

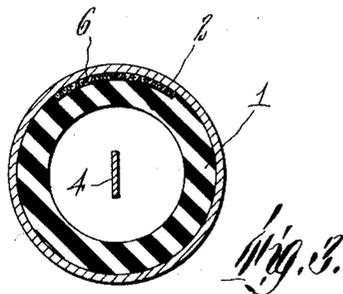
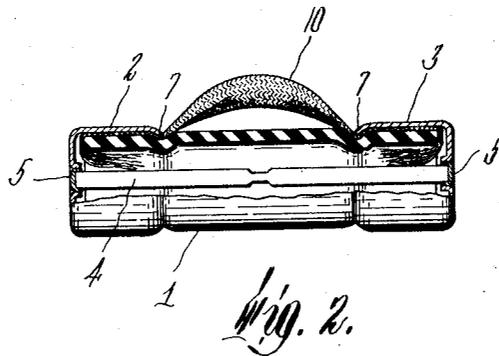
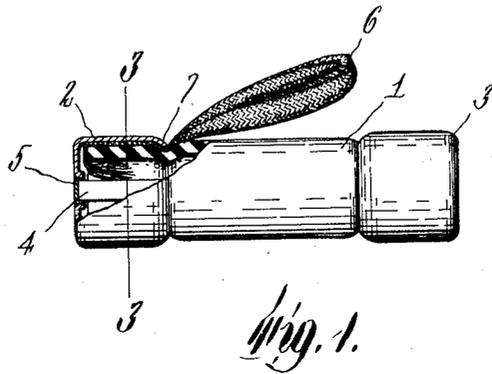
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FUSE CONSTRUCTION

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FUSE CONSTRUCTION

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This invention relates to electric fuses, more particularly of the cartridge type. Such fuses when in operation are commonly supported by metallic clips which clamp by spring pressure partly around metal ferrules at the end portions of the fiber tube which houses the fusible link. This link is connected electrically at opposite ends to the ferrules. The fuse clips must engage the fuse ferrules with considerable pressure to hold the fuse securely and to provide a good electrical connection between the ferrules and clips, and as the fuses are often located somewhat inaccessibly in recesses it is often a difficult matter to remove them from their clips. In attempting to remove them also, particularly if the fuse is small, there is danger that the fingers shall contact with and bridge across the ferrules or clips, resulting in shock or burns should some of these parts be alive.

This invention, therefore, has for an object to provide a simple means for facilitating the removal and also the replacement of a fuse which will make it unnecessary to grasp the fuse with the fingers, and which will not interfere with replacement of a cover for any enclosure in which the fuse is positioned. To this end a pull member is secured to the fuse as by being wrapped therewith by one or both of the end ferrules and the pull element may be made of flexible fabric such as a length of tubular knitted textile fabric.

For a more complete understanding of this invention, reference may be had to the accompanying drawing in which

Figure 1 is an elevation partly broken away and in section showing a fuse with one form of pull member.

Figure 2 is a view somewhat similar to Figure 1, but showing a modification.

Figure 3 is a detail section on line 3—3 of Figure 1.

Referring first to Figures 1 and 2, at 1 is indicated a tube of insulating material such as fiber, over which are secured, as by crimping, the metal ferrules 2 and 3 at opposite ends. A fuse link 4, which is the fusible element of the fuse, extends through the member 1 and is secured at its opposite ends to the ferrules 2 and 3, as, for example, by the soldered joint as shown at 5.

The pull element, as shown, comprises a piece of tubular knitted fabric 6, which, in the form shown in Figure 1, has its ends brought together and extended between the member 1 and one of the ferrules as at 2, the crimping of the ferrule at 7 firmly securing both the ferrule and the

pull element to the fuse. While tubular knitted fabric is shown for this element, it might be made of many other nonconductive materials so long as such material is capable of being secured in the manner shown. The tubular knitted fabric, however, is of particular utility due to its inherent springiness and flexibility. The springiness causes the material to bulge out in such a way that it is easily grasped by the fingers and its flexibility permits it to be pressed down tightly against the fuse whenever this is desirable so that the fuses can be packed closely for shipment and when in position between the fuse clips (not shown) in the usual manner the pull element will not interfere with the securing of a cover which is often used to close the receptacle in which the fuses are positioned. The pressure to which the ferrule, which secures the pull element in position is subjected during the crimping operation, is usually sufficient to embed the material of the pull element more or less into the fiber of which the tube 1 is made.

Instead of securing the pull element to one end portion only of the fuse, it may be secured at both end portions, as, for example, as shown in Figure 2. Referring to this figure, the pull element, herein shown as a piece of tubular knitted fabric as at 10, has its opposite end portions arranged along the length of the tube 1, whereupon the ferrules 2 and 3 are crimped over the ends of the tubular member 1, each of these ferrules engaging and clamping one end portion of the element 10 in position against and embedded into the member 1.

The inherent springiness of this tubular material tends to form a rounded handle portion between the ferrules 2 and 3 which stands out from the tube 1, thus furnishing a convenient part for engagement by the fingers when it is desired to pull or replace the fuse. Likewise this handle portion is sufficiently yieldable to offer no substantial obstruction to the closing of a cover over the fuse compartment.

With either of the constructions illustrated, the fuse may be readily grasped by the pull element in order to facilitate removal of the fuse from the fuse clips and it also forms a handle portion for facilitating the presentation of the fuse to the fuse clips, whereupon pressure exerted against the fuse itself between the ferrules may be employed to engage the fuse with its clips.

From the foregoing description of certain embodiments of this invention, it should be evident to those skilled in the art that various changes and modifications may be made without depart-

ing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a pull element having a portion extending between said member and one of said ferrules and secured in position by said one ferrule and having a portion extending from said fuse and which may be grasped by the fingers.
2. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a pull element having its end portions extending between said member and ferrules and secured by said ferrules thereto, and an intermediate portion outside of said member and which may be grasped by the fingers.
3. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a flexible pull element having a portion extending between said member and a ferrule and clamped to said member by said ferrule, and having a portion extending from said fuse and which may be grasped by the fingers.
4. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a loop having its ends extending between said member and a ferrule and clamped to said member by said ferrule, and having an intermediate portion extending from said fuse and which may be grasped by the fingers.
5. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a flexible fabric pull element having a portion extending between said member and a ferrule and clamped to said member by said ferrule, and having a portion extending from said fuse and which may be grasped by the fingers.
6. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a flexible pull element having its ends extending between said member and ferrules and clamped by said ferrules to said member and having an intermediate portion outside of said member and which may be grasped by the fingers.
7. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a fabric pull element having its ends extending between said member and ferrules and clamped by said ferrules to said member and having an intermediate portion outside of said member and which may be grasped by the fingers.
8. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a flexible pull element comprising a length of tubular knitted fabric having its ends extending between said member and ferrules and clamped by said ferrules to said member and having an intermediate portion outside of said member and which may be grasped by the fingers.
9. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a pull element comprising a loop of tubular knitted fabric having a portion extending between said member and a ferrule and clamped to said member by said ferrule, and having a portion extending from said fuse and which may be grasped by the fingers.
10. A fuse of the cartridge type having a textile fabric pull element secured thereto.
11. A fuse of the cartridge type having a tubular knitted fabric pull element secured thereto.
12. A fuse comprising a tubular member of insulation, a conducting ferrule on each end of said member, a fuse link within said member and secured at its ends to said ferrules, and a pull element of tubular knitted fabric secured to said fuse and presenting a handle portion which may be grasped to facilitate removal and replacement of said fuse.

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