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B. F. BISHOP

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FUSE LIGHT

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Fig. 2

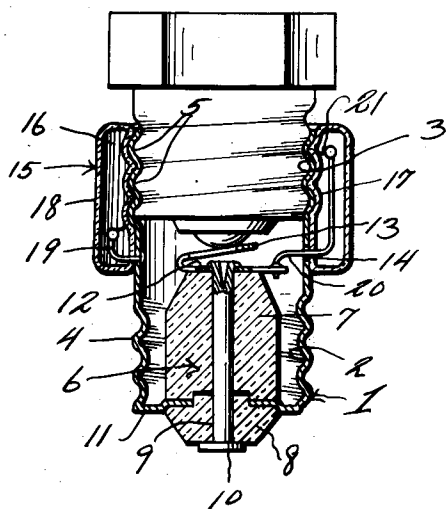


Fig. 1

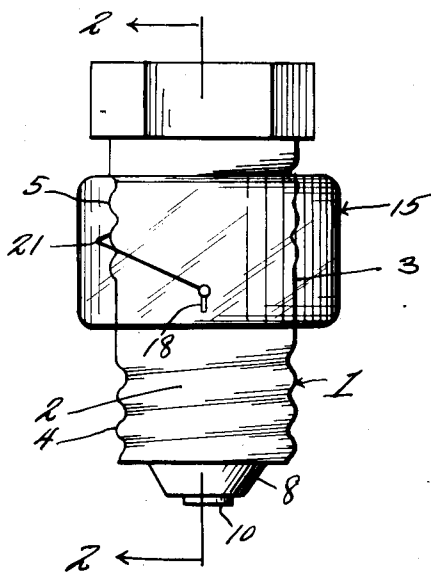
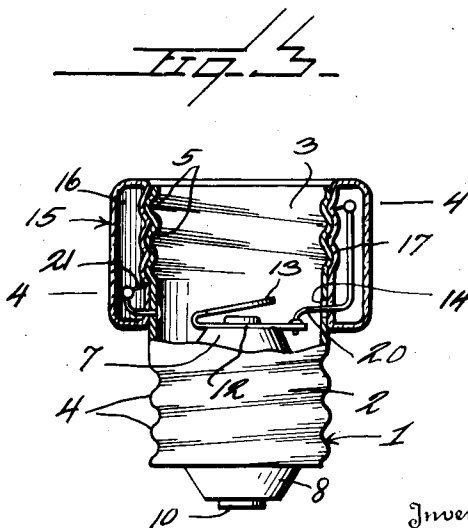
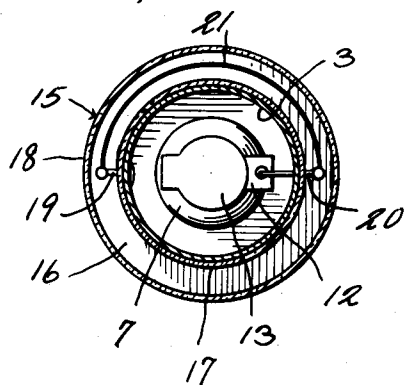


Fig. 4



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FUSE LIGHT

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4 Claims. (Cl. 200—121)

This invention relates to electrical devices and pertains particularly to circuit controlling fuses.

The primary object of the present invention is to provide in association with a circuit controlling fuse, a means whereby when such fuse is burned out or becomes broken so that the circuit in which it is connected is interrupted, evidence of this fact will be given by a light which is connected across the fuse, thereby facilitating the quick identification of the burned out fuse where such fuse may be one of a group or in a group which is enclosed within a fuse box or other structure where the fuses are in darkness or semi-darkness.

Another object of the invention is to provide a novel fuse light by means of which the identification of a burned out or broken fuse is readily made, in association with which a fuse plug of the well known screw type may be employed.

A further object of the invention is to provide an illuminated means for identifying a burned out fuse plug of the screw type, which is so designed that it may be placed in parallel circuit with the fuse and need not be removed or taken from its position for the replacement of a burned out fuse.

A still further and more specific object of the invention is to provide a fuse light plug for indicating in the manner above set forth, a burned out fuse, which is adapted to be screwed into the regular socket of the fuse block and to then receive the screw threaded fuse member, by which arrangement the fuse member, after it becomes broken or burned out, may be removed and replaced by a new fuse without having to remove the indicating light.

Still another object is to provide a tell-tale fuse light of the character stated in which the element which is made incandescent by the electric current after the associated fuse is burned out or becomes broken, is of a character which will offer a much higher resistance to the flow of current than the material of the fuse so that the light will not show or burn so long as a good fuse is in the socket as the current will be shunted from the high resistance light filament and will pass entirely through the fuse element.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not to be confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient fea-

tures of the invention as expressed in the appended claims.

In the drawing:

Fig. 1 is a view in side elevation of the device embodying the present invention, showing the same with a fuse plug therein, the device being shown on an enlarged scale.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1 through the fuse light, the fuse plug being in elevation.

Fig. 3 is a vertical section through the upper portion of the fuse light.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3.

Referring now more particularly to the drawing, the numeral 1 designates the main body portion of the present fuse light plug and this comprises a shell body having an inner portion 2 and an outer portion 3, the inner portion being of slightly less overall diameter than the outer portion. These two portions 2 and 3 of the shell are each pressed to provide screw threads, the portion 2 having exterior threads 4 and the portion 3 having interior screw threads 5.

The numeral 6 designates a central body which is mainly housed within the inner portion 2 of the shell and which is constructed of a suitable insulation material, preferably porcelain. This insulation body is preferably of circular cross section and relatively long, as shown, and is made up of a major inner portion 7 and a minor outer portion 8 which portions are disposed in abutting relation to form the complete body and are secured together by a metallic current conductor pin 9 which passes longitudinally through the entire insulation body and which at the end adjacent the minor portion 8 is shaped to form a contact head 10.

As shown, the inner end of the shell has a centrally apertured end wall 11, the edge of the aperture in this wall being clamped between the two portions 7—8 of the central insulation body but the current conductor pin 9 passes through the insulation body and is free from contact with the metallic shell.

The inner end of the center body 6 of the device is at substantially the transverse center of the shell which is in the plane of the portion where the inner part 2 of smaller diameter joins the outer part 3 which is of larger diameter and there is secured to the inner end of the body 6 and to the inner end of the current conductor pin 9, a metallic plate 12, one end of which extends laterally beyond the side of the body 6 while the other end is reversely bent to form the spring

contact terminal 13. Any suitable means may be employed for securing the plate 12 to the pin 9, as for example, the plate may have the pin extended through an aperture therein and the end of the pin may then be swaged over as shown, to hold the plate firmly in place and at the same time secure the pin in position where it will tightly couple together the two portions 7-8 of the insulation body 6.

The inner end of the outer portion 3 of the shell has a relatively large aperture 14 formed therethrough for the purpose about to be described. Encircling the outer portion 3 of the shell is an annular hollow body 15 which provides an evacuated chamber 16 and which has the inner and outer spaced walls 17 and 18, the inner wall 17 being secured to the portion 3 of the shell. This body or evacuated annular envelope 15 is preferably of a length equal to the length of the outer portion 3 of the shell although it is to be understood that it does not have to be made in this manner and that, therefore, the invention is not to be limited in this respect. It is also to be stated that while there is shown an annular chamber encircling the shell, this chamber may be formed to only partially enclose the shell if this construction should be found desirable or of advantage.

Electrically connected with the shell 1 is a filament terminal 19 which passes through the inner wall 18 of the evacuated envelope and is in air-tight connection therewith. This terminal is preferably at the inner part of the envelope and is turned within the same to extend toward the outer end thereof, as shown.

Connected with the metallic plate 12 forming the central electrode of the fuse light body 6 is a terminal 20 which passes through the aperture 18 so as to be free from electrical connection with the shell 1, and into the envelope 15. This terminal also has air-tight connection with the inner wall of the envelope and it extends in the envelope toward the outer end of the latter.

Within the envelope 15 there is supported between the terminals 19 and 20, in spaced relation with the envelope walls, a high resistance filament wire 21 which is made incandescent when the fuse light is in an electric circuit and the fuse which the fuse light carries is burned out or removed.

From the foregoing, it is believed it will be readily apparent that the inner portion 2 of the shell of the fuse light is intended to be threaded into the socket in a fuse box which ordinarily receives a screw type fuse, the shell making electrical contact with one side of the electric circuit and the terminal button 10 making contact with the other side of the circuit, and that the enlarged outer portion 3 of the shell which is interiorly threaded, is provided to receive the screw type fuse such as is at present commonly employed in house wiring and other circuits.

As previously stated, the filament 21 is of high resistance material, being preferably of about 1614 ohms and of 7.5 watts and used in a 110-volt circuit. This will draw approximately .068 ampere. Since the fuse across which the filament is shunted has comparatively no resistance, its current carrying capacity across the fuse will be practically non-existent and even after the fuse has been burned out or removed, the amount of current used for the light will be very small as above indicated.

It will be seen that the present fuse light plug may be installed in all of the present plug type

fuse blocks without the necessity of making any change in the position of the blocks in the fuse box or any enlargement in the size of the fuse box and it will also be readily apparent that after the fuse light plug has been installed, it does not have to be subsequently removed for the replacement of a fuse since the fuse is coupled in the outer end of the light.

From the foregoing, it will be readily apparent that the fuse light plug herein described provides a novel and inexpensive means of locating burned out fuses in a fuse box and that after it has been once installed, it need never be removed because of the fact that the life of the filament therein is practically without limit due to the fact that it will be heated only at infrequent intervals and then only for a short period of time.

What is claimed is:

1. An indicator for a "blown" fuse of the plug type, comprising a body adapted for insertion into a threaded fuse plug socket, the body having opposite terminals for connection with opposite sides of an electric circuit in which the socket is connected, means forming a part of the body for receiving a plug type fuse and for electrically connecting the fusible element thereof with said means whereby such element is connected in the electric circuit, a current conducting filament carried by and extending in a circumferential direction with respect to the body, a light transmitting shield for said filament extending around the body and forming therewith an evacuated chamber, means for connecting the ends of said filament with the said opposite sides of said circuit in parallel with the fusible element, said filament being formed of a material having an electrical resistance greater than the fusible element.

2. An indicator for a "blown" fuse of the plug type, comprising a shell having a threaded portion adapted for engagement in a fuse plug socket, said shell being formed at one end for reception of a plug type fuse, said shell forming one terminal for connection with one side of the circuit in which the socket is connected, a central terminal carried by the shell for electrical connection with the other side of said circuit, said central terminal being arranged in the shell for electrical engagement by a terminal of a plug type fuse engaged in the shell, means forming an evacuated chamber in encircling relation with said shell and having a light transmitting wall, an electric current conducting filament within the evacuated chamber having a resistance greater than the fusible element of the plug type fuse, and means electrically connecting one end of the filament with said shell and the other end of the filament with said central terminal.

3. As an article of manufacture, a plug type fuse light, comprising an elongated cylindrical shell of current conducting material, means forming screw threads exteriorly of one end of said shell for engaging the same in a threaded electric socket, means forming interior screw threads in the other end of the shell, the said other end of the shell being of a diameter to threadably receive a threaded plug type fuse, a pin member extending longitudinally of the central portion of the said one end of the shell and secured to the shell in insulated relation therewith, one end of said pin being disposed outside of the shell and the other end of the pin being disposed adjacent the transverse center of the shell, means forming a resilient terminal elec-

trically connected with the said other end of the pin, an annular hollow body of translucent material encircling the said other end of the shell, a high resistance current conducting filament within said body, means electrically connecting one end of the filament with the shell, and means electrically connecting the other end of the filament with said terminal.

4. As an article of manufacture, a plug type fuse light, comprising an elongated cylindrical shell of current conducting material having a centrally apertured wall at one end, screw threads formed exteriorly about the said one end of the shell, screw threads formed upon the interior of the shell adjacent the other end, the said other end of the shell being adapted to threadably receive a threaded plug type fuse, a body of insulation material extending longitudinally of the said one end of the shell and having a portion extending beyond the said

apertured end wall thereof, a current conducting pin extending longitudinally through said body of insulation and having an end exposed at the end of the insulation body exteriorly of the shell and having its other end exposed at the end of the insulation body inside the shell, a resilient terminal connected with the said other end of said pin and secured by the pin against the end of the insulation body lying within the shell, a hollow annular body encircling the said other end of the shell and formed of light transmitting material, said hollow body being evacuated of air, a high resistance electric current conducting filament within said hollow body, a terminal supporting one end of said filament and electrically connecting the same with the shell, and a terminal connecting the other end of the filament and electrically connecting the same with the first-mentioned terminal.

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