

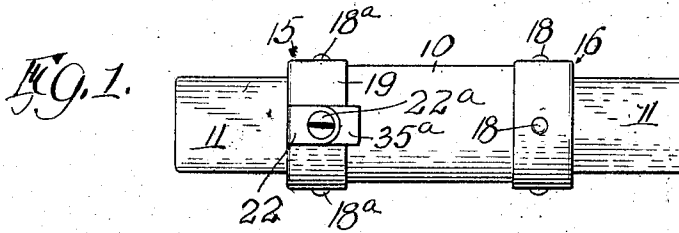
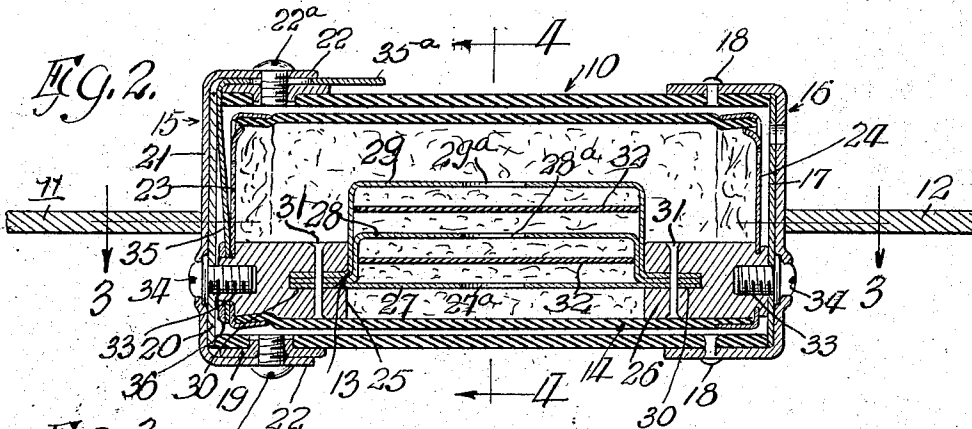
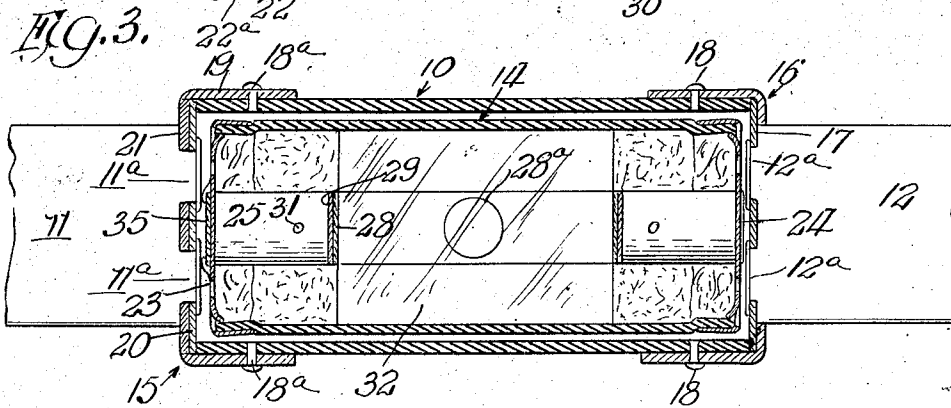
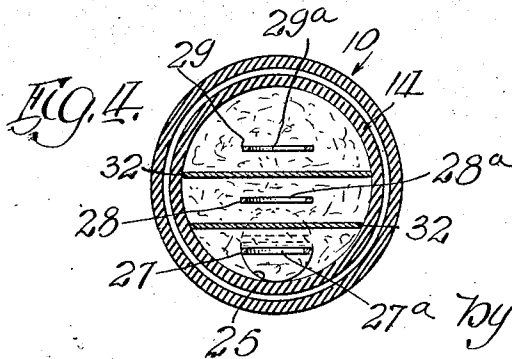
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E. L. OGLE

FUSE

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UNITED STATES PATENT OFFICE.

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FUSE.

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This invention relates to improvements in electric fuses and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

5 The primary object of the invention is to improve the construction of electric fuses which include a plurality of fusible members, and to so arrange and separate said members that each is located in an individual
10 compartment, so that when said members fuse or "blow" the arcs and the pressures generated thereby are each confined to a small space where it is more quickly smothered or extinguished, instead of being
15 permitted to combine with the other fused members and produce such a high pressure as will destroy the usefulness of the casing or body of the fuse.

20 The object of the invention, as well as others, together with the many advantages thereof will more fully appear as I proceed with my specification.

In the drawings:—

25 Fig. 1 is a view in elevation of a fuse embodying my invention.

Fig. 2 is a view on an enlarged scale representing a longitudinal central section through the fuse.

30 Fig. 3 is another longitudinal central section through the fuse as taken on the line 3—3 of Fig. 2.

Fig. 4 is a cross-section through the fuse as taken on the line 4—4 of Fig. 2.

35 Referring now to that embodiment of the invention illustrated in the drawings:—10 indicates the body of the fuse, which is of the knife-blade contact type, and 11, 12 indicate the contact blades. 13 indicates as a whole the fusible member of the fuse (see Fig. 1) which as shown in this instance is contained in a renewable cartridge 14. The
40 fuse body 10 is a heavy tube of insulating material, such as fibre or the like and is closed at its ends by metallic, tubular heads 15, 16, which carry the blades 11 and 12 respectively.

45 The head 16 is permanently attached to the tube 10. The tubular part of the head closely embraces the end of the fuse body 10 with its end wall engaged against a flat metal disc 17, which in turn engages against the end of the tubular body 10 and said head is fixed on the tube, preferably by means of
50 rivets 18. The blade 12 extends through a slot in the flat end wall of the head and has

spaced extensions 12^a, 12^a (see Fig. 3) which project through holes in the disc 17 and are upset against the inner face of said disc.

The other head 15 is made in two separable parts, (see Figs. 2 and 3) namely, a short
60 tube 19, which is permanently attached to the fuse body 10 by rivets 18^a, and inner and outer flat discs 20, 21 respectively. Said discs are attached together and are secured to the associated blade 11 by means of
65 spaced extensions 11^a, 11^a on said blade, which are upset against the inner face of the disc 20. Both of said discs fit snugly within the open end of the metal tube 19 and against the end of the fibre tube 10, beyond
70 which said metal tube extends a distance equal to the thickness of the two discs. The outer disc 21 has diametrically opposed ears 22, 22 which extend at right angles to the plane of the disc and embrace the tube 19
75 and are secured thereto by screws 22^a,—the metal of the tube being up-set through the fibre tube 10 and tapped to receive said screws. From the foregoing, it is apparent that the removable part of the fuse head 15
80 comprising the discs 20 and 21 and the connected blade 11, is readily removable for the purpose of replacing a fused or "blown" cartridge, and that it is thereafter easily and quickly applied with its blade 11 always
85 in the required plane.

The cartridge 14 has a tubular body of insulating material which is closed at its ends by metal tubular caps 23, 24 secured thereto
90 in any suitable manner.

The fusible member 13 comprises as shown herein, two metal plugs 25, 26 which constitute terminals, one connected to each metal cap of the cartridge and of a plurality of
95 fusible bars 27, 28 and 29 respectively, connected to and supported by said plugs. As many fusible bars may be used as are required to carry the load. The plugs 25, 26 are made cylindrical as shown, and are provided in their proximate ends with diametric
100 slots 30 to receive the ends of the fusible bars which are secured thereto by rivets 31. The bars 27, 28 and 29 are arranged in parallel planes with their ends in juxtaposition and engaged in the slots 30 of the plugs
105 25 and 26 and with their intermediate lengths spaced apart as clearly illustrated in Fig. 2. Said bars are apertured between their ends to determine the effective cross-section in a familiar manner.

Between the fusible bars 27, 28 and 29 I provide barriers 32, 32 of heat resisting material in the form of flat sheets of mica of a length equal to the distance between the ends of the plugs 25, 26 and of a width to engage with substantially diametrically opposite points of the cartridge body. These barriers together with the proximate walls of the cartridge body define arcing compartments, one for each fusible bar, so that when said bars fuse or "blow" their arcs are isolated from each other and cannot combine to develop a gas pressure which would damage the fuse as a whole, and thus render it unfit for further use. As an example, assume that the fuse is a 150 ampere fuse with each bar in this instance having a capacity of 50 amperes. With the fusible bars separated from each other as before described, the arcs of the three fusible members cannot combine their explosive effect but each arc is confined to its individual compartment where it is easily smothered and quickly extinguished and its explosive force reduced to a minimum.

Each plug 25, 26 is provided with a threaded aperture 33 to receive a screw 34 rotatively held in the proximate head of the fuse. An apertured tell-tale-tag plate 35 (see Figs. 1 and 2) is operatively engaged on the reduced end of the plug 25 next to the outer face of the cap 23 of the cartridge and a washer 36, next to the plate 35, and all parts are secured to the plug and to each other by solder. The plate 35 is adapted to extend diametrically across the cap 23 and beyond it so that its apertured end 35^a constituting the tell-tale-tag may be bent down against the metal tube 19 on the fuse body in advance of the application of the removable head.

After the fusible bars have been inserted in the cartridge body, said body is loaded with the usual pulverulent material and a wad of asbestos fibre is placed in each end of the cartridge; the said pulverulent material assisting in holding the barriers 32, 32 in a position parallel with and midway between the fusible bars. In the adjacent heads of the cartridge and fuse body are provided vent holes through which the gas escapes when the fuse blows, to relieve the pressure generated thereby. The cartridge is now ready for insertion into the fuse body and its capacity is shown on the tell-tale-tag 35^a.

To load the fuse with a cartridge,—the cartridge is inserted in the fuse body and is

then rotated until the threaded recess in the plug 26 may be engaged by the screw 34 in the fuse head 16. By means of the aforesaid screw, the cartridge is drawn up towards the fuse head 16 until the exposed end of the plug 26 is engaged against the inner face of the fuse head. The removable part of the fuse head 15 is then applied and the associated screw 34 is threaded into the hole 33 in the plug 25.

It is apparent from the foregoing description that when a fuse embodying my invention "blows" for any reason, the rapidly generated gases cannot combine their pressures, because each fusible member is isolated or separated from the adjacent fusible member. Thus, the force of said rapidly generated gases is reduced to a minimum and no danger can result to the fuse body, and therefore, said body can be used a number of times, a new cartridge being inserted in the fuse body when needed.

While in describing one embodiment of my invention I have referred to certain details of construction and arrangement of parts, I do not wish to be limited thereto except as may be pointed out in the appended claims.

I claim as my invention:

1. In an electric fuse, the combination of a fuse body having a contact member at each end, a cartridge body in said fuse body provided with metal caps, metal plugs connected to the metal caps of the cartridge, a plurality of parallel, spaced fusible bars in said cartridge body, said bars being formed to bring their ends into contactual engagement, said ends being fixed in said plugs, and barriers of heat-resisting material interposed in the spaces between said bars and engaged against said cartridge body.

2. A cartridge for an electric fuse comprising an insulation tubular body provided with metal caps, metal plugs connected to the metal caps of the cartridge, a plurality of parallel, spaced fusible bars in said cartridge body, said bars being formed to bring their ends into contactual engagement, said ends being fixed in said plugs, and barriers of heat-resisting material interposed in the spaces between said bars and engaged against said cartridge body.

In testimony that I claim the foregoing as my invention, I affix my signature this 31st day of October, A. D. 1923.

ELMER L. OGLE.