Dec. 13, 1949 H. V. DRYER 2,490,950

FUSE CONSTRUCTION

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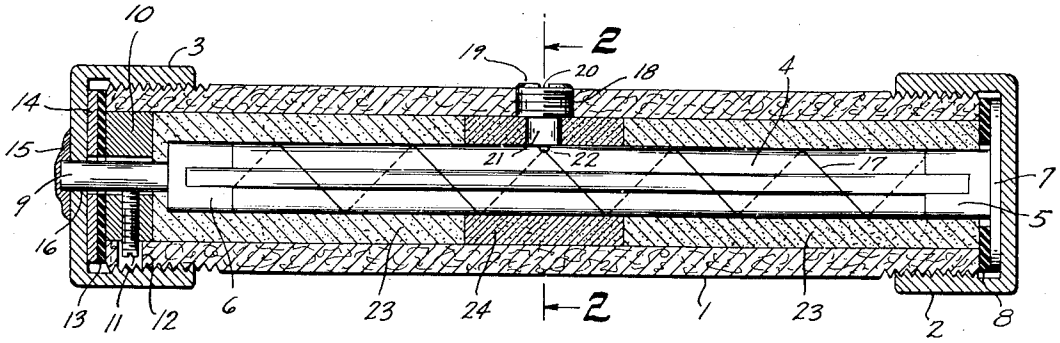


FIG. 1.

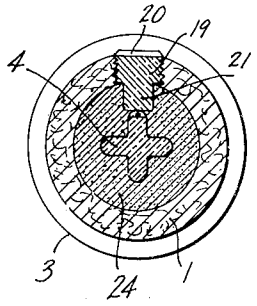


FIG. 2.

INVENTOR.
Henry V. Dryer
BY
Arthur P. Woolfolk
Attorney

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FUSE CONSTRUCTION

Henry V. Dryer, Milwaukee, Wis., assignor to Line Material Company, Milwaukee, Wis., a corporation of Delaware

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3 Claims. (Cl. 200—121)

1

This invention relates to fuse constructions.

Objects of this invention are to provide a cartridge type of fuse construction in which an outer opaque cylinder is provided and is equipped with transparent means arranged to give a view of the internally positioned fuse link to ascertain the condition of the fuse link, and in which the transparent means includes a part, at least, of clear acrylic plastic such as Lucite, and in which this plastic material is located closely adjacent the fuse link and constitutes a discolorable member which will indicate when the fuse has blown so that the cartridge may be discarded and a new cartridge substituted.

A further object for one form of the invention is to provide an opaque outer casing with a transparent plug screwed therein and formed of a clear acrylic plastic as described hereinabove with the inner end of the plug arranged in close proximity to an intermediate portion of the fuse link and to provide means for holding the intermediate portion of the fuse link in such close proximity to the transparent plastic plug.

Further objects are to provide a cartridge type fuse construction employing the plastic transparent indicating member hereinabove described in which the cartridge is closed at both ends and is provided with arc extinguishing material located adjacent the plastic member and with granular material on opposite sides of the arc extinguishing material to provide a cooling and expansion chamber or surface for the gases, the arc extinguishing material being designed to give off water vapor and chill the arc and aid in the extinguishing thereof.

An embodiment of the invention is shown in the accompanying drawings, in which—

Figure 1 is a longitudinal view through a cartridge type of fuse illustrating one form of the invention.

Figure 2 is a sectional view on the line 2—2 of Figure 1.

Referring to Figures 1 and 2 it will be seen that the fuse construction comprises a cylinder or casing 1 of fiber or other suitable opaque insulating material such, for example, as Bakelite. The tube or casing 1 is threaded at opposite ends and is provided with end terminal caps 2 and 3. A ceramic rod 4 preferably of ribbed formation is positioned centrally of the casing 1 and is supported at opposite ends by means of suitably slotted fittings 5 and 6 of brass or other suitable metal. The fitting 5 is formed as a unitary structure with the metal disk 7 which is spaced from the end of the casing 1 by means of a gasket 8 and

2

which bears against the terminal cap 2. The fitting 6 is provided with an extension or rod 9 which projects through an apertured, brass plug 10 and is locked thereto by means of a set screw 11. The set screw is reached through a hole 12 formed in the casing or tube 1. A yielding gasket 13 is positioned between a metal washer 14 and the plug 10, and the rod 9 projects through an aperture formed in the terminal cap 3. Preferably solder 15 is used to close the hole 16 in the terminal cap 3 after the rod 9 has been inserted.

A fuse wire 17 is wrapped about the ceramic rod 4 and has opposite ends secured in any suitable manner, not shown, to the fittings 5 and 6. The fiber casing 1 is provided with a threaded aperture 18 into which is screwed a transparent plug 19 of a clear acrylic plastic material, such for example as that commonly known as Lucite. This plug 19 is provided with a transverse slot 20 so that a screwdriver may be used to position it. It is equipped with an inwardly projecting extension 21 which bears against the rod 4 and is in close proximity to the central portion of the fuse link 17. The rod 4 is preferably notched as indicated at 22 so as to definitely position a portion of the fuse link immediately adjacent the inner end of the extension 21 of the plastic plug 19.

The end portions of the casing 1 are filled with sand 23 and a central portion is filled with bauxite 24. The bauxite is preferably powdered and the sand is preferably a fine grained, cutting sand. When the fuse link ruptures, it has been found that the rupturing of the fuse link almost always occurs centrally thereof. It has been found also that when the acrylic plastic plug is subjected to the action of the arc, that it is discolored and such discoloration is easily perceptible from the outside of the device since the plug 19, 21 is clear and transparent. In this way the condition of the fuse link can always be observed from the outside of the opaque casing 1.

It has also been found that when the fuse link is ruptured, the sand 23 provides expansion chambers and a very extensive condensing surface for the gases. Also it has been found that the bauxite liberates a quantity of water vapor which assists in chilling the sand and extinguishing the arc. Consequently, the pressure within the closed cartridge type fuse does not rise to a dangerous extent, even on heavy overloads.

It will be seen that a simple type of cartridge type fuse construction has been provided by this invention which is eminently practical and which, although the casing is formed of opaque material,

nevertheless is provided with discolorable transparent means which allows for external inspection with consequent determination of the condition of the fuse link.

It is intended that whenever one of these fuse devices blows, that it shall be removed and a new cartridge fuse substituted therefor.

Although this invention has been described in considerable detail, it is to be understood that such description is intended as illustrative rather than limiting, as the invention may be variously embodied and is to be interpreted as claimed.

I claim:

1. A cartridge type fuse construction comprising a tubular outer casing of opaque material having an opening intermediate its ends, terminals adjacent opposite ends of said outer casing, a ceramic supporting element located within said outer casing, a fuse link wrapped about said ceramic supporting element, a transparent plug screwed into said opening and a clear acrylic plastic element located adjacent said plug and held by said plug in close proximity to said fuse link.

2. A cartridge type fuse construction comprising a tubular outer casing of opaque material having an opening intermediate its ends, terminals adjacent opposite ends of said outer casing, a ceramic supporting element located within said outer casing, a fuse link wrapped about said ceramic supporting element, a transparent plug screwed into said opening, and a clear acrylic plastic element located adjacent said plug and held by said plug in close proximity to said fuse link, said ceramic supporting element having a notch opposite said plastic element arranged to position a part of said fuse link in immediate proximity to said plastic element.

3. A cartridge type fuse construction comprising a tubular outer casing of opaque material having an opening intermediate its ends, terminals adjacent opposite ends of said outer casing, a ceramic supporting element located within said outer casing, a fuse link wrapped about said ceramic supporting element, a transparent plug screwed into said opening, a clear acrylic plastic element located adjacent said plug and held by said plug in close proximity to said fuse link, said ceramic supporting element having a notch opposite said plastic element arranged to position a part of said fuse link in immediate proximity to said plastic element, powdered bauxite located adjacent the sides of said plastic element and within said casing and surrounding said ceramic supporting element, and sand within said casing located on opposite sides of said bauxite and surrounding said ceramic element.

HENRY V. DRYER.

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