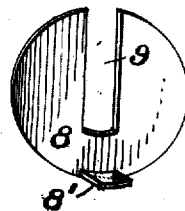
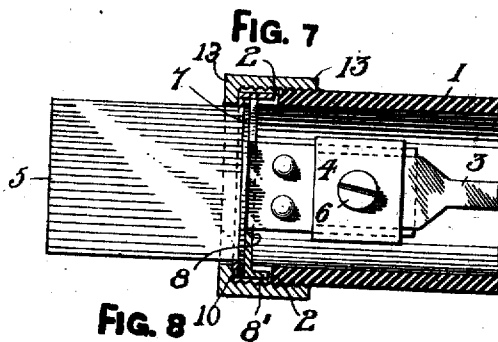
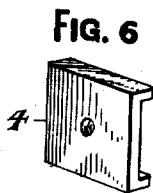
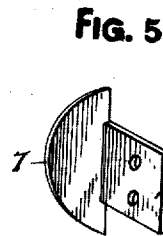
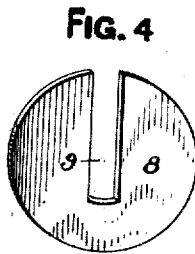
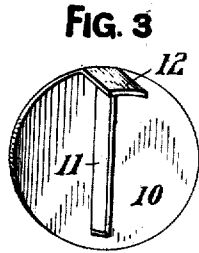
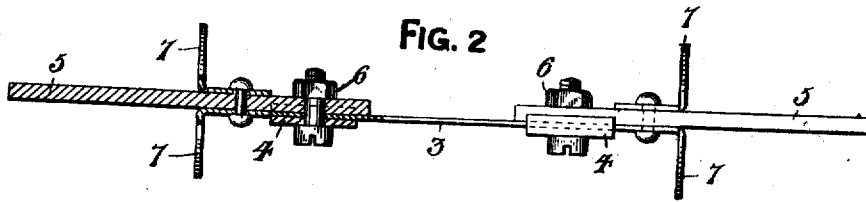
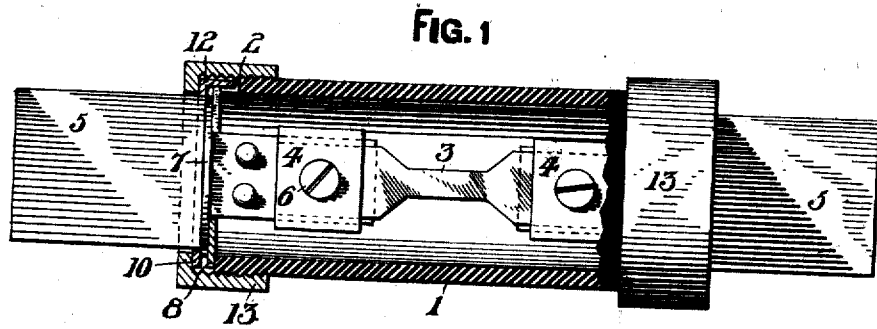


E. B. MALLORY.
REFILLABLE CARTRIDGE FUSE.
APPLICATION FILED JUNE 17, 1911.

1,005,253.

Patented Oct. 10, 1911.



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UNITED STATES PATENT OFFICE.

EDWARD B. MALLORY, OF WILKINSBURG, PENNSYLVANIA.

REFILLABLE CARTRIDGE-FUSE.

1,005,253.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed June 17, 1911. Serial No. 633,771.

To all whom it may concern:

Be it known that I, EDWARD B. MALLORY, a citizen of the United States, residing at Wilksburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Refillable Cartridge-Fuses, of which the following is a specification.

My invention pertains to renewable cartridge fuses of the electrical class and of a type to accommodate currents of high or low capacity, which are capable of being easily recharged when the fuse blows out, and which can be used repeatedly.

The primary object of my invention is to provide a renewable cartridge fuse, of the so called knife blade type, which will possess the vital and necessary functions of good electrical and mechanical contact between the renewable fuse element and the knife blade elements which constitute the means for inserting the entire device in an electrical circuit for protective purposes.

Another object of my invention is to provide a renewable cartridge fuse embodying the necessary means for retaining the knife blade elements in a centered position, and prevent them getting out of line, and keeping them on the same plane with the removable fuse element, at the same time holding them rigid so as to properly engage the receptacles provided on switchboards and similar places for their reception.

Still another pertinent object of my invention is to provide a construction the principal parts of which are made of metal stampings or die work, in order to minimize the cost of manufacture of devices of this nature.

I do not limit myself to the exact form and construction shown and hereinafter described, reserving the right to make any necessary alterations and amendments therein which will be in accord with the original idea and spirit of the invention, and within the scope of the claims appended hereto.

With the above objects in view, as well as others that will appear during the following detailed description, my invention involves approximately the combined features set forth in the specification, and shown in the accompanying drawings.

Referring then to said drawings, Figure 1 is a longitudinal section of my invention in assembled formation; Fig. 2 is a detached view of the fuse showing means for securing

same to the blade contact pieces. Fig. 3 is a detail of one of the securing members, and Fig. 4 is a similar view of still another securing member. Fig. 5 also shows a detail of one-half of the blade carrying wings; Fig. 6 is a similar view of a channel piece to receive the end of the fuse; Fig. 7 illustrates a modified form of securing means, and Fig. 8 shows a modification of the member seen in Fig. 4.

Throughout the drawings the numeral 1 designates the body portion or cartridge shell made preferably of a non-conducting material, and having the exteriorly threaded end portions, at the extreme outer part being formed of one or a plurality of recesses 2.

The ends of the fuse 3, which may be of any desired size of configuration, are securely seated in suitable terminal members 4 of a channel formation as shown in Fig. 6, that are removably, or integrally fixed to, and carried by the inner ends of the contact blade members 5. When said terminal pieces are made removable I employ a nut and bolt means 6 to unite the said contacting members, the ends of said fuse being removably held between the registering portions of the two members 4 and 5, and, by reason of the channel formation provided on the said element 4, the fuse will be held in alignment and prevented from any free play or lateral movement; the object being to provide as perfect an electrical contact at this point as is possible. If necessary I can dispense with the element 4, and in that event simply employ an ordinary washer in conjunction with the nut and bolt 6 for uniting the fuse and blades. Rigidly secured at either side of the said blades are the two segments of the wing elements 7, shown in detail, Fig. 5, which can be of any desired configuration, but of a size capable of being passed freely through the body portion.

The united fuse and blades, shown in assembled formation, Fig. 2, are first loosely inserted in the shell 1, then, in order to securely retain said blades and fuse, the remaining parts of my invention are brought into service. This involves first, the taking of the flat circular washer 8, shown in Fig. 4, which involves the centrally disposed slot 9, slipping it in from the side and seating the same around the blades 5, at a point between the end of the shell 1 and wing element 7. The diameter of the element 7 is such that it permits free insertion and move-

ment of the blades through the shell 1, but the members 8 are of a slightly greater diameter than the opening through the shell, and by resting against the end of said shell, and contacting with the element 7, will center the blades and fuse, and prevent any longitudinal movement of these said members. In order to prevent rotary movement of the said blades at this point, and to guard against any possibility of fracture or twisting of the fuse, I employ another flat circular washer 10, shown in Fig. 3, which is provided likewise with a centrally disposed slot 11, and an integrally formed lug portion 12. This member is placed over the free ends of the blades, and contacts with the outer face of the element 7, the lug 12 entering the slotted portion of the first mentioned washer 8 and seating in the notch 2 formed in the end of the shell, after which step the centrally apertured or slotted screw caps 13 are turned on over the threaded ends of said shell, and upon engaging the members 10 will serve to lock and unite all the elements rigidly in position and hold the blades and fuse in fixed alignment. In this position these said members cannot be moved until released by unscrewing the caps 13, which step will be necessary when the fuse has burned out and is to be replaced by a new one.

In the modified construction shown in Fig. 7 I employ the form of washer shown in Fig. 8, which involves the additional lug feature 8', designed to engage in one of the recesses 2 formed in the end of the shell, and serves to hold and lock the member 8 against rotary movement when seated and performing its intended function; as heretofore described.

What I claim as my invention is:

1. In a refillable cartridge fuse the combination with the hollow insulating body portion and contact blades, of a fuse intermediate of the inner ends of said blades adapted for removable contact therewith; means formed on said blades, cooperating with an element intermediate of the said means and body portion, for centering the blades and fuse and for preventing longitudinal movement thereof; means for preventing rotary movement of the said blades and fuse; and locking means to hold all the elements in fixed position.

2. In a refillable cartridge fuse an insulating hollow body portion having recessed ends; blade contact members projecting into and extending beyond the said body; a fuse intermediate of and adapted for removable contact with the inner ends of the said blades; wings carried by the blades; means seated around said blades and positioned between the wing members and body for centering the blades and fuse and for preventing longitudinal movement of said elements; means seated over the blades and engaging

in the recesses in the body for preventing rotary movement of said blades and fuse; and cap members seated over the blades and contacting with the body for locking all the elements in holding position.

3. In a cartridge fuse of the class described the combination with a hollow insulating body portion having exteriorly threaded and recessed end portions, of blade members interiorly positioned and extending beyond the ends of the said body; a removable fuse intermediate of and contacting with the inner ends of the blade members; wings carried by the blades and positioned exteriorly of the body portion; a slotted washer seated around the blades and contacting with the wing members and end of the body portion; a second slotted washer seated over each blade, contacting against the said wing elements, and carrying a lug for engagement in the recessed ends of the body; and screw cap members for engagement with the body portion and against the second mentioned washer for locking all the elements in holding position.

4. In a cartridge fuse of the class described the combination with a hollow insulating body having exteriorly threaded and recessed end portions, of blade members interiorly positioned and projecting beyond the ends of said body; a removable fuse intermediate of and contacting with the inner ends of said blade members; wing members carried by said blades and positioned exteriorly of said body portion; a slotted washer seated around the blade members and contacting with the wing members and end of said body, said washer carrying a lug for engagement in the recessed ends of the body; a second slotted washer seated around said blade members and over and contacting with the wing members and carrying a lug for engagement in the other slotted washer and in the recessed ends of the body; and screw cap members for engagement with the body portion and against the second mentioned washer for locking all the elements in holding position.

5. In a renewable cartridge fuse of the class described the combination with a hollow insulating body portion having exteriorly threaded and notched end portions, of blade members exteriorly positioned and projecting into the ends of said body; a removable fuse between and contacting with the inner ends of said blade members; wings carried by said blades and positioned exteriorly of said body; a slotted washer seated around said blades and under and contacting with said wing members and over and contacting with the ends of said body; a second slotted washer seated around said blades and over and contacting with said wing elements and carrying a lug or lugs for engagement in the slot or slots in the first

mentioned washer and in the notch or notches in the end of said body; and screw cap members for engagement with the body and over and contacting with the last mentioned washer for holding and locking all the elements rigidly in proper position.

6. In a renewable cartridge fuse of the class described the combination with a hollow insulating body portion having exteriorly threaded and notched ends, of blade members carrying flanged means, for positioning in said body; a removable fuse between and contacting with the inner ends of said blade members; means provided on the inner ends of said blades to hold the fuse in fixed alinement with said blades; means seated around said blades and contacting with the ends of the body and with the flanged portion of the blades for centering the blades and fuse and for preventing longitudinal movement of said members; means contacting with said flanged portion and engaging in the notched ends of the body for preventing rotary movement of

said blades and fuse; and screw cap members contacting with the last mentioned means and with the body for locking all the elements in holding position.

7. A cartridge fuse capable of being refilled, involving an insulating hollow body portion, contact blades, and renewable fuse; means carried by the blades, cooperating with a removable element adapted for engagement with the body portion, for centering the blades and fuse and for preventing longitudinal movement thereof; additional removable means, engaging the first mentioned means and body portion, for preventing rotary movement of said blades and fuse; and locking means, engaging the last mentioned means and body, for holding all the elements in proper position.

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

EDWARD B. MALLORY.

Witnesses:

EMMA F. LEA,
W. T. D. EAMSEY.