Sept. 19, 1933. C. E. O. KRIEGSTEDT 1,927,372

FUSE

Filed May 6, 1932

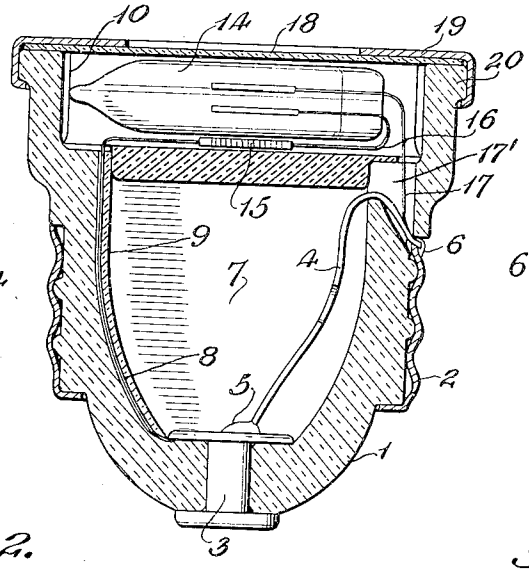


Fig. 1.

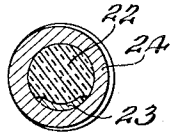


Fig. 6.

Fig. 2.

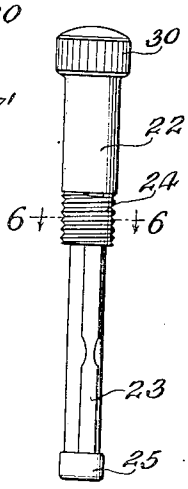
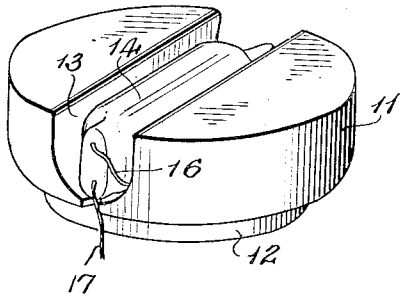


Fig. 5.



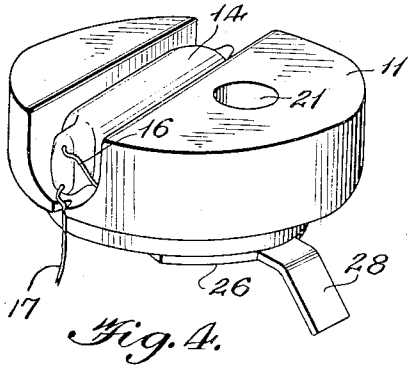


Fig. 4.

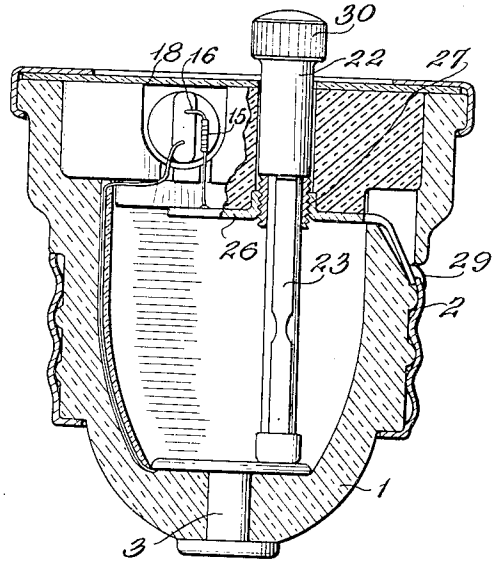


Fig. 3.

Inventor

Carl E. O. Kriegstedt.

By William C. Linton.

Attorney

Patented Sept. 19, 1933 1,927,372

UNITED STATES PATENT OFFICE

1,927,372

FUSE

Carl Erenest Oscar Kriegstedt, Washington, D. C., assignor to Engineering Appliance Corporation, Baltimore, Md., a corporation of Delaware

Application May 6, 1932. Serial No. 609,723

6 Claims. (Cl. 200—121)

The present invention relates to electric fuses capable of visibly indicating the inoperativeness of the same after it has become blown, having among its principal objects to provide a self-contained unit in which is included a signal lamp and fuse element, all of which can be manufactured and assembled at a comparatively low cost to render the same commercially desirable.

Another and equally important object of the present invention is to provide a renewable fuse for installation in a lighting circuit having a light signal capable of being visible when the fuse element is blown and the glow from the lamp to be sufficient to illuminate the fuse in order that the operator may readily refill or replace the fusible element thereof.

Still another object of the invention is to provide a plug fuse capable of being installed in an ordinary electric light circuit and which when so installed may have its fusible element renewed without removing the plug fuse from the socket of the lighting circuit in which it is included.

With the above and other objects in view the invention consists of the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the accompanying drawing in which:—

Figure 1 is a vertical section through the plug fuse embodying one form of my invention;

Figure 2 is a detail perspective view of the combined partition and light holder having arranged therein a miniature lamp;

Figure 3 is a vertical section through the plug fuse taken at right angles to that shown in Figure 1 and illustrating another form of the invention;

Figure 4 is a detail perspective view of the combined lamp holder and partition as is employed in that form of the invention shown in Figure 3;

Figure 5 is a detail side elevation of the removable plug having the fuse element attached thereto, and

Figure 6 is a horizontal section taken on the line 6—6 of Figure 5 in the direction of the arrow points.

Referring now more particularly to the accompanying drawing wherein like corresponding parts are designated by similar reference characters throughout the several views, I have herein shown a plug fuse capable of being inserted in a standard socket of an electric wiring system and comprising a body portion 1 which is preferably molded in one piece from porcelain or the like insulating material. Surrounding this body portion 1 is a ferrule or covering 2 preferably made of brass, which is capable of engaging the socket included in the lighting system in which the fuse is to be used. The axially positioned contact or terminal of the fuse is formed by means of the rivet 3 which is secured within the lower portion of the body 1 and is adapted to be connected to the ferrule terminal 2 by means of the fusible element 4. This fusible element 4 has one end soldered as at 5 to the inner end of the rivet 3 whereas the opposite end of this fusible element 4 is secured by the solder 6 to the terminal 2 whereby the latter will be retained in place about the body portion 1 of the fuse.

The body portion 1 of the fuse is of hollow construction forming an enlarged chamber 7 in which lies the fusible element 4 and this chamber 7 being of relatively large area, permits the gases to readily expand therein, which gases are given off by the fusible element 4 when the latter has been ruptured or blown. Also electrically connected to this rivet terminal 3 is a conductor 8 which lies within a recess formed in the body portion 1 of the fuse and after the conductor 8 is laid within this recess, a suitable covering of insulating material, herein indicated by the numeral 9, is placed over the conductor 8 and completely fills the recess formed within the body portion 1. The upper end of the body portion 1 is enlarged and has formed therein a circular compartment 10 and in this compartment 10 is adapted to be seated the combined lamp holder and partition 11. This partition 11 is preferably molded from porcelain or a similar insulating material and has formed therewith a depending skirt or flange 12 which is seated within the upper end of the compartment 7 whereas the remaining portion of this partition 11 is seated within the compartment 10 of the fuse body. Formed within the upper part of the partition 11 is a recess 13 and adapted to be seated within this recess is a miniature lamp 14. This lamp 14 is preferably one which contains a low potential mixture of inert gases and one electrode arranged in the lamp is connected to the conductor 16. This conductor 16 is electrically connected to the conductor 8 by means of a resistance 15 whereby a miniature glow lamp containing a low potential mixture of inert gases, may be employed, irrespective of the voltage within the lighting circuit in which this fuse is to be included. The other electrode of the lamp 14 is connected to a conductor 17 and the latter is electrically connected to the

terminal 2 by means of the soldering 6. The terminal 17 together with the fusible element 4 extends through an opening 17' formed within the body 1 so as to have engagement with the terminal 2.

The upper opened end of the body portion 1 of the fuse is closed by means of a cover made of any suitable transparent or translucent material or a mica disk 18 as herein shown in order to form a display window for the lamp 14 arranged within the fuse. This mica disk 18 is secured in position by the ring or cap 19 which latter is crimped about the bead 20 formed with the upper end of the body portion 1.

In assembling my improved fuse during the course of manufacture thereof, the casing or body member 1 of insulated material having the rivet 3 secured therein, has inserted thereover the threaded band or terminal 2 and the fusible element 4 connects the rivet 3 with this terminal 2 whereby the latter is retained in permanent position about the body 1. The conductor 8 is also electrically connected to this rivet 3 and positioned within the recess formed in the body 1. The partition 11 is then inserted in the upper end of the body 1 and by inserting the lamp 14 within this partition, connecting its conductors with the ring 2 and the conductor 8, the partition and lamp will be retained in position in the fuse. Finally the mica disk is fastened about the upper opened end of the fuse by means of the connecting band 19 whereupon the fuse is readily presented for use. By providing comparatively few parts and following the aforesaid mode of assembling the parts of the fuse, it will readily be seen that the cost thereof will be materially reduced.

Whereas in the foregoing, I have described my fuse as being one which when the fusible element has been ruptured or blown may, in its entirety, be discarded and a new fuse substituted therefor, I have found it desirable at times to provide a renewable fuse wherein a fusible element may be substituted for the one blown without discarding the entire fuse casing, and in Figures 3, 4, 5 and 6 of the drawing, I have disclosed another form of fuse with a renewable fusible element applied thereto. In this form of the invention, the mica disk 18 as well as the partition 11 each have an opening extending therethrough and the opening within the partition 11 is herein designated by the numeral 21, through which is adapted to extend, a plug 22. This plug 22 is preferably made of fiber or similar insulating material and has attached thereto a fusible element 23. In order to connect this fusible element 23 to the plug 22, I provide about the latter, a threaded conductor ring 24 and a cap 25 which latter retains the strip 23 of fusible material to the plug so that when the plug is inserted in the fuse casing, the cap 25 will contact with the inner face of the rivet terminal 3 and the threaded ring 24 is capable of having electrical connection with the terminal 2 located about the casing 1 of the fuse. In order to form an electrical connection between the threaded ring 24 and the terminal 2, I provide a plate 26 which rests against the lower face of the partition 11 and has a threaded sleeve 27 extending within the opening 21 of the partition so that the threaded ring 24 may engage this internally threaded sleeve 27 of the plate when the plug is inserted within the fuse. A strip 28 extends from this plate 26 and is connected by means of solder 29 to the terminal 2, whereby when a plug with the fusible strip applied thereto is inserted within the fuse casing, an electrical connection may be established between the contacts 2 and 3.

One of the electrodes of the lamp 14 positioned within the partition 11 is connected to the rivet 3 by means of the conductor 8 whereas the other conductor 16 of the lamp having a resistance 15 connected thereto is also connected to the plate 26 in order that should the fusible strip 23 be ruptured or blown, the current will flow through the lamp 14 thereby giving off a visible signal that the fuse has been blown. After the fuse has been blown, it is only necessary that the operator grasp the handle or knob 30 of the plug 22 and by turning the latter until the ring 24 is out of engagement with the sleeve 27, remove the plug and fusible element from the fuse. A new plug or a new fusible element of strip 23 applied to the old plug may be inserted within the fuse, whereupon a new connection will be established between the terminals 2 and 3 and the lighting circuit in which the fuse is included will be again complete without removing the fuse body from the socket of such lighting circuit.

Very often plug fuses of this character when included in the lighting circuit, are arranged within a box in some dark corner of a building and accordingly, it is quite obvious that by providing a lamp within the fuse, the visible signal will be readily apparent should the fuse become blown. In the renewable fuse herein described, the lamp not only functions as a telltale signal, but the glow from the lamp is sufficient for the operator to readily find the opening within the fuse in which the plug 22 may be withdrawn or a plug with a new fusible element therein inserted.

Manifestly, the construction herein shown is capable of considerable modification and such modifications as come within the scope of my claims, I consider within the spirit of my invention.

I claim:—

1. A fuse device comprising a body having contact terminals capable of having electrical engagement with a standard socket of an electric lighting system whereby one end of the body portion of the fuse will extend from the socket and be exposed, of a removable fuse element adapted to have contact with the terminals of the fuse body when inserted therein, a lamp connected across said terminals for visibly indicating the rupture of said removable fuse element, and said lamp being so positioned as to illuminate the exposed end of the fuse body when said fusible element has been removed from the fuse body.

2. A fuse plug comprising a body, a threaded shell connected to and surrounding said body and forming one contact member of the fuse, a contact button centrally arranged within the fuse body, said fuse body having an opening arranged therein and eccentrically thereto, a plug, a fusible element carried by said plug and adapted to bridge said contact members when inserted within the opening of the fuse body, a threaded connection between said plug and fuse body having threads of a less pitch than that of the threads of said threaded shell, whereby said plug may be released from its threaded engagement with the fuse body without turning the threaded shell when the latter is applied to the usual threaded socket of the lighting system.

3. A plug fuse comprising a circular body portion, a threaded shell surrounding said body portion and serving as a contact for the fuse plug, a centrally arranged contact button mounted

within the fuse body, said fuse body having an opening arranged therein and arranged eccentrically thereto, a plug, a fusible element carried by said plug and adapted to bridge said contact members when inserted within the opening of the fuse body, and a detachable connection between said plug and said fuse body.

4. An electric fuse comprising a casing, an axially positioned terminal secured within said casing, a terminal arranged about said casing, a partition supported within said casing and having an opening therein, a plug capable of being inserted through the opening of said partition, a fusible element carried by said plug and adapted to have contact with the terminals of said casing when inserted therein, and a visible signal arranged within said partition capable of indicating the inoperativeness of said fusible element.

5. A fuse plug comprising a casing, terminals arranged about said casing, a partition arranged within said casing and having an opening therein, a conductor plate carried by said partition and having electrical connection with one of the terminals of said casing, a plug capable of being inserted through the opening of said partition, a fusible element carried by said plug and having electrical contact with said contact plate and the other of said terminals, a glow lamp positioned within said partition, and conductors connecting said glow lamp with the terminals of said casing.

6. A fuse device comprising a hollowed shell, a threaded contact terminal surrounding said shell and capable of having electrical engagement with a standard socket of an electric lighting system whereby one end of said shell will extend from the socket and be exposed, a button contact terminal carried by said shell, a removable fuse element adapted to have contact with said contact terminals when inserted within the shell of the fuse, said shell having an opened end, a lamp arranged within the open end of said shell and connected across said terminals for visibly indicating the rupture of said removable fusible element, a transparent covering for closing the opened end of said shell, and said lamp being so positioned as to illuminate the exposed end of the fuse when said fusible element has been removed therefrom.

CARL ERENEST OSCAR KRIEGSTEDT.