

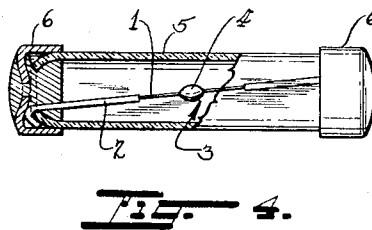
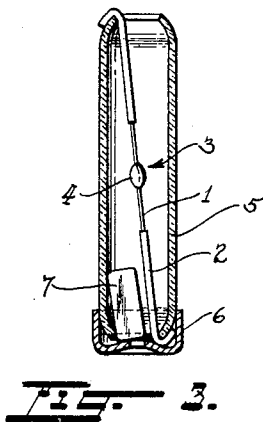
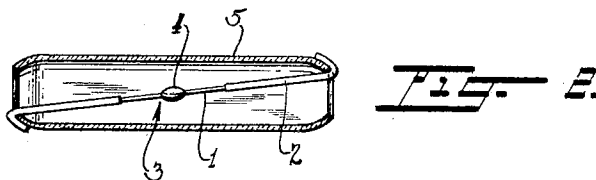
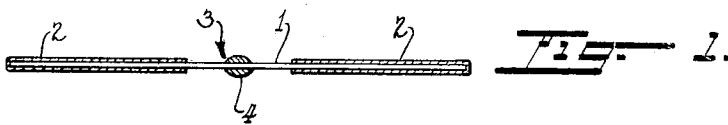
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E. V. SUNDT

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LOW CAPACITY FUSE AND METHOD OF MAKING THE SAME

Filed Sept. 9, 1929



INVENTOR  
E. V. Sundt  
BY *Munn & Co.*  
ATTORNEYS

## UNITED STATES PATENT OFFICE

EDWARD V. SUNDT, OF CHICAGO, ILLINOIS

## LOW CAPACITY FUSE AND METHOD OF MAKING THE SAME

Application filed September 9, 1929. Serial No. 391,375.

My invention relates to improvements in low-capacity fuses and methods of making the same, and it consists in the steps hereinafter described, and in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a low-capacity fuse and method of making the same to operate at low currents for the protection of delicate electrical equipment such as galvanometers, radio and rectifier tubes, rectifier and filter circuits, etc.

A further object of my invention is to provide a fuse of the type described which is so constructed that it will fuse readily at the passage of a small amount of current there-through.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is an illustration of a fuse wire ready to be assembled,

Figure 2 is a sectional view of the casing showing the fuse wire disposed therein,

Figure 3 illustrates the assembling of a ferrule upon the end of the casing, and

Figure 4 is a side elevation of the fuse as assembled, a portion thereof being shown in section.

In carrying out my invention I provide a fuse wire 1 which is of high resistance material, such as nickel chromium or copper nickel alloy. The wire 1 is metal plated throughout its length as at 2 with the exception of the central portion indicated generally at 3. This central portion is shielded during the plating. A highly combustible material 4, such as phosphorus mixed with a suitable binder, is disposed upon the bare central portion 3 of the wire 1.

The wire 1 in this condition is then placed in a casing 5 which is constructed of any suitable insulating material, preferably glass. The ends of the wire are bent over the edges of the casing 5 so as to hold the wire in place. It will be observed that the wire ex-

tends at an angle through the casing. A ferrule such as that indicated at 6 is placed upon one end of the casing over the adjacent end of the wire. A quantity of solder is placed in the casing upon the ferrule as indicated at 7 in Figure 3. The solder 7 is melted, thus firmly securing the ferrule, the wire, and the casing together. In a like manner, another portion of solder is placed within the casing and another ferrule is placed upon the other end of the casing and secured in place by melting the solder. In this manner the fuse is assembled.

When the fuse is disposed in a circuit, the current will flow through the ferrules and the fuse wire connecting these ferrules. When the current is higher than desired for the devices in which the current is used, the wire 1 will become heated. The combustible material 4 requires little heat to become ignited and will therefore become ignited before the wire will become fused. Upon the ignition of this combustible material, the wire will be instantaneously fused. This is one of the outstanding features of this invention; namely, the provision of a fuse by means of which a circuit may be instantaneously broken upon the reception of a higher current than desired.

Another feature of the invention is the metal plating of the wire 1 which reduces the heat generated by the fuse to a minimum, since only a small portion of the fuse wire becomes heated the maximum degree. This brings about an instantaneous fusing which is necessary in many cases.

I claim:

1. A fuse construction comprising a tubular member provided with constricted end portions, a fuse wire disposed in said tubular member, said fuse wire being provided with end formations for gripping the ends of the tubular member whereby the fuse member is held in a suspended position therewithin, cap members disposed over the ends of the tubular member, and fusible solids disposed within the ends of the tubular member, said solids being adapted for being heated whereby the same may be fused for embedding the constricted end portions of the tubular member,

the ends of the fuse wire, and the cap members therein.

2. A fuse construction comprising a tubular member, a fuse wire disposed in said tubular member, said fuse wire being provided with end formations for gripping the ends of the tubular member whereby the fuse wire is held in a suspended position there-within, cap members disposed over the ends of the tubular member and provided with openings therethrough, and fusible solids disposed within the ends of the tubular members and adapted for being heated whereby said solids may be fused for embedding the ends of the tubular member, the ends of the fuse wire, and cap members therein.

3. A fuse construction comprising a tubular member, a fuse wire disposed in said tubular member, said fuse wire being provided with oppositely extending hook formations for gripping the ends of the tubular member, cap members disposed over the ends of the tubular member and provided with openings therethrough, and fusible solids disposed within the ends of the tubular member, said solids when fused extending through the openings in the cap members whereby the ends of the tubular member, the ends of the fuse wire, and the cap members may be embedded therein.

4. A fuse construction comprising a tubular member provided with constricted end portions, a fuse member disposed in the tubular member and provided with end formations for gripping the ends of the tubular member, cap members disposed over the ends of the tubular member, and means for embedding the constricted end portions of the tubular member, the ends of the fuse wire, and the cap members.

5. A fuse construction comprising a tubular member provided with constricted end portions, a fuse wire disposed in said tubular member, said fuse wire being provided with formations for gripping the ends of the tubular member whereby the fuse wire may be held in a suspended position therein, cap members disposed over the ends of the tubular member and provided with openings therethrough, and fusible solids disposed within the ends of the tubular members whereby said solids, when heated, may be fused for imbedding the constricted end portions of the tubular member, the ends of the fuse wire, and the cap members therein.

6. A fuse construction comprising a tubular member provided with constricted end portions, a fuse wire disposed in said tubular member, said fuse wire being provided with oppositely extending hook formations for gripping the ends of the tubular member, and cap members disposed over the ends of said tubular member and provided with openings therethrough and fusible solids disposed within the ends of the tubular member, said

solids when fused extending through the openings in the cap members whereby said cap members, the constricted end portions of the tubular member, and the end portions of the fuse wire may be imbedded therein.

Signed at Chicago in the county of Cook and State of Illinois this 27th day of August, A. D. 1929.

EDWARD V. SUNDT.