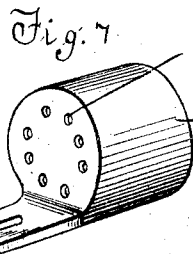
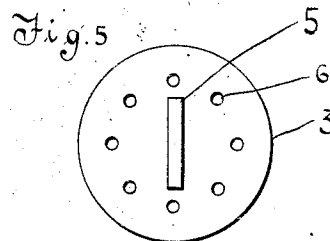
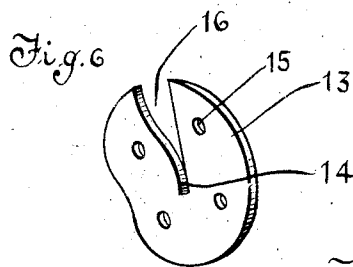
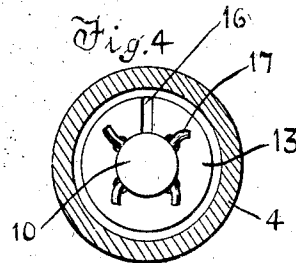
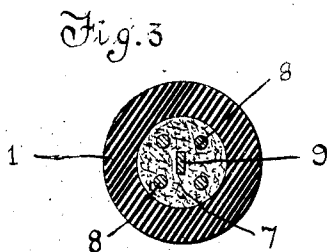
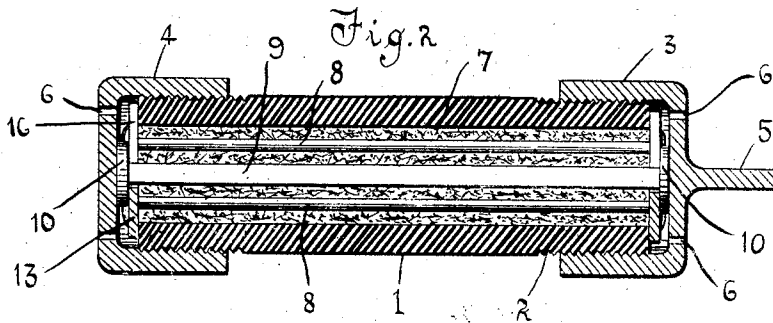
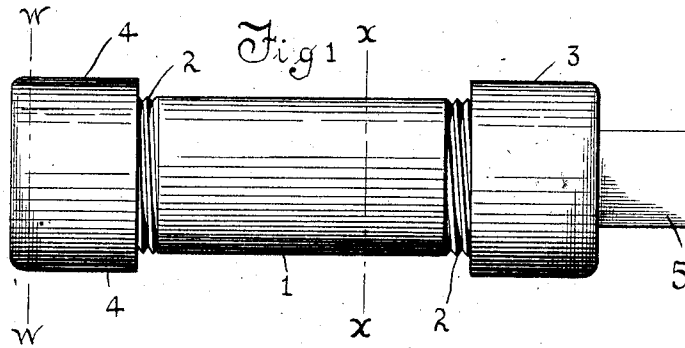


A. F. DAUM.
CARTRIDGE FUSE.
APPLICATION FILED MAR. 5, 1910.

961,716.

Patented June 14, 1910.



WITNESSES

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CARTRIDGE-FUSE.

961,716.

Specification of Letters Patent. Patented June 14, 1910.

Application filed March 5, 1910. Serial No. 547,577.

To all whom it may concern:

Be it known that I, ALBERT F. DAUM, a citizen of the United States of America, residing at N. S. Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Cartridge-Fuses, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to cartridge fuses, and the objects of my invention are to furnish a fuse cartridge with detachable end caps that can be easily removed to permit of new fuses being placed in the cartridge; and to provide a cartridge fuse that can be easily repaired particularly when the fuse is burned out, without discarding any part of the cartridge fuse.

Other objects of my invention are to provide a cartridge fuse that can be used in connection with a blade contact, binding post or other contacts used in connection with electrical devices, to provide a cartridge fuse with fuses that can be replaced without the use of tools, and to assemble the various parts of the fuse in such a manner that they can be easily and quickly renewed.

Further objects of my invention are to furnish a cartridge fuse with simple and effective means for holding the fuses whereby they can expand and contract without breaking or disarranging any part of the fuse, and to accomplish the above objects by a fuse that is simple in construction, durable and inexpensive to manufacture.

These and such other objects as may hereinafter appear are attained by a mechanical construction that will be hereinafter specifically described and then claimed.

Reference will now be had to the drawing forming a part of this specification, wherein:—

Figure 1 is an elevation of a cartridge fuse constructed in accordance with my invention, Fig. 2 is a longitudinal sectional view of the same, Fig. 3 is a cross sectional view of the fuse taken on the line X—X of Fig. 1, Fig. 4 is a similar view taken on the line W—W of Fig. 1, Fig. 5 is an end view of the cartridge fuse, Fig. 6 is a perspective view of a detached resilient washer adapted to form part of the fuse, and Fig. 7 is a perspective view of a modified form of fuse cap.

In the accompanying drawing the reference numeral 1 denotes a cylindrical shell or section of tubing made of a suitable non-

conducting material and having the ends thereof exteriorly screw threaded, as at 2, to receive caps 3 and 4, said caps having the walls thereof threaded to screw upon the ends of the shell 1. The cap 3 is provided with a blade 5, whereby the cartridge fuse can be used in connection with a knife switch or a blade contact, and furthermore, the caps are provided with a plurality of circumferentially arranged vents 6 to allow gaseous fumes or other matter to escape from the shell when the fuses are burned out.

In the shell 1 is located a non-combustible and insulation material 7, as soapstone, chalk, asbestos, etc. and extending through the material 7 are a plurality of fuses 8 and 9 made of soft lead or a similar material. These fuses are of a greater length than the shell 1 and the fuse 9 is preferably in the form of a ribbon, and the ends thereof are provided with heads 10 adapted to be soldered or otherwise mounted upon the fuse 9. In some instances, the heads 10 can be formed integral with the ends of the fuses and the heads bent to lock the fuse in position.

Arranged at the ends of the shell 1 and of a greater diameter than the interior diameter of the shell 1 are resilient split washers 13 provided with a slot 14 and openings 15, the slot 14 forming the inner end of the slit 16 of said washer. The washers 13 are made of light and durable metal with the slots 14 centrally thereof and the openings 15 equally disposed around said slots. The edge of the washer bordering upon the slit 16 is bent out of the plane with respect to the opposite edge of the washer, whereby the washer will have a certain resiliency for a purpose that will presently appear. The ends of the fuses 8 are adapted to extend through the openings 15 and be bent against the washers, as at 17, and these fuses are used where the current is of small capacity, and when the current is increased, the ribbon fuse 9 is used, this fuse being placed in position by sliding the washers into engagement with the headed ends thereof, the slit 16 of said washers being of a sufficient width to allow the ends of the ribbon to enter the slots 14 of the washers.

The resilient washers 13 are adapted to be held in engagement with the ends of the shell 1 by the caps 3 and 4 engaging the ends of the fuses 8 or 9, and the resiliency of the washers is adapted to normally main-

tain and contact between the ends of the fuses and the cap 4, irrespective of any expansion and contraction upon the part of said cap.

5 In Fig. 7 of the drawing, I have illustrated a modified form of cap, the cap having one edge thereof provided with a bifurcated extension 15 which permits of a cartridge fuse equipped with the caps being
10 held between the binding posts or contacts.

Having now described my invention what I claim as new, is:—

15 In a cartridge fuse, the combination with a shell of non-conductive material, insulation filling the shell, resilient washers fitted against the ends of said shell and provided with openings, each washer being provided with a radial slit with a portion of each
20 washer bent out of the plane of the remaining portion of the washer, a plurality of

fuses extending through the insulation material in the shell, some of said fuses having the ends thereof extending through the openings of said washers and bent to engage the outer sides of said washers, another 25 fuse extending through the filling of said shell, heads carried by the ends of said fuse, and end caps threaded on the ends of said shell to engage the ends of said fuses, and slitted washers compensating for the ex- 30 pansion and contraction of said fuses and said caps and adapted to normally maintain the ends of said fuses in engagement with said caps, substantially as described.

In testimony whereof I affix my signature 35 in the presence of two witnesses.

ALBERT F. DAUM.

Witnesses:

KARL H. BUTLER.

EVA A. MILNE.