H. M. HUXLEY.

INCLOSED SAFETY FUSE.

APPLICATION FILED MAY 3, 1915.

1,231,364.

Patented June 26, 1917.

Fig. 1.

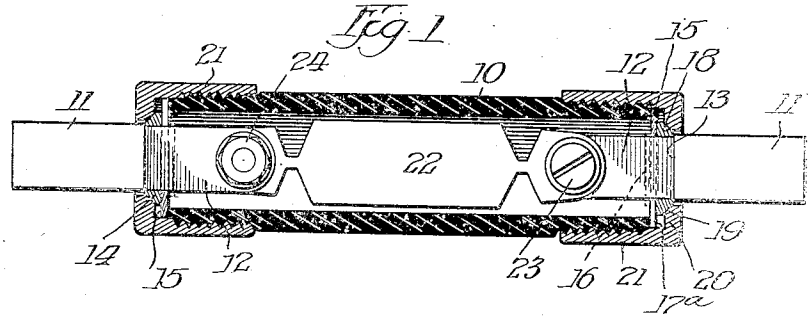


Fig. 2.

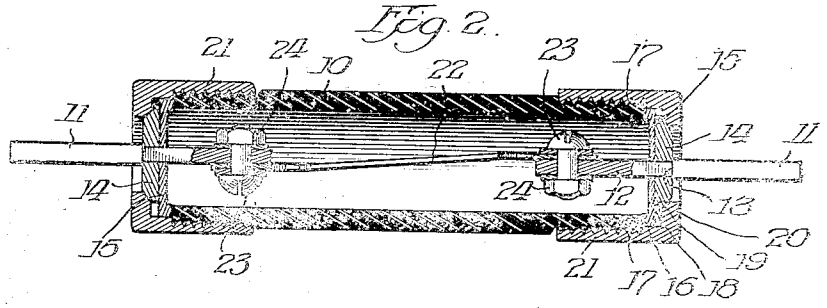


Fig. 3.

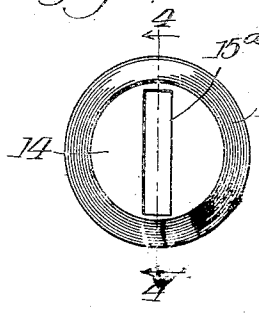


Fig. 4.

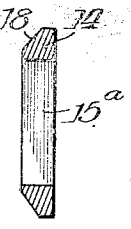


Fig. 5.

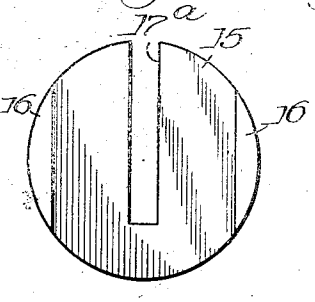
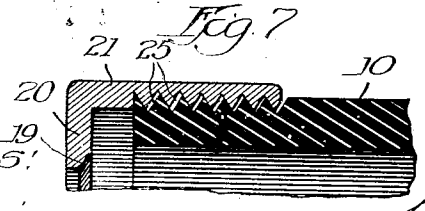


Fig. 6.



Fig. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

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INCLOSED SAFETY-FUSE.

1,231,364. Specification of Letters Patent. Patented June 26, 1917.

Application filed May 3, 1915. Serial No. 25,353.

To all whom it may concern:

Be it known that I, HENRY M. HUXLEY, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inclosed Safety-Fuses, of which the following is a specification.

My invention relates to cartridge fuses used for the protection of electrical circuits, and refers particularly, although not exclusively, to renewable cartridge fuses of the so-called "knife-blade" type.

It is one of the objects of my invention to construct fuses with a small number of parts, thereby decreasing the cost of manufacture and increasing the simplicity of operation in renewing the fusible links.

It is a further object of my invention to construct the various parts so that the terminals at the ends of the fuse will be automatically centered in correct position and will be truly alined with respect to each other.

It is a still further object of my invention to construct the removable parts at the ends of the fuses so that tight joints will result, and on "blowing" of the fuse the escape of gases will take place entirely through the restricted venting passages provided for this purpose.

Further objects and advantages of my invention will be more readily understood by reference to the accompanying drawings, which show a preferred embodiment of my invention, and in which—

Figure 1 is a longitudinal section through my improved cartridge fuse;

Fig. 2 is a longitudinal section of the fuse shown in Fig. 1, but taken at an angle of 90° thereto;

Fig. 3 is an enlarged plan of one of the centering washers;

Fig. 4 is a section through one of the centering washers, being taken on the line 4—4 of Fig. 3;

Fig. 5 is an enlarged plan of one of the alining washers;

Fig. 6 is a side elevation of the alining washer shown in Fig. 5; and

Fig. 7 is an enlarged fragmentary longitudinal section through a portion of the end of the fuse, showing the venting passage from the interior to the exterior of the fuse.

My improved fuse is provided with an insulating shell or casing 10 of cylindrical form and of insulating material, such as fiber or the like. A terminal blade 11 is located at each end of the casing 10, and at its slightly reduced portion 12 projects into the bore of the casing 10. Between the exterior portion of each terminal blade 11 and the interior reduced portion 12 is provided a shoulder 13, which is engaged by the exterior surface of the centering washer 14 having the aperture 15^a therethrough. It will be evident that by this construction the centering washer 14 may be brought into the position shown in Figs. 1 and 2 by slipping it over the inner end of the reduced portion 12 of the terminal blade 11, the aperture 15^a being the same size or very slightly larger than the reduced portion 12 of the terminal blade. The centering washer 14 is permanently maintained in position with respect to the terminal blade 11, and, if desired, may be securely fastened thereto by means of solder or the like. As clearly shown in Fig. 3, the centering washer 14 is circular in form, and is of a diameter slightly less than the interior bore of the casing 10 so that it may readily be slipped therethrough while attached to the terminal blade 11.

The alining washer 15 on its inner surface engages the end of the casing 10 and on its outer surface engages the inner surface of the centering washer 14. The alining washer 15 is provided at its edges with the bosses 16, clearly shown in Figs. 5 and 6, and these bosses engage corresponding recesses 17 in the end of the casing 10, and serve to prevent the alining washer 15 from turning after it is in its adjusted position. The washer 15 is provided with the slot 17^a extending inwardly from its periphery and parallel with the bosses 16. It will be apparent that the alining washer 15 may readily be applied to the blade 11 by slipping it into position so that the reduced portion 12 of the blade 11 occupies a position within the slot 17^a.

The centering washer 14 is provided with a beveled surface 18 on its outer face, and this beveled surface is engaged by a corresponding beveled surface 19 on the inner edge of the flange 20 of the cap member 21 which has threaded engagement with the end of the casing 10. It will be evident that

by reason of the beveled surface on the centering washer 14 and the cap member 21, or either of them, the centering washer 14 and its attached terminal blade 11 are automatically centered when the cap member 21 is screwed home, while at the same time the engagement of these beveled surfaces forms a tight joint through which it is impossible for gases to escape when the fuse is blown.

A fusible link 22, of zinc or other similar material, is fastened by means of the bolts 23 and nuts 24 to the inner ends of the terminal blades 11.

It will be understood that the centering washer 14, the alining washer 15, the cap 21, and the terminal blade 11 are duplicated on the two ends of the casing 10, as clearly shown in Figs. 1 and 2.

After the caps 21 have been screwed into position, a slight clearance is formed between the threads in the ends of the casing 10 and the threads of the cap members 21, this clearance forming restricted venting passages 25 from the interior of the fuse to the exterior.

After a fuse has blown, the various parts may be disassembled and then reassembled with a new fusible link 22, according to the following procedure:

The caps 21 are unscrewed, after which the terminal blades 11 may be readily removed from the ends of the casing 10. The alining washer 15 is then slipped off of one of the terminal blades 11 and a new link 22 is connected at its ends to the inner ends of the terminal blades 11. The other terminal blade 11 from which the alining washer 15 has been removed is slipped through the bore of the casing 10 until the alining washer 15 of the other terminal blade is brought into engagement with the end of the casing 10 and the bosses 16 engage the recesses 17 to prevent the alining washer from turning. It will be evident that the first terminal blade 11 with its attached centering washer 14 may be readily slipped through the casing 10 on account of the fact that the diameter of the centering washer 14 is slightly less than the bore of the casing 10. The alining washer 15 is then readily slipped into position on said first terminal blade, the bosses 16 fitting into the recesses 17 in the end of the casing 10, the terminal blade 11 thereby being prevented from moving inwardly into the casing 10 by the engagement of the centering washer 14 with the alining washer 15. The two terminal blades 11 are correctly alined with respect to each other by the engagement of the bosses 16 of the alining washers in the recesses 17, these recesses being in corresponding positions at the two ends of the casing 10. The cap members 21 are then screwed onto the ends of the casing, and the engagement of their beveled surfaces 19 with the beveled surfaces 18 of the centering washers 14 causes the latter, with the blades 11, to be correctly centered with respect to the casing 10.

It will be apparent to those skilled in the art that many changes could be made in the detailed construction of the various parts which I have described without departing from the spirit or scope of my invention, as defined in the appended claims.

What I claim is:

1. In an inclosed safety fuse, the combination of a hollow cylindrical casing, a terminal extending into the end of said casing, a fusible link attached to said terminal, a round centering member of smaller diameter than the bore of said casing and engaging said terminal, a washer between said centering member and the end of said casing, and a cap member fitting over the end of said casing and engaging said centering member, one of said members having a beveled surface engaging the other member, whereby said centering member will be automatically centered with respect to said casing when said cap member is brought into position on the end of said casing.

2. In an inclosed safety fuse, the combination of a hollow cylindrical casing having an alining recess at its end, a terminal extending into the end of said casing, a fusible link attached to said terminal, a round centering member fastened to said terminal and having an aperture through which said terminal extends, said centering member being of less diameter than the bore of said casing and having a beveled surface on its outer face, an alining washer between said centering member and the end of said casing, said alining washer having a boss engaging the alining recess of said casing, and a cap member fitting over the end of said casing and having an inwardly-extending flange engaging the beveled surface of said centering member, whereby said centering member will be automatically centered with respect to said casing when said cap member is applied in position.

3. In an inclosed safety fuse, the combination of a hollow cylindrical casing, a terminal extending into each end of said casing, a fusible link within said casing and having its ends attached to the inner ends of said terminals, a centering washer fastened to each of said terminals, one of said centering washers being of less diameter than the bore of said casing, means engaging each end of said casing for alining said terminals, the alining means at one end of said casing comprising a washer having a slot extending to its periphery through which the terminal blade passes, and a cap member fitting over each end of said casing and having a beveled surface engaging the corresponding centering washer when the cap is applied in position, whereby the cen-

tering washer and its attached terminal are automatically centered with respect to said casing.

4. In an inclosed safety fuse, the combination of a hollow cylindrical casing having an alinement recess in each end thereof, a terminal blade extending into each end of said casing, a fusible link within said casing and attached at its ends to the inner ends of said terminal blades, a round centering washer attached to each of said terminal blades and of smaller diameter than the bore of said casing, each of said centering washers having a beveled surface on its outer face, an alining washer between each of said centering washers and the end of said casing, said alining washer having a slot extending inwardly from its periphery, whereby it may be applied to said terminal blade and having a boss engaging the alining recess in the end of said casing, and a cap fitting over each end of said casing and having an inwardly-extending flange with a beveled surface engaging the beveled surface of the corresponding centering washer.

In witness whereof, I hereunto subscribe my name this 30th day of April, A. D. 1915.

HENRY M. HUXLEY.

Witnesses:
ALBERT C. BELL,
L. E. HANNEN.