No. 856,393. PATENTED JUNE 11, 1907.

R. C. COLE.

INCLOSED FUSE.

APPLICATION FILED DEC. 10, 1906.

Fig. 1.

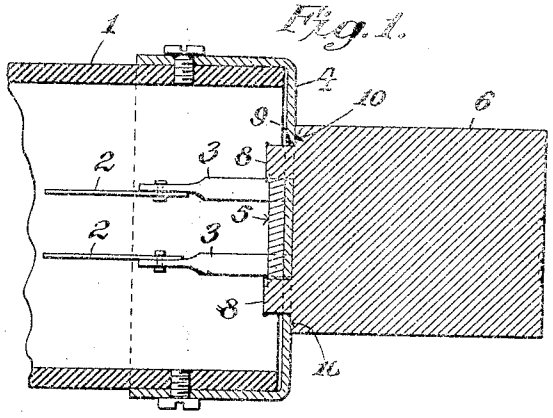


Fig. 2.

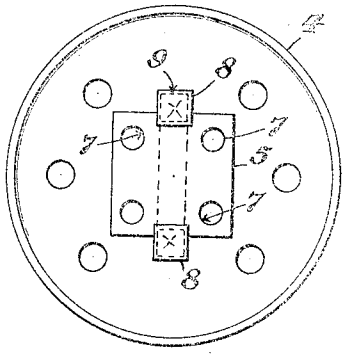


Fig. 3.

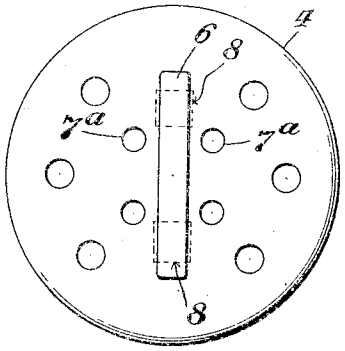


Fig. 4.

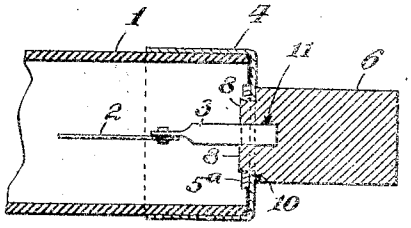
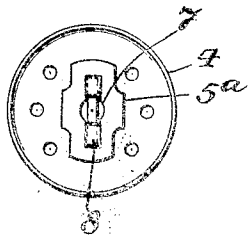


Fig. 5.



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UNITED STATES PATENT OFFICE.

ROBERT C. COLE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE JOHNS-PRATT COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

INCLOSED FUSE.

No. 856,393. Specification of Letters Patent. Patented June 11, 1907.

Application filed December 10, 1906. Serial No. 347,058.

To all whom it may concern:

Be it known that I, ROBERT C. COLE, a citizen of the United States, and a resident of Hartford, Connecticut, have invented certain new and useful Improvements in Inclosed Fuses, of which the following, taken in conjunction with the accompanying drawing, is a full, concise, and true specification.

My invention relates to inclosed fuses for electrical protective purposes, and more particularly concerns an improved construction for the terminals of such fuses whereby the end closure for the tubular casing and the exterior contact blade thereof are securely joined together, forming a rigid structure which may be applied as a unit to the end of the casing and is adapted for ready and easy connection with the fuse-link or links, and whereby, also, the electrical junction between said parts may be made to comprise a sufficient extent of contacting surface, and likewise a proper cross-section of conducting metal, without unduly increasing the amount of metal or solder employed in the terminal, or materially affecting its cost.

Other advantages, obtained by my invention, will be apparent to those skilled in this art and without explanation.

In the accompanying drawings, Figure 1 is a central vertical section of the end of an inclosed fuse with terminal constructed in accordance with my invention; Fig. 2 is an elevation of the interior of the terminal of Fig. 1; Fig. 3 is an end elevation of Fig. 1; Fig. 4 is a modified form in central vertical section; and Fig. 5 is an interior elevation of the terminal of Fig. 4.

For convenience of illustration the drawings show only one end of the fuse, but it will be understood that both ends may be constructed alike.

In common with ordinary inclosed fuses, my invention comprises an inclosing tubular casing 1 of fiber or equivalent non-conducting material, and an interior fuse-strip or link 2 of fuse metal which may be provided either with integral or connected fuse-link terminals 3, as desired. The present drawings show the latter construction, and in the form of Figs. 1 to 3, which figures represent a multiple-strip fuse, there are four fuse-links 2 with connected fuse-link terminals 3, and in the form of Figs. 4 and 5 a single link and terminal are employed. In both forms the space within the tubular casing 1 and around the fuse-link 2 and its terminals 3, is intended to be packed with the usual filling of comminuted refractory material, not shown in the drawings.

The end closure for the tubular casing consists of a ferrule 4 fitting the end of the casing and secured to it in some convenient manner, and in accordance with the present invention the closure further comprises a backing plate 5 adapted to receive or hold the fuse-link or links, and an exterior projecting contact member 6 in the form of a flat blade. The backing plate 5 is laid against the end wall of the ferrule, preferably on the inside thereof, and is perforated with one or more apertures 7 which register with corresponding apertures 7^a (Fig. 3) in the said end wall The end of blade 6 abuts against the end wall of the ferrule and is provided or formed with lugs or prongs 8, which prongs project through appropriate openings 9 in the end wall of the ferrule and through or past the edge of the backing plate 5 and are upset or riveted against the said plate so as to bind it securely to the ferrule in its above mentioned position thereon, wherein the perforations 7 and 7^a in both parts are in registry. The prongs 8 are formed slightly inside or intermediate of the side edges of the blade, whereby shoulders 10 are left thereon which are brought up into close contact with the ferrule, when the prongs are upset.

In the multiple-strip form of Figs. 1 to 3, wherein the backing plate 5 is square in outline, the prongs are upset in open-sided recesses in its margins, but in the single-strip form of Figs. 4 and 5 the backing plate 5^a is of a generally oblong shape and the prongs are upset in the interior recesses which open into the central fuse-link aperture. In both cases the backing plate serves to stiffen the joint between the plate and ferrule. The fuse-links 2, or their terminals 3, are received within the registering apertures in the plate 5 and ferrule 4, as indicated in Figs. 1 and 4, by means of which registering apertures a relatively large internal area is provided for contact with the ends of each of the fuse-links or their terminals, which latter may be secured in place by solder in obvious manner. The extra thickness of the end closure at that

point where the backing plate is applied affords an ample cross-section of metal in the path of the current from the links to the blade and such cross-section can be obviously suited to various capacities of fuses by selecting an appropriate thickness for the backing plate and without affecting the construction of the ferrule 4.

In the form of Figs. 4 and 5 the fuse-link terminal comes into contact with the walls of both of the registering apertures, in the ferrule and backing plate, and likewise directly with the prongs themselves which bound the opening on two of its sides, as clearly indicated in the drawings, and in order further to increase the contact area between the link and the metallic terminal, my invention contemplates a longitudinal slot or recess 11 cut up into the end of the blade between the prongs thereof, as indicated in Fig. 4, and the end of the fuse-link or its attached terminal is extended into the said recess and soldered directly to the body of the blade as well as to the backing plate. Such an arrangement, while improving the connection, will not affect the security or rigidity with which the blade and ferrule are joined.

The larger perforations surrounding the backing plate of each ferrule are the usual vent-holes for the escape of the gases evolved upon the disruption of the fuse metal.

I am aware that inclosed fuses embodying the following combination have been heretofore proposed:—In an inclosed fuse the combination with the tube (casing), of an end cap (ferrule), a reinforcing strip inside said tube (casing), a blade projecting from the end of the tube (casing) and secured to said strip, and a fusible element attached to said blade.—Such combination I disclaim, but I believe myself to be the first to construct the means, as above described, for permanently securing the contact blade to the end wall of the ferrule and as pointed out in the following claims.

Having described my invention, what I claim and desire to secure by United States Letters Patent is,

1. An inclosed fuse having a tubular casing and a metallic terminal therefor comprising an end closure for said casing, a projecting contact member fastened by its end to said closure and a backing plate reinforcing the joint between said member and end closure.

2. An inclosed fuse having a tubular casing and a terminal therefor comprising an end closure for said casing, a backing plate laid against the end wall of said closure and a projecting contact member adapted to bind the said plate and closure together.

3. An inclosed fuse comprising a tubular casing, a fuse-link therein and an end ferrule closing the end of said casing, in combination with a plate adjacent the end wall of said ferrule and perforated to receive a terminal of said fuse-link, and a projecting contact member adapted to bind said plate to the ferrule.

4. A metallic terminal for the tubular casings of inclosed fuses comprising a perforated end closure for said casing and a backing plate therefor having a fuse-link perforation therein which registers with the perforation in said end closure and a projecting contact member adapted to secure said plate and closure together.

5. An inclosed fuse having a tubular casing, a ferrule fitting the end of said casing, a backing plate adjacent the end wall of said ferrule and a contact blade abutting against said end wall and provided with a prong projecting through said end wall and upset upon said backing plate.

6. An inclosed fuse having a tubular casing, a ferrule fitting the end of said casing, a backing plate laid against the end wall of said ferrule, and a contact member abutting against said end wall and having prongs passing through said end wall and upset in a recess in said backing plate.

7. An inclosed fuse having a tubular casing, an interior fuse-link, and an end closure for the casing, in combination with a backing plate adapted to support the interior fuse-link, laid against the end wall of said closure, and a projecting contact member adapted to bind said plate to said end closure.

8. An inclosed fuse having a tubular casing and an end closure therefor comprising a ferrule, a projecting contact blade abutting against said ferrule and having prongs formed on its end intermediate the side edges thereof and secured in corresponding apertures in the said ferrule.

9. An inclosed fuse comprising a casing, an interior fuse-link and an end ferrule for said casing, in combination with a backing plate adapted to support the fuse-link, and a contact blade abutting against said ferrule and having prongs formed on its end intermediate of the side edges thereof, said prongs being located in apertures in the ferrule and upset upon said backing plate.

10. In an inclosed fuse, a tubular casing having an end closure and a projecting contact blade fastened by its end to said closure, said blade and closure being provided respectively with a longitudinal recess and an aperture, in registry, and a fuse-link terminal contained within said recess and aperture.

11. In an inclosed fuse, a tubular casing provided with an end closure and a projecting contact blade formed with prongs at its end riveted to said end closure, the said contact blade being provided with a longitudinal recess between its prongs and a fuse-link terminal secured in said recess.

12. An inclosed fuse comprising a casing, an interior fuse-link and an end ferrule for said casing, in combination with a backing

plate laid against said ferrule, said ferrule and backing plate being formed with registering apertures for connection with the fuse-link, and a contact blade secured by its end to said ferrule and provided with means for securing said backing plate in position.

In testimony whereof, I have signed my name to the specification in the presence of two subscribing witnesses.

ROBERT C. COLE.

Witnesses:
ARTHUR B. PECK,
JOHN S. FITZSIMMONS.