugs, of which the following is a specification.

This invention relates to a fuse plug, susceptible of being renewed in an economical manner, merely by the disposition of a new fuse conducting element therein.

The primary object of the invention is the provision of a fuse plug for electric circuits, of relatively simple construction, embodying a detachable arrangement, whereby a fusible conducting element may be detachably associated therewith for bridging spaced terminals, said fusible element being clamped in the plug in a novel manner to permit fusion thereof, upon an overload of electric current.

A further object of the invention is the provision of a fuse plug of the socket inserting type, embodying a novel clamping arrangement for detachably holding a fusible element therein.

Other objects and advantages will be apparent during the course of the following detailed description.

In the accompanying drawing, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a cross sectional view taken longitudinally of the fuse plug, showing the association of details thereof.

Figure 2 is a transverse cross sectional view, taken substantially on the line 2—2 of Figure 1.

Figure 3 is a plan view, showing the manner in which a fusible element is connected in one part of the improved fuse plug.

Figure 4 is a plan view of the improved fusible conducting member adapted for association with the renewable plug, showing the same in the compact arrangement which the same assumes prior to assemblage in the improved fuse plug.

Figure 5 is a side elevation of the element illustrated in Figure 4.

In the drawing, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the letter A designates the improved renewable fuse plug, embodying a casing or body portion B, and clamping cap C, for the securing of the novel fusible conducting element D to the body portion B.

The casing B is preferably of the socket inserting type, although it is to be understood that the renewable feature of the improved fuse plug may be adapted to various types of casings. The body B is preferably formed of porcelain or similar insulating material, being of cylindrical shape, and having the upper end 10 relatively flat and provided with the central depression 11 therein. A pair of sockets in the form of longitudinal passageways are provided, extending inwardly of the casing B from the flat face 10, and just bordering on the marginal edges of the depression 11 formed in said face 10. The ordinary screw threaded metallic ring 15 may be provided, engaging the outer circumference of the casing B for a portion of the length thereof, which is adapted for engaging in a socket in the well known manner. A terminal strip of conducting metal 16 is mounted in the body B, in contact with the screw threaded ring portion 15 and extending upwardly in the socket passageway 12 to a point just below the face 10. The end 17 of the casing B directly opposed to the face 10 is preferably provided with the ordinary contact point or member 18 of metal, having a terminal strip 19 of conducting metal in engagement therewith and extending upwardly through the casing B into the other socket passageway 13; said strip 19 terminating in said socket passageway 13 just below the face 10. Thus, it can be seen that the terminal strips 16 and 19 are provided in the casing B, which are held in insulated and spaced relation therein, having ends thereof which extend respectively into the passageway 12 and 13 above described. This casing B and the incidental parts may be made of any size, consistent with the use to which the fuse is to be put.

Referring to the clamping cap C, the same preferably comprises a disc like member 25,

of insulating material, having a central aperture 26 extending transversely therethrough. Arms 27 and 28, preferably of spring like connecting metal, are provided, extending outwardly from an inside face 30 of the insulating disc 25; said arms 27 and 28, of course, being of the same length, and spaced in such relation that they may be inserted into the sockets 12 and 13 of the casing B.

The fusible element D may be composed of any of the well known fusible metals used in plugs for properly controlling an electrical circuit. This member D is preferably of rectangular formation, and strip like in appearance. In most instances, the same will be of ductile lead, capable of fusing at a relatively low degree of temperature. This member D is provided intermediate its ends with the arcuated cut outs 31, to materially reduce the width of said member D at such point, to provide the relatively narrow portion 32 which, in fact, is that portion of the member D in which fusion takes place, in order to break an electric circuit.

The assembling of the fuse plug A is extremely simple. It is merely necessary to bend the ends of the fusible element D outwardly in the same general direction, so that said element D assumes a U-shaped appearance, so that the ends thereof may be inserted into the passageways or sockets 12 and 13 provided in the main body B of the fuse plug A. When in this position, it can be seen that the ends of the fusible element D are in contact with those ends of the terminals 16 and 19 which extend into the sockets 12 and 13 respectively, and thus bridging said terminals whereby an electric circuit may be completed, when the improved plug A is properly inserted in a socket provided therefor. In order to insure that the fusible element D is properly retained upon the main body B of the plug A at all times, the clamping cap C is applied to the main body B, so that the arms 27 and 28 thereof are inserted into the sockets 12 and 13 respectively. In this position, said arms 27 and 28 securely engage those ends of the fusible element D which are disposed in the sockets 12 and 13 of the casing B, and binding them in secure engagement against the terminals of the improved fuse plug A.

The improved plug A having been assembled in the above described manner, and properly inserted in a socket to close an electric curcuit, it can be seen that if an overload is imposed upon the plug A, fusion will take place in the member D at the relatively narrow point 32, so that the circuit conveyed through the plug A will immediately become broken. Gases and the melted portions of the fusible element D are permitted to escape from the plug A, by reason of the vent opening 26 and the depression 11, provided in the cap C and the body B of the plug respectively. The portion 32 when the improved fusible strip D is applied to the plug A is not in contact with any portion of the body B or the cap C and is thereby permitted to function in an accurate manner for controlling an electric circuit.

It is apparent that when the strip D is destroyed, the improved plug A may be renewed, by merely disposing a new member D in the body B, and fasten the same by the cap C in the above described manner. Thus, the cost of renewing the plug A is merely the cost of one of the fusible members D. These fusible members D are inexpensive, and the cost of renewal will be almost negligible.

Various changes in the shape, size and arrangement of parts, may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. A fuse plug comprising a casing of insulating material having pockets leading from one end in spaced relation to each other, terminals carried by said casing and extending into said pockets, a U-shaped bridge of fusible material extending across the said end of said casing and having its arms extending into said pockets and engaging said terminals, a cap, and attaching arms extending from said cap into said pockets to hold the cap in place and engaging the arms of the bridge to retain the bridge arms in close contact with said terminals.

2. As an article of manufacture, a casing provided with a pair of socket passageways therein, terminals mounted in said socket passageways insulated from each other, a cap, a fusible element having portions extending into the passageways for engagement with said terminals, and clamping arms carried by said cap insulated from each other, and adapted for insertion in said socket passageways of the casing to hold the cap in place and the extended portions of the fusible element in contact with the terminals.

3. A fuse plug comprising a supporting casing of insulating material having an end face thereof provided with a central depression, said end face having socket passageways extending inwardly upon opposite sides of said depression, terminals carried by said casing having ends extending into said socket passageways, a fusible member of ductile conducting material having the intermediate portion thereof reduced, said material adapted for having the outer ends thereof inserted into the socket passageways of said casing whereby said reduced portion is spaced over the depression in the

end of said casing, and a clamping cap including a disc portion provided with a central opening therein, and having a pair of spring like clamping arms extending outwardly from one side thereof, whereby said arms may be inserted in the socket passageways of said casing to clamp the ends of said fusible element therein, said cap when in such position having the aperture therein disposed directly over the reduced portion of said fusible element for exposing the same.

In testimony whereof I affix my signature.

FRANK M. LONG.