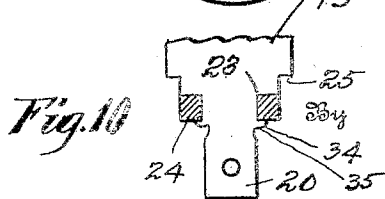
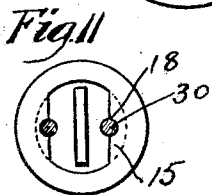
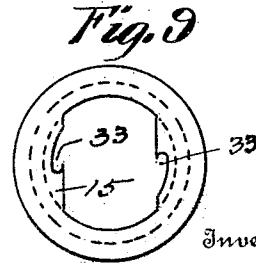
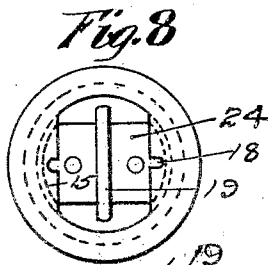
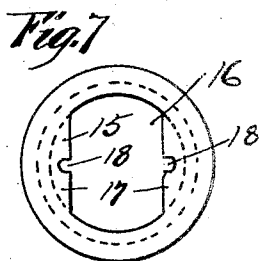
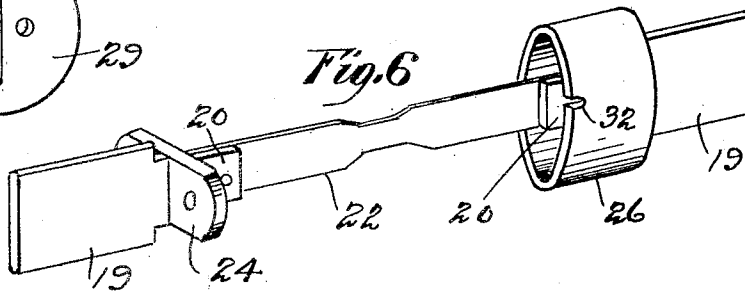
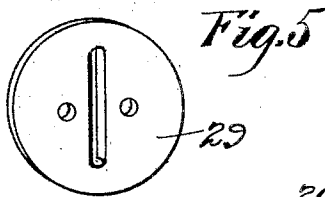
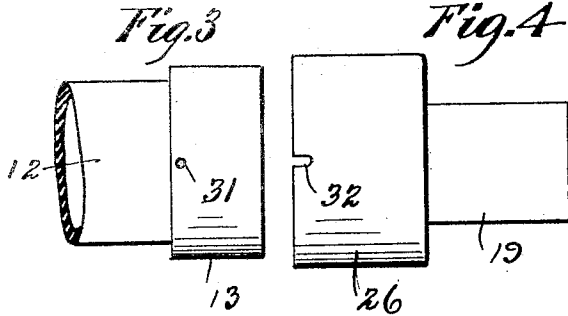
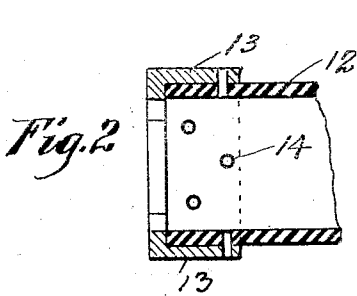
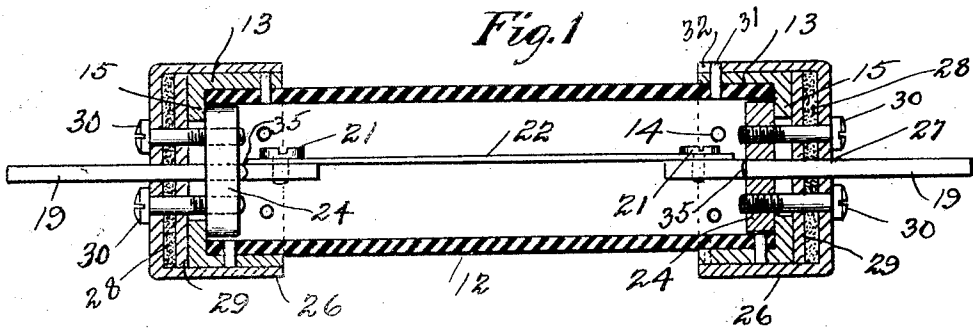


R. C. PATTON.
 RELOADABLE FUSE.
 APPLICATION FILED JUNE 30, 1917.

1,257,021.

Patented Feb. 19, 1918.



Inventor
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UNITED STATES PATENT OFFICE.

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RELOADABLE FUSE.

1,257,021.

Specification of Letters Patent. Patented Feb. 19, 1918.

Application filed June 30, 1917. Serial No. 177,885.

To all whom it may concern:

Be it known that I, RALPH CLIFTON PATTON, a citizen of the United States, and resident of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Reloadable Fuses, of which the following is a specification.

This invention relates to electric fuses, more particularly of the reloadable type, and the object of this invention is to provide a very strong and yet inexpensive construction of such a fuse which may be readily taken apart after having been blown, a fresh link connected and the parts easily replaced in the tube and locked therein as securely as when originally assembled at the factory.

It is found in practice that the granular material with which electric fuses are filled assists in quenching the arc when the fusible element is blown, by acting as a mechanical condenser for the metallic vapor evolved. This quenching action of the filler lessens the pressure within the casing.

However, as reloadable fuses are frequently reloaded by unskilled or incompetent persons, the granular filling material is not always put back. Therefore, a type of fuse casing which depends on the quenching action of the filler might not be strong enough to resist the gas pressure when the granular material is omitted. Under such conditions the fuse might burst and become a menace to life and property. To obviate such a possibility I have constructed a reloadable fuse strong enough to operate safely without the filling material.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1— is a sectional side elevation of my improved reloadable fuse.

Fig. 2— is a sectional view of one end of the tubing showing the ferrule riveted thereon.

Fig. 3— is a side elevation showing one end of the tube with the ferrule connected thereto and showing the alining pin therein.

Fig. 4— is a side elevation of the end cap showing the notch for engaging the alining pin by which the knife blade terminal contacts are held in alinement one with the other.

Fig. 5— is a perspective view of the metal washer which is positioned on the inside of the cap.

Fig. 6— is a perspective view showing the assembly of the link, terminal blades and one end cap as positioned into the casing.

Fig. 7— is a view of one end of the ferrule showing the shape of the opening therein through which the anchor block is passed.

Fig. 8— is the same as Fig. 7, showing the anchor block locked behind the flange of the ferrule by being rotated one-quarter turn after having been passed through the openings.

Fig. 9— shows another means for alining the contact blades which is that of providing notches in the edge of the ferrule flange for receiving screws in the cap when the link assembly is positioned in the fuse tube.

Fig. 10— is a side elevation showing a portion of a blade and the means of connecting it to the anchor block.

Fig. 11— illustrates another means of alining the blades by causing the screws to engage the slots in the flange.

Referring to the drawings, 12 designates the tubular casing employed for this cartridge type of fuse which may be made of any suitable insulating material. On each end of this tubing I have permanently connected a collar or ferrule 13 by means of rivets 14 or other suitable fastening. Each of these ferrules is preferably constructed of steel and provided with an inwardly turned flange portion 15 extending over the end of the tube, and as illustrated in Fig. 7 this flange is provided with an oblong opening 16 leaving side portions 17 adapted to engage the anchor block, presently described. These flange portions 17 are provided with notches 18 through which the edges of the contact blades pass in positioning the link assembly in the casing.

The knife blade form of terminal contacts are formed of copper or other material of high conductivity and its inner end is somewhat reduced as at 20, and tapped to

receive the binding screw 21, by which the fuse link 22 is secured thereto. A short distance back from this end, the blade is shouldered as at 23 against which is set the anchor block 24, which block is of a shape and size to just enter the opening 16 in the flange of the ferrule 13. The block is permanently secured to the blade by cutting the edge of the latter as at 34 and turning the cut portion over the inner surface of the block as at 35, see Fig. 10. This blade is further shouldered as at 25 so as to permit the block to be passed through the opening and then rotated a quarter turn to lock the same against the inner surface of this flange. The cap 26 is also preferably constructed of steel and is adapted to fit over the ferrule 13 and is slotted at 27 to permit the blade 19 to pass therethrough. A packing 28 of felt or other suitable material is placed on the inside of this cap and a washer 29 is placed against the packing so as to prevent the fire of the rupturing fuse link from blowing out through the joints. This cap is locked in position to the anchor block 24 by means of screws 30 which are threaded into tapped holes in this block.

In assembling my improved fuse the link 22 is secured by screws 21 to the inner ends of the opposite terminal blades 19, the blade at one end of the assembly is then passed through the notches 18 and the anchor block 24 through the opening 18 to the opposite end of the casing then the block at the opposite end of the assembly is passed through this opening and the whole is rotated in the casing the two anchor blocks being brought back against the inner side of their respective flanges in the position illustrated in Figs. 1 and 8. Both fiber and steel washers 28 and 29 are positioned, finally the caps 26 are placed over the whole and the screws 30 passed through them and threaded into their anchor blocks drawing each against the flat inner surface of its flange, thus holding the terminal blades rigidly in alinement with the axis of the tube, the anchor block also serving to securely lock all of the members of each terminal structure in position, rendering it impossible for any amount of pressure which may be developed by blowing of the fuse from forcing off these heads.

After a link has been blown it is only necessary to loosen the screws 30 and by rotating the blade and anchor block one-quarter turn the end structures may be readily withdrawn, and when again replaced after a fresh link has been attached thereto, the cap, screws and washers at one end need be removed as shown in Fig. 6, in order to again position the renewed assembly in its casing.

As it is necessary that the knife-blade-terminal contacts should be in perfect aline-

ment one with the other, I have provided a pin 31 on the ferrule 13 and a slot 32 on the cap which will register only when the blades at the opposite ends of the fuse are in alinement one with the other.

Other means may be provided for securing this alinement, one form of which is shown in Fig. 9 in which the flange 15 of the ferrule is notched as at 33 so that the locking screws, if properly positioned, will engage these notches when the cap, blade and anchor block are turned to locked position.

Then again another means for accomplishing this alining effect is to enlarge the slots 18 in the flange portions 15 and separate the screws 30 sufficiently so that upon being positioned in the cap and block they will pass through these slots and so provide positive alining means for the blades.

It will be noted in my improved construction that the number and size of the current-carrying parts which are constructed of brass or copper have been reduced to the minimum and the other or non-current-carrying parts are constructed of a stronger and cheaper metal which is preferably steel.

A feature of my improved construction is that the device may be readily taken apart and reassembled in replacing a blown fusible element and that when so assembled it is as strong and as serviceable as when originally constructed.

The foregoing description is directed solely toward the construction illustrated, but I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. An electric fuse comprising a tubular casing, a ferrule fixed to the end of the casing and having an inwardly turned flange, a removable cap covering the end of said tube, a terminal blade extending through said cap into the tube and provided with a locking member adapted to engage said flange, and means for securing said cap to said member when in position on the casing.

2. An electric fuse comprising a tubular casing, a ferrule fixed to the end of said casing and having an inwardly turned flange provided with an opening therethrough, a cap covering the end of said tube, a terminal blade extending through said cap into the tube, a locking member on said blade adapted to be passed through the opening in said flange and rotated to engage the inner face of said flange, and means for securing said cap to said member when in position on the casing.

3. An electric fuse comprising a tubular casing, a ferrule having a sleeve portion fixed to the ends of said casing, each ferrule

having an inturned flange, a readily removable cap for each end of the tube fitted to slide over the sleeve portion of said ferrule, a terminal blade extending through each cap to be connected by a fusible element, a locking member on each blade, each member being adapted to engage the inner face of its flange, and means whereby each cap may

be releasably secured to the lock member and so held against action of internal pressure. 10
In testimony whereof I affix my signature in presence of two witnesses.

RALPH CLIFTON PATTON.

Witnesses:

GEORGE W. STEERE,
JAMES L. GONGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."