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G. P. McDONNELL

1,650,996

FUSE

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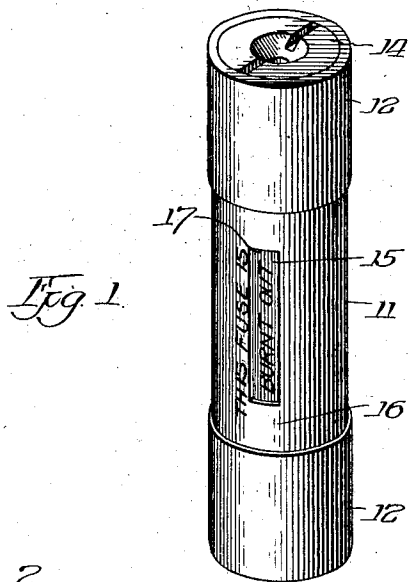


Fig. 2

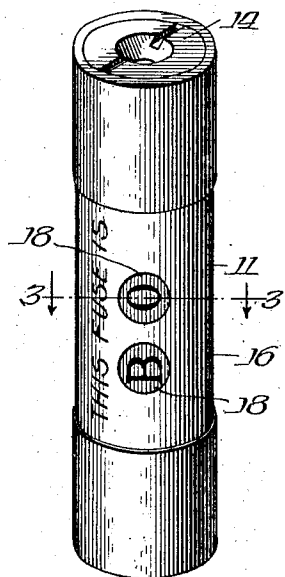


Fig. 3

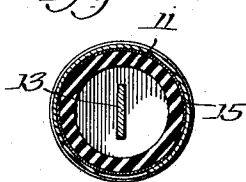


Fig. 5

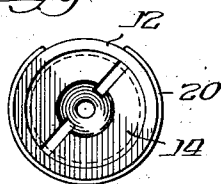
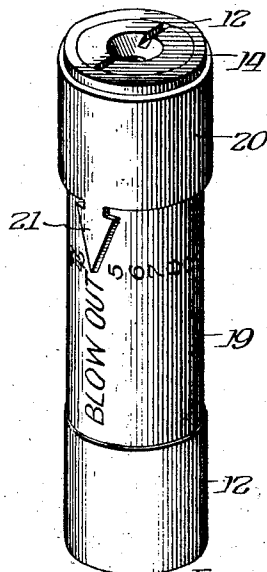


Fig. 4



Witness:

Ed. C. Brown

Inventor
George P. McDonnell
By McKinstry, Hurley, Byrum & Knight
Attys

UNITED STATES PATENT OFFICE.

GEORGE P. McDONNELL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ECONOMY FUSE & MANUFACTURING CO., OF CHICAGO, ILLINOIS, A CORPORATION OF NEW YORK.

FUSE.

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This invention relates to a new and improved fuse and more particularly to means associated with a fuse for selectively indicating the condition or capacity of the fuse. Certain types of fuses now in use are known as renewable in that the body portion of the fuse can be dismantled sufficiently to remove a burned out fuse element and replace it with a new element. Such fuses result in considerable economy since the fusible element represents but a small part of the cost of the entire fuse. The fusible elements are made in a large variety of capacities and a single size of fuse casing is capable of containing any one of a series of varying resistances with quite a wide difference in rating.

In numerous types of these fuses the fusible element is not readily visible and it is impossible to easily ascertain the value of the fusible element contained in the casing. It is also impossible to easily ascertain whether or not the fusible element is burned out. Consequently, the mere external examination of such a fuse cartridge will not enable the user to know its capacity or condition. The fuse may contain a fusible element of higher or lower rating than that desired which might permit an undesirable load before blowing, or on the other hand, might blow before permitting passage of the desired amount of current.

It is an object of the present invention to provide a means associated with a renewable fuse whereby the condition or capacity of the fuse may be readily indicated.

It is a further object to provide a construction of this character in which the indication may be selectively changed to correctly indicate the value of any fusible element which may be placed in the casing or to indicate that the fuse is burned out.

It is also an object to provide a device of this character in which the indicating means is permanently associated with the fuse and adapted for easy and rapid manipulation.

It is a further object to provide a device of this character which is simple in design and construction and which may be commercially manufactured at small cost.

Other and further objects will appear as the description proceeds.

I have illustrated certain preferred em-

bodiments of my invention in the accompanying drawings in which—

Figure 1 is a perspective view of one form of my invention;

Figure 2 is a view similar to Figure 1, showing a slight modification;

Figure 3 is a section taken on line 3—3 of Figure 2;

Figure 4 is a perspective view of a further modified form; and

Figure 5 is a view of the form shown in Figure 4 as seen from above.

All forms of fuses shown are of the cartridge type and comprise a main fuse body 11 having ferrules 12 at each end. The fusible element 13, shown in cross section in Figure 3, is secured in place in the cartridge by means of the screw plugs 14. This construction is a usual one and forms no part of the present invention.

In the form of construction shown in Figures 1 to 3, an inner label member 15 is pasted around the fuse body 11. Fitting around this label 15 is the movable cylinder 16 which cylinder in Figure 1 is provided with the rectangular opening 17. In the adjusted position shown in Figure 1, the words "Burned out" on the inner label 15 are visible through the opening 17. The words "This fuse is" are shown printed on the movable member 16 adjacent the opening 17. The member 16 is tubular in form and is held against longitudinal movement by the shoulders of the ferrules 12. The member is preferably fitted upon the fuse body sufficiently tightly to prevent accidental rotation but to permit it to be rotated intentionally to vary the indicia appearing through the opening.

The form of construction shown in Figures 2 and 3 is similar to that just described with the exception that instead of the rectangular opening 17, a pair of circular openings 18 is provided. As shown in Figure 2, the indicia "BO" appear signifying "Burned out." In the form shown in Figures 4 and 5, the fuse body has fixedly secured thereto a label 19 upon which appear the words "Blow out" and a series of figures extending circumferentially of the fuse. These figures represent amperes of capacity of fusible elements which may be placed in the fuse.

The spring clip 20 is sprung around one of the ferrules 12 as shown in Figures 4 and

5. This clip is formed of conducting material and is provided with indicator pointer 21. The clip 20 may be rotated to bring the pointer 21 opposite any desired figure in the series upon the fuse body.

It will be understood that in the forms of construction shown in Figures 1 to 3, a series of figures, or figures accompanied by the word "Amperes" or an abbreviation thereof, will be printed upon the inner label which is secured to the fuse body. Consequently, in Figure 1 the member 16 may be rotated to permit the words "5 amperes" or some other number of amperes to appear instead of the word "Burned out." Similarly in the form shown in Figure 2, the member 16 may be rotated to permit a figure to appear in the opening 18 in which the letter "B" appears in the drawing and to permit a letter "A" or the abbreviation "Amp." appear in the opening 18 upon which the letter "O" appears in the drawing.

In the use of the form shown in Figures 1 to 3, the fuse when originally sold will have its outer tubular member 16 adjusted to disclose the rating of the fusible element. When it is burned out in service, upon removal from the fuse-holding element, the members 16 should be turned to "Burned out" or "B O". When the fuse casing is re-filled, member 16 is turned to make visible the designation of the proper rating of the new element inserted.

The form shown in Figure 4 is used in a similar manner, the clip 20 being rotated to cause the pointer 21 to indicate properly. As has been stated, the clip 20 is formed of conducting material so that it will not inter-

fere with the flow of the current and the operation of the fuse holding members engage the clip rather than the fuse ferrules.

While I have shown certain preferred embodiments of my invention it is capable of further modification and I contemplate such changes as come within the scope of the appended claims.

I claim:

1. In combination with a renewable fuse containing a single fusible element, a plurality of indicia adapted to indicate the value of the fusible element and a member adapted to indicate one of said indicia, said member being independent of the renewable fuse structure and said indicia and indicating member being movable relative to each other.

2. In combination with a renewable fuse of the cartridge type, a plurality of indicia carried by the fuse body and adapted to indicate the value of the fusible element in the body, and a rotatable sleeve carried by the body and adapted to selectively indicate one of said indicia, said sleeve being independent of the structure of the fuse itself.

3. In combination with a renewable fuse of the cartridge type, a plurality of indicia carried by the fuse body and adapted to indicate the value of the fusible element in the body, and a rotatable sleeve carried by the body and adapted to selectively expose one only of said indicia, said sleeve being independent of the structure of the fuse itself.

Signed at St. Louis, Missouri, this 1st day of October, 1923.

GEORGE P. McDONNELL.