

J. A. TORNQVIST.
ELECTRIC FUSE.
APPLICATION FILED JUNE 22, 1911.

1,003,673.

Patented Sept. 19, 1911.

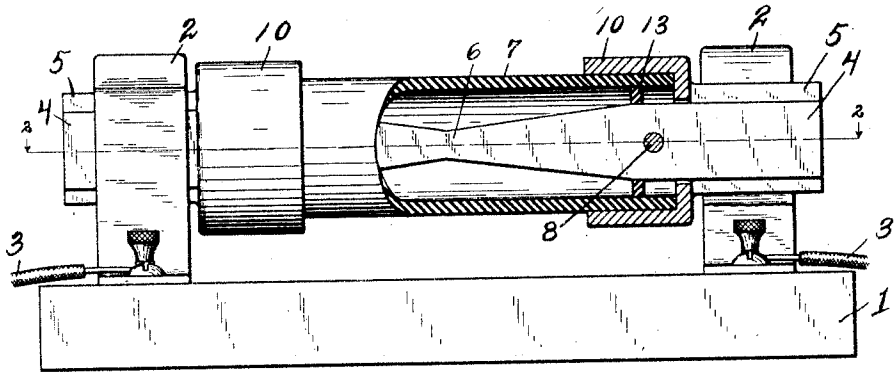


Fig. I.

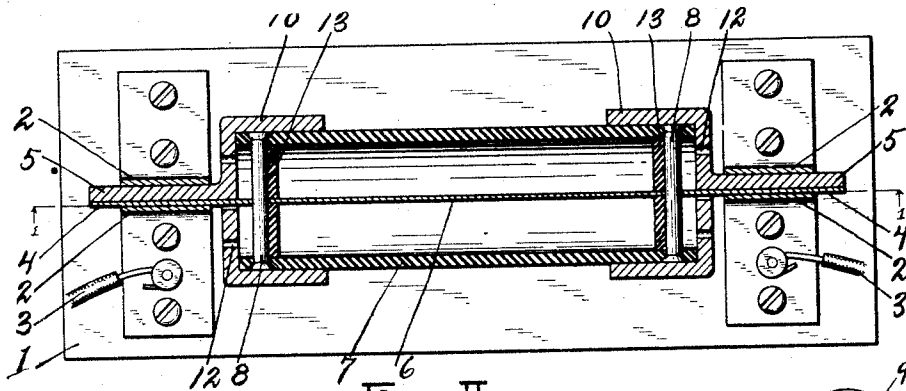


Fig. II.

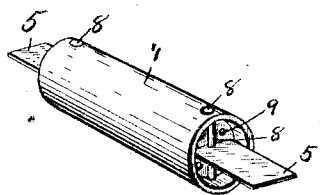


Fig. IV.

Witnesses
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M. L. Glasgow.

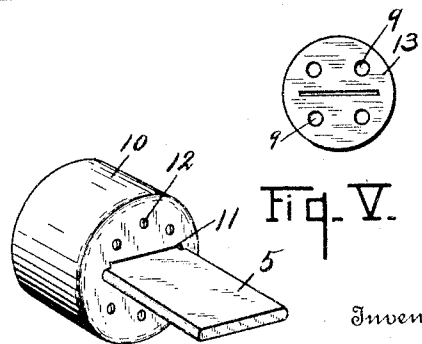


Fig. V.

Fig. III.

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JOHN A. TORNQVIST, OF DAVENPORT, IOWA.

ELECTRIC FUSE.

1,003,673.

Specification of Letters Patent.

Patented Sept. 19, 1911.

Continuation of application filed March 29, 1910, Serial No. 552,259. This application filed June 22, 1911.
Serial No. 634,669.

To all whom it may concern:

Be it known that I, JOHN A. TORNQVIST, a citizen of the United States, residing at Davenport, Iowa, have invented certain new and useful Improvements in Electric Fuses, of which the following is a specification.

This invention relates to improvements in electric fuses, this application being a continuation of my application for patent filed March 29, 1910, Ser. No. 552,259.

The main objects of this invention are: First, to provide an improved electric fuse, the expensive parts of which may be used repeatedly, the fuse element proper and its inclosing casing or carton being quickly assembled with, or disassembled from the other parts, and being permanently connected so that the effectiveness of the fuse cannot be destroyed by the unauthorized changing of the fuse element. Second, to provide an improved electric fuse which is very simple and economical in structure, and, at the same time, one which is very effective.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a side elevation, partially in longitudinal section, on a line corresponding to line 1-1 of Fig. II of my improved electric fuse. Fig. II is a longitudinal section on a line corresponding to line 2-2 of Fig. I, the rivets 8 for securing the fuse elements in the casing or carton being shown in full lines. Fig. III is a perspective view of one of the terminal caps. Fig. IV is a perspective view of the fuse element and its inclosing casing or carton disassembled from the caps. Fig. V is a plan view of one of the disks 9.

In the drawing, similar numerals of reference refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, I represents the fuse block or base on which are mounted re-

silient line terminals 2 for the circuit wires 3 in which the fuse is interposed. The line terminals 2 are of the blade-switch type, being formed of resilient material and disposed in coacting pairs to receive the ends of the fuse element 4 and the fuse terminals 5 between them, as illustrated.

The fuse element 4 is formed of a thin strip of suitable metal of uniform thickness, but contracted or reduced at a central point, as at 6, so that when the fuse is blown or disrupted, it is disrupted at this central point within the casing 7. The casing 7 is a cylinder of suitable insulating material, preferably of fiber or paper or like material, which is found not only effective for the purpose, but is cheap and strong.

The fuse element 6 is arranged centrally through the casing 7 to project from both ends thereof, and is permanently secured therein by means of the rivets 8, which are arranged through the fuse element and the cylinder at each end. The ends of the cylinder are inclosed and the fuse element supported against lateral movement by means of the disks 9, which are slotted at 14 to receive the fuse element. The disks 9 are arranged at each end of the cylinder on the inside of the rivets 8, so that the disks are retained by the rivets, as well as the fuse elements. By this simple arrangement, the fuse elements are permanently supported and retained in their central positions in the casings: that is, they cannot be removed or changed without the destruction or mutilation of the parts. This is of very great advantage, as of course, the purpose of a fuse is to prevent the passage of an excessive current, and where the fuse element can be readily changed, careless workmen frequently substitute new fuse elements of unknown capacity, so that the fuse, instead of being a safety device, is a menace as it may carry a much larger current than the lamps or the machinery which it is supposed to guard are adapted for.

The terminal caps 10 are sleeved over the ends of the casing 7, the terminals 5 being preferably formed integrally with the caps, as illustrated. These caps are slotted at 11 at one side of the terminals to receive the projecting ends of the fuse elements, which lie alongside of the terminals and are clamped with the terminal blades between the line terminals 2, the fuse ele-

ment being directly in contact with one of the line terminals at each end.

The casing is effectively supported by the caps. The caps are freely removable, so that in the assembling of the parts, it is only necessary to slip the caps in position upon the cylinder so that the terminals pass through the slots and place the fuse in the line terminal supports. When the fuse is blown or disrupted, the caps are removed and a new fuse element and its casing inserted. It is my intention that the fuse element and its inclosing casing, as shown in Fig. IV, shall be furnished by the manufacturer so that the terminal caps can be used repeatedly. This results in a great saving to the consumer, as the terminal caps are the expensive parts of a fuse,—that is, they should be made of metal and be uninjured by the blowing of the fuse. Another advantage of this construction is that in the event of the blowing of the fuse, the fuse element cannot be renewed by a careless workman or an unauthorized person without destroying the carton, or without such mutilation thereof as will make it obvious that the fuse element has been tampered with. The fuses, as assembled by the manufacturer, are, of course, properly measured as to their carrying capacity and the capacity is indicated upon the casing.

Ventilating openings 12 are provided in the caps 10, and the disks 9 are provided with ventilating openings 13.

I have illustrated and described my invention in a very satisfactory embodiment thereof, which is simple and economical in structure and possesses the advantages sought.

I am aware that certain variations in structural details are possible without departing from my invention, but as such variations will no doubt be readily understood by those skilled in the art to which this invention relates, I have not illustrated or described the same herein, but desire to be understood as claiming the same specifically in the form illustrated, as well as broadly within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A fuse device comprising in combination, a cylinder of insulating material, cylindrical metallic caps for the ends thereof

having slotted perforations through their ends and integral terminal blades extending therefrom, a relatively thin blade-like fuse element extending through said cylinder and slots in its caps, its terminals lying parallel with said terminal blades and a rivet taking through said fuse element proper and said insulating cylinder and lying under each of said caps.

2. A fuse device comprising in combination, a cylinder of insulating material, slotted insulating disks at each end of said cylinder, a relatively thin blade-like fuse element extending through cylinder and slots in said disks and beyond the ends of said cylinder, and pins taking through said cylinder and fuse element between the ends of said cylinder and the respective disks.

3. A fuse device comprising in combination, a cylinder of insulating material, slotted insulating disks in each end of said cylinder, a blade-like fuse element extending through said cylinder and the slots in said disk and projecting beyond the said cylinder, and pins arranged through said fuse element and cylinder, the said fuse element being secured to said cylinder and supported against longitudinal movement by said pins and against lateral movement by said disks.

4. A fuse device comprising in combination, a complete cylinder of insulating material, a relatively thin blade-like fuse element arranged centrally in said casing to project from both ends thereof, means for permanently supporting and securing said fuse element at both ends of said cylinder, and cylindrical metallic caps for the ends of said cylinder having slots through which the ends of said fuse element project, and blade-like terminals extending therefrom, said terminals being disposed at the sides of the said slots and being parallel with the projecting ends of the fuse element, said caps and fuse element being unconnected, said caps being freely removable from the said casing, for the purpose specified.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

JOHN A. TORNQUIST. [L.S.]

Witnesses:

AUGUSTA PASCHE,
MADGE M. MARTINELLI.