Nov. 21, 1933. G. W. ALLRED 1,936,004

PLUG FUSE

Filed Oct. 28, 1931

Fig-1-

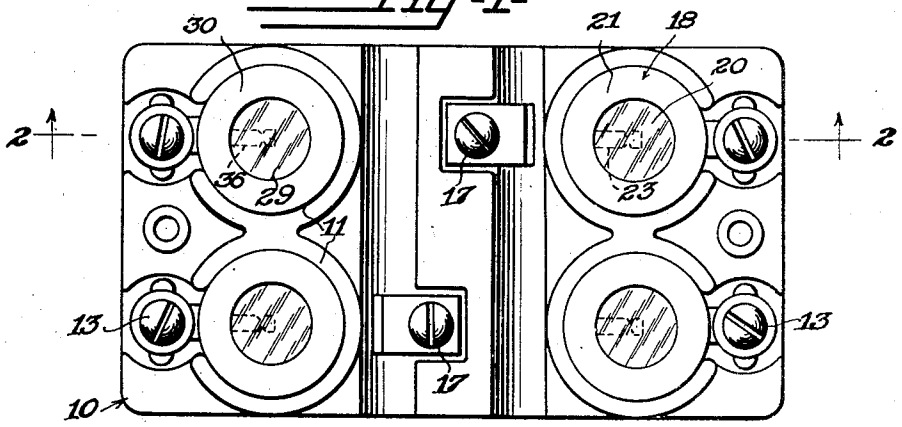


Fig-2-

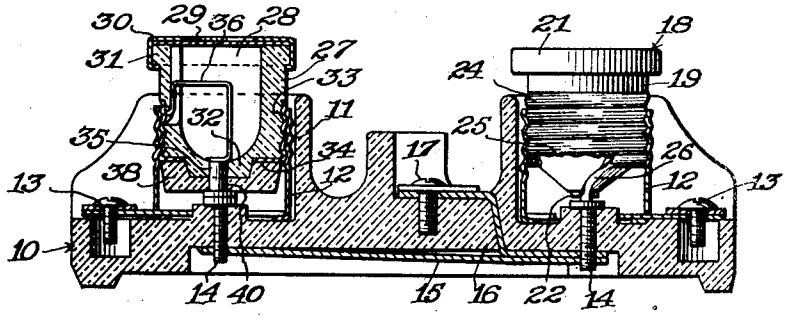


Fig-4-

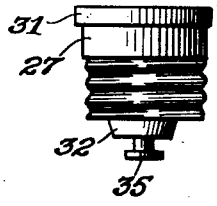


Fig-3-

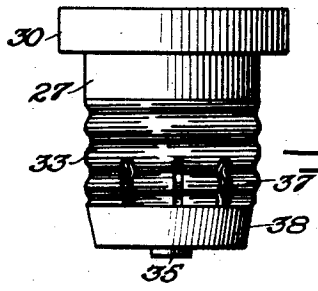


Fig-6-

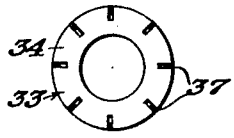


Fig-7-

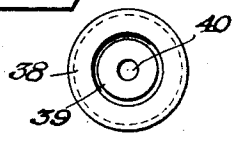
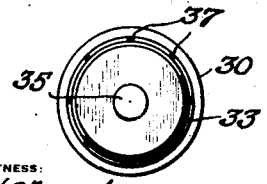


Fig-5-



WITNESS:
H. S. Mudie

George W. Allred
INVENTOR
BY Victor J. Evans and Co.
ATTORNEY

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UNITED STATES PATENT OFFICE

1,936,004

PLUG FUSE

George W. Allred, Mayodan, N. C.

Application October 28, 1931. Serial No. 571,667

1 Claim. (Cl. 200—130)

The invention relates to electrical apparatus, particularly to protective devices, and has for its general object the provision of a novel plug fuse or fuse plug, as it is sometimes called, of such construction that it will be impossible for a person to cut away a strip of the threaded shell and bend it into engagement with the central contact for the purpose of shorting out the fuse and making it possible to close a circuit even though the fuse be blown or burnt out.

It is well known that the ordinary type of fuse embodies a main member or body of suitable insulating material, usually porcelain, at the center of which is a contact and at the outside of which is a threaded sheet metal shell connected with the central contact by a fusible wire or strip, the arrangement being such that when the plug is screwed into an appropriate socket the central contact engages a contact within the base or socket while the threaded exterior shell engages within the metallic shell of the socket. By cutting the lower edge of the threaded sheet metal shell for a short distance upwardly from its edge and then cutting it for a considerable distance parallel with its edge it is possible to define a narrow tongue of metal which is easily bendable down to engage between the central contact of the socket and the central contact of the fuse so as to close the circuit even though the fusible wire or strip be burnt out. Quite naturally this is a dangerous practice inasmuch as it may bring an unusual and in fact excessive electrical strain and excessive current flow through whatever circuit is ordinarily protected by the fuse and it may frequently occur that a dangerous and disastrous as well as expensive fire may result.

It is with the above fact in view that I have devised the present invention which has for an important object the provision of a fuse in which the exterior threaded sheet metal shell portion is slit longitudinally at a plurality of points comparatively close together so as to preclude the possibility of cutting a strip or tongue of sufficient length that it might be bent to extend into engagement with the central contact.

Another object is to provide a fuse plug or plug fuse of this character in which the extreme edge of the threaded metal shell portion is to a certain extent protected by the provision of an insulating disk secured in place by the central contact so as to render it still more difficult to effect short circuiting of the central contact with the outside threaded shell in order to establish current flow even though the fusible element itself be burnt out.

An additional object is to provide a device of this character which will be simple and inexpensive to manufacture, which will look and act exactly the same as any ordinary fuse plug but which will yet at the same time be highly efficient for the purpose specified and a general improvement in the art.

With the above and other objects and advantages in view, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawing, in which

Figure 1 is a plan view of a fuse block equipped with fuses constructed in accordance with my invention and also with fuses of the common type.

Figure 2 is a section taken on the line 2—2 of Figure 1.

Figure 3 is a side elevation of the fuse plug or plug fuse constructed in accordance with my invention.

Figure 4 is a side elevation of the insulating body with the exterior metallic shell and the insulating disk removed.

Figure 5 is an end view of what is shown in Figure 3.

Figure 6 is an end elevation or bottom plan view of the metallic shell itself detached, and

Figure 7 is a plan view of the insulating disk detached.

Referring more particularly to the drawing the numeral 10 designates, as a whole, a support commonly called a fuse block and likewise usually formed of insulating material and of any desired size, shape and material, that is to say in the latter respect it may be constructed of porcelain, bakelite, fiber or its equivalent. Furthermore, any suitable means whatsoever may be provided for mounting this support or block upon a wall or other support, these details having nothing to do with the present invention. In the present instance the block 10 is disclosed as provided with a plurality of similar sockets 11 within which are mounted in any suitable manner metallic shells 12 which are formed with pressed out threads and which are connected with contact screws 13. Located within the center of each socket is a central contact 14 and these are represented as shown as connected in pairs by a metallic strip 15 with an angular strip 16 connected in turn with a contact 17 in the form of a screw. Clearly the contact screws 13 and 17 are adapted to be connected with the line

wires of a current supply system as is quite customary.

At the right hand side of Figure 2, and of course also Figure 1, there is disclosed the ordinary type of fuse plug 18 comprising a body 19 of insulating material chambered out in the customary manner and provided at its top with a transparent disk or pane 20 held in place by a metal ring 21. Furthermore the ordinary type of fuse plug illustrated is provided with a central contact 22 adapted to contact with the contact 14 in the base or block and having connected therewith a fusible element such as a wire or strip 23 in turn connected with an exterior metallic shell 24 carried by the body 19 and screwed within the metal shell 12 forming part of the socket. As shown in Figure 2 it is a common practice to tear away a part of the metal shell 24 as indicated at 25 to provide a thin long tongue 26 which may be bent down so as to be interposed between the contacts 14 and 22 and close the circuit even though the fusible wire or strip be burnt out or "blown". It is this fact which the present invention is intended to make impossible.

In carrying out my invention I provide a plug fuse or fuse plug comprising a body 27 of insulating material formed with a chamber 28 normally covered by a disk 29 of isinglass or the like held in place by a metal ring 30 clamped about an outstanding flange 31 on the upper or open end of the body. At its closed end the body is formed with a reduced extension 32 for a purpose to be described. Exteriorly, the body is pressed in the form of a screw thread and carries a metallic shell 33 having an inwardly extending flange 34 lying against the lower or underside of the body outwardly of the reduced extension 32. This shell 33 is of course adapted to be screwed into the metallic shell 12 in the socket 11. Extending axially through the closed end of the body, that is to say through the extension 32, is a central contact 35 adapted to engage the contact 14 in the socket 11, and connected with this contact 35 and located within the chamber 28 is a fusible wire or strip 36 which lies within the chamber 28 and which connects with the shell 33.

A very important feature in my invention is the formation in the lower end of the shell 33 of a plurality of longitudinally extending slits or slots 37 which are sufficiently close together to preclude the tearing off of such a strip as that indicated at 26 at the right hand side of Figure 2, it being quite clear that upon attempting to tear such a strip the slits or slots would prevent it from being of sufficient length to reach the central contact 35.

As an additional safe guard, I provide a washer or disk 38 of insulating material preferably of inverted frusto-conical shape recessed so as to receive the reduced extension 32, it being quite clear that this disk or washer must be apertured at 40 for the passage of the central contact 35 and that it is held in place with respect to the body 27 and shell 33 by means of the same central contact.

Assuming that the fuse plug or plug fuse has been constructed in accordance with my invention, it is of course obvious that it is used in exactly the same manner as one of the ordinary type, that is to say it is screwed into the socket 11 as indicated at the left hand side of Figure 2. When this is done it is of course apparent that the circuit through what ever device is connected with the apparatus will be completed through the fusible strip or wire 36. However, if it should happen that the fusible element 36 melts, burns out or is "blown", it will be apparent that it will be impossible for anyone to tear off a part of the lower edge of the metal shell 33 in the manner indicated at the right hand side of Figure 2 for the purpose of closing the circuit notwithstanding the absence of the fusible element. As a consequence the device is bound to protect the users of electrical apparatus against the results of their own ignorance in short circuiting a burnt out fuse.

It is thought from the foregoing that the construction, operation and advantages should be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that I reserve the right to make all such changes in the details of construction and the arrangement and combination of parts as will not depart from the spirit of the invention or the scope of the subjoined claim.

Having thus described the invention I claim.

A fuse plug comprising a hollow body of insulating material closed at the forward end, a center contact disposed in the forward end of the body, a shell encircling the body and formed with circumferential corrugations constituting threads for engagement with the shell of a fuse block, and a fusible element interior to the body and electrically connecting the center contact and said shell, the shell at the forward end being formed with a series of slits extending in the direction of the axis of the body, the slits being closely enough placed to reduce the segments of metal between them to lengths less than the distance from the forward end of the shell around the forward end of the body to the center contact and being extended inwardly from the forward end of the shell to points whose distance from the center contact around the end of the body is greater than the circumferential length of the shell.

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GEORGE W. × ALLRED.
mark

Witness,
J. C. JOHNSON.