

No. 810,664.

PATENTED JAN. 23, 1906.

D. B. MILLS.

ATTACHMENT DEVICE FOR ELECTRIC CONDUCTORS.

APPLICATION FILED APR. 13, 1905.

Fig. 1

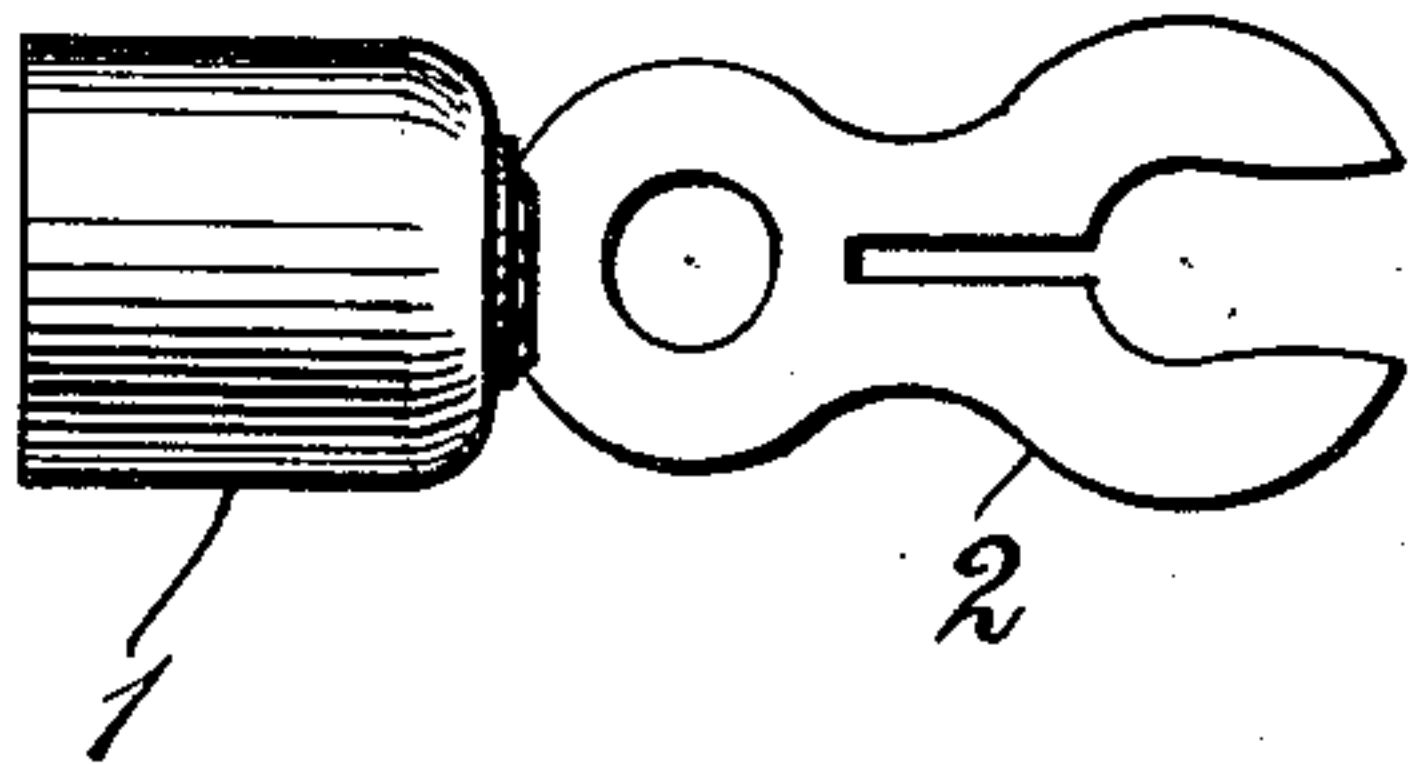


Fig. 2

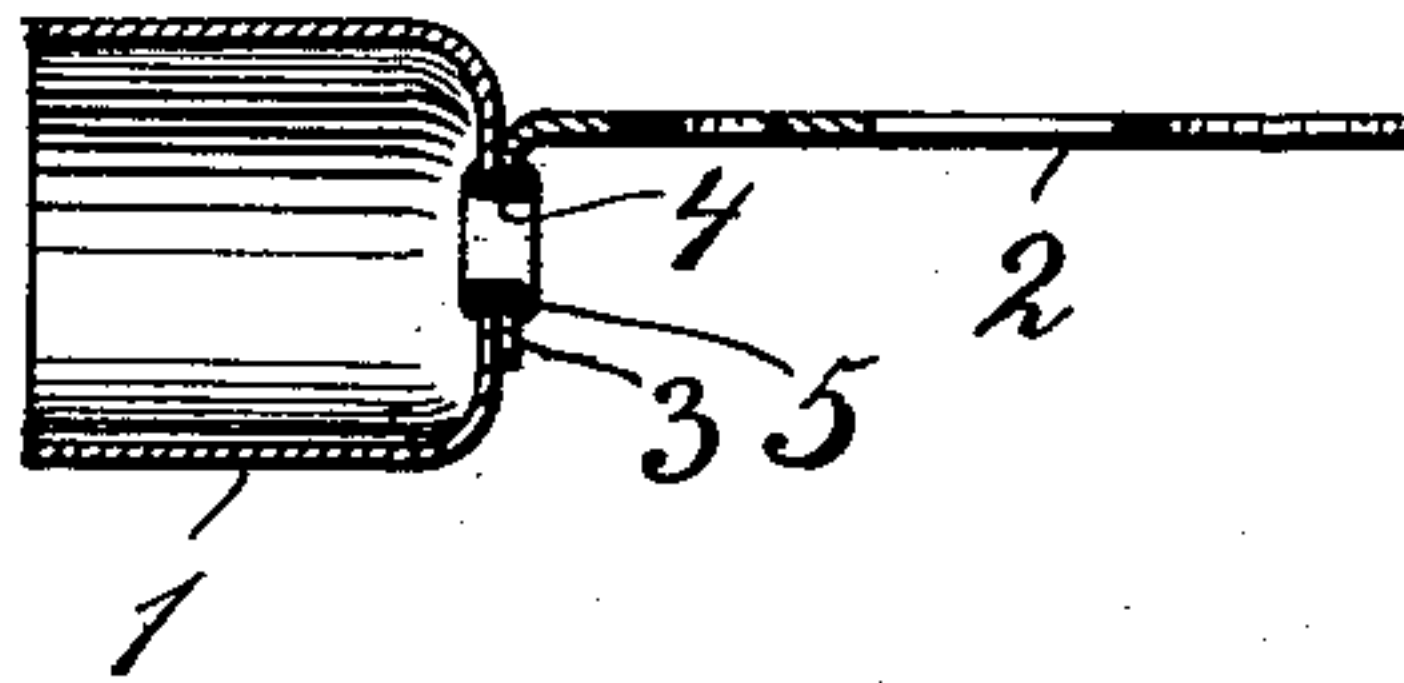


Fig. 3

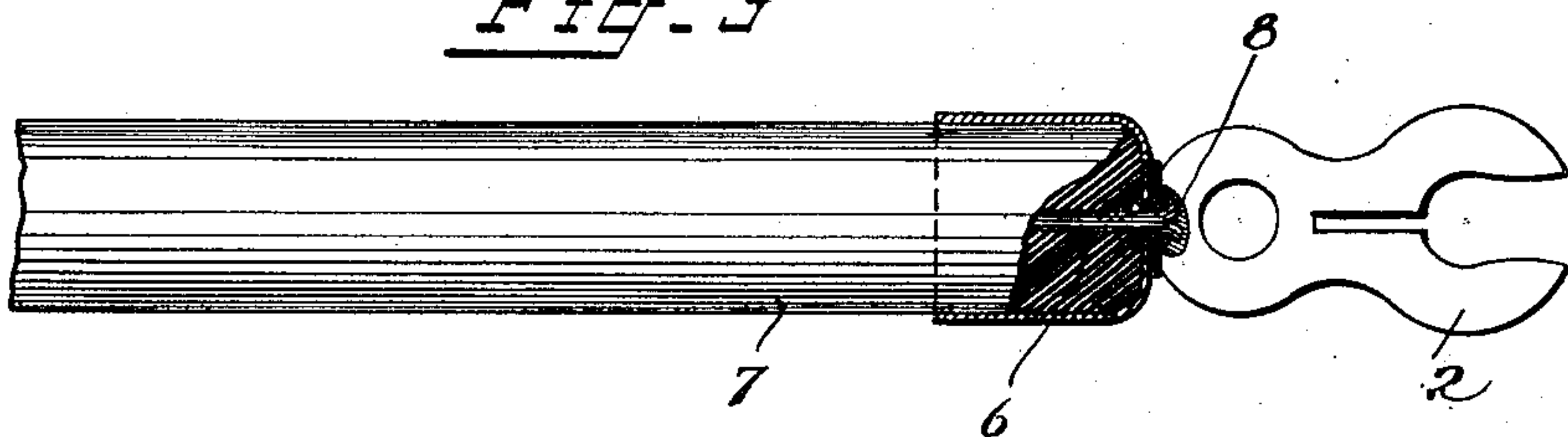


Fig. 5

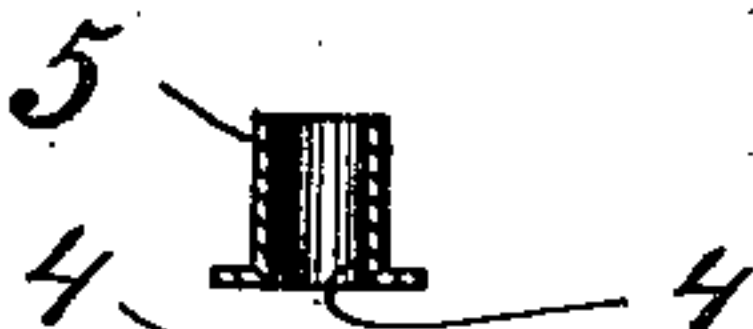


Fig. 4

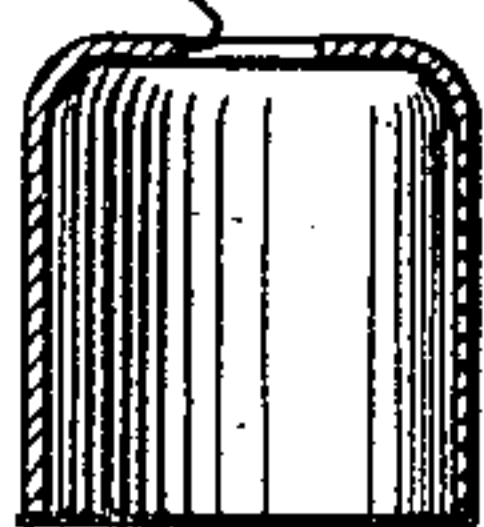


Fig. 7

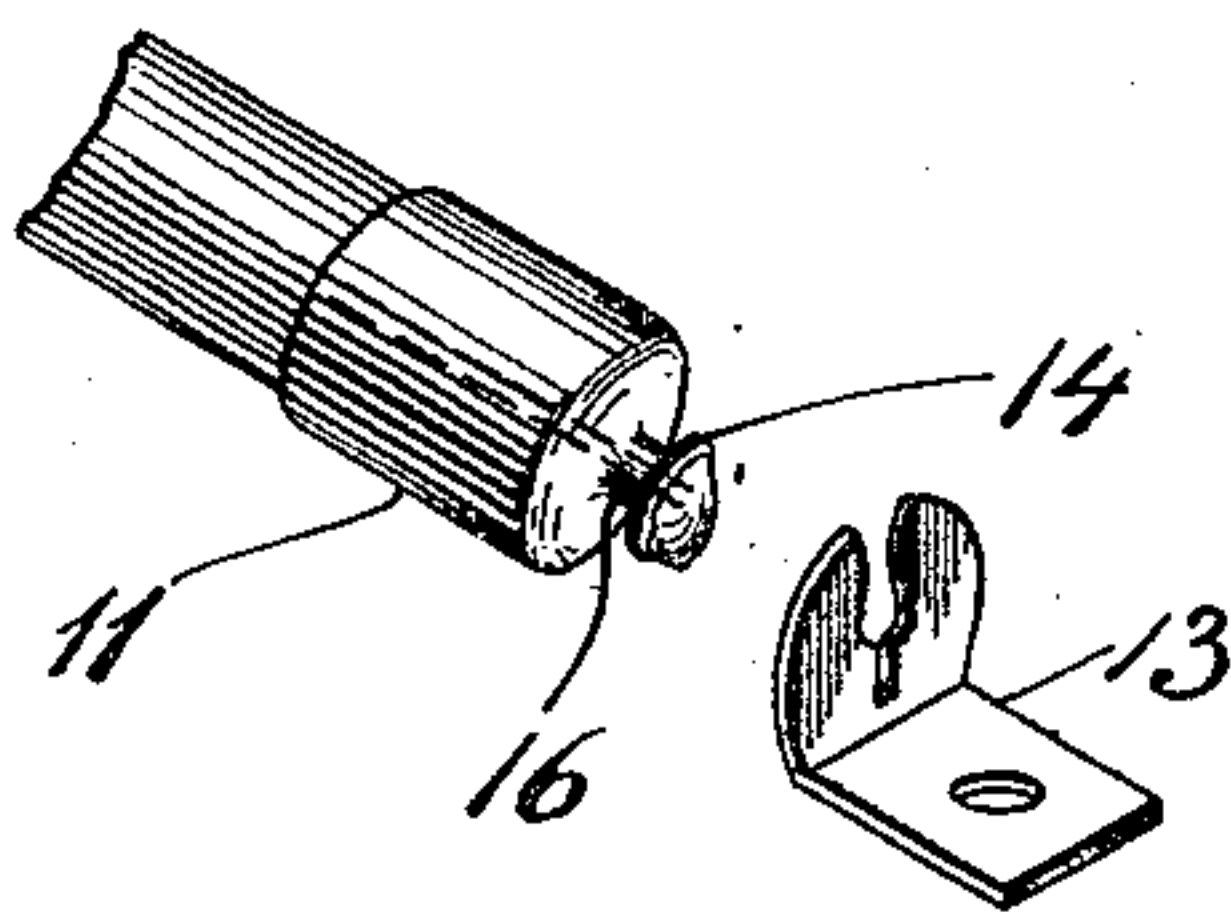


Fig. 6

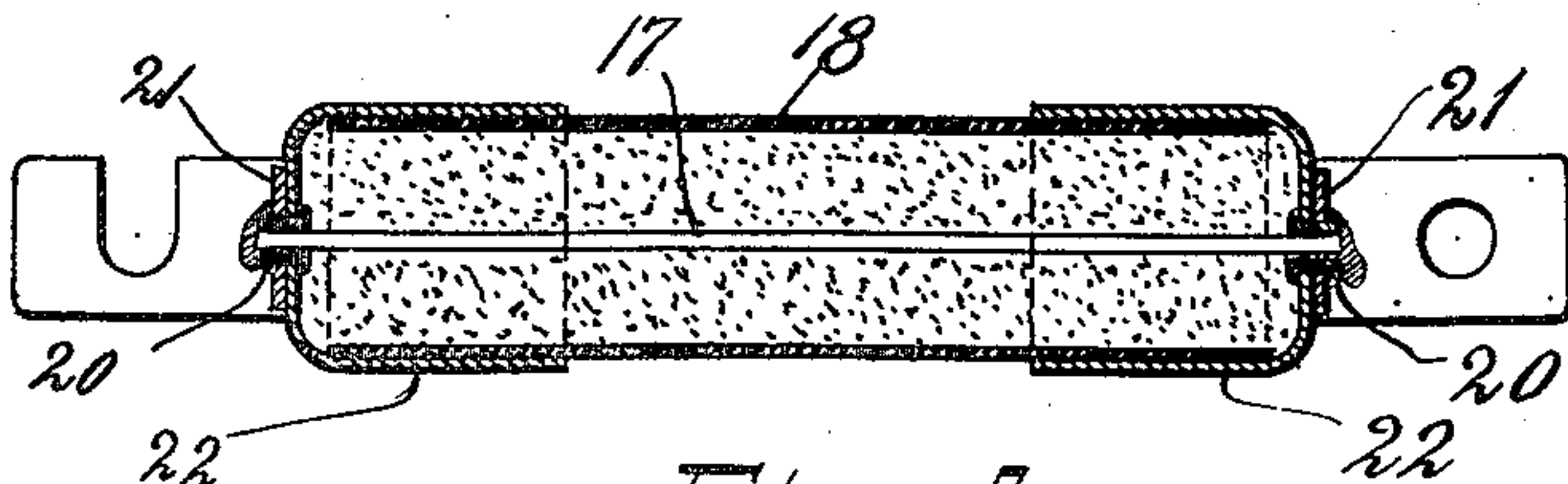


Fig. 8

Witnesses
Wm. J. Bergman
Beatrice Purvis

Inventor
David B. Mills
By his Attorney
Austin K. Neill

UNITED STATES PATENT OFFICE.

DAVID B. MILLS, OF EAST ORANGE, NEW JERSEY.

ATTACHMENT DEVICE FOR ELECTRIC CONDUCTORS.

No. 810,664.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed April 13, 1905. Serial No. 255,396.

To all whom it may concern:

Be it known that I, DAVID B. MILLS, a citizen of the United States, residing at East Orange, New Jersey, have invented certain new and useful Improvements in Attachment Devices for Electric Conductors, of which the following is a clear, full, and exact description.

This invention has for its object to provide an improved attachment device for an electrical conductor, so that its terminal may be readily and securely joined to the conductor to prevent its pulling free from it and at the same time to allow the insulation surrounding the conductor to be more or less firmly grasped and its end protected by the clip. I have shown a device of this character in my United States Patent No. 783,061.

In carrying out this invention I provide a metal part adapted to embrace the outside insulation of the conductor to protect its end. This part is preferably formed as a ferrule—that is, a cylindrical body having a substantially closed end. The terminal portion of the device may be of any desired form—such, for instance, as shown in my above-referred-to United States Patent—so long as it is adapted to be engaged by any binding-post or equivalent terminal end of a separate conductor. The terminal portion and the ferrule may be detachably or rigidly secured together, and for this purpose the ferrule may be provided with a neck portion to which the terminal may be resiliently engaged or the neck itself may be upset on the terminal to form a riveting means or the terminal portion and the ferrule may be united by a separate hollow riveting-neck. If desired, both terminal and ferrule may be pierced with coincident openings, the opening in the ferrule preferably being at its outer end. The conductor within the insulating-sheath is passed through an opening in the two parts just described, preferably through the hollow riveting-neck which secures them, and is secured outside of the two, preferably by soldering the end where it protrudes from the neck or rivet opening. As shown in my preferred embodiment of this invention, the neck is a separate hollow rivet.

Primarily this device is adapted for use as a terminal for a conductor which is subjected to vibration—for instance, any conductor used upon a vehicle or adjacent to machinery where vibration will tend to dislodge the connecting parts; but it is not by any means limited to such use. In the modification herein

shown I have shown it as applied to the ordinary form of cartridge-fuse.

In the accompanying drawings and in the following description I have shown several specific embodiments of my invention; but I do not limit myself to the same, as the arrangement and location of the parts may be varied and still the device formed come within the scope of my invention as pointed out in the claims.

In the drawings, Figure 1 is a plan view of my improved attachment device. Fig. 2 is a sectional side elevation of the same. Fig. 3 is a sectional plan of the device attached to a conductor shown partly broken away. Figs. 4 and 5 are details of the ferrule and hollow rivet, respectively. Fig. 6 is a central sectional view of a modified form of ferrule. Fig. 7 is a perspective view of a type of attachment device in which the ferrule and terminal portion are detachably secured, and Fig. 8 is a sectional view of a cartridge-fuse constructed according to my invention.

As shown in Figs. 1 to 5, inclusive, the ferrule 1 is secured to a terminal 2, such as shown in my before-mentioned United States patent. The terminal is provided with means for securing it to a binding-post or equivalent means and is formed with an end 3, bent at right angles to its base. The inner end of the ferrule is pierced with an opening 4, and the bent end of the terminal is also provided with a similar opening. The two may be joined by the hollow rivet or neck 5, as will be readily seen in Fig. 2.

In Fig. 6 I have shown the ferrule 10 as formed with an integral neck or rivet part 12.

In this modification the projecting rivet part may be directly inserted through the opening in the bent end of the terminal and then upset in the ordinary manner.

In Fig. 7 I have shown the ferrule 11 as formed with a neck 16 with a flange 14 at its end, while the terminal 13 is provided with a pair of spring-jaws adapted to be forced over the neck, and thus detachably secured to the neck portion 16.

In securing a conductor to an attachment device of the constructions hereinbefore described I first bare the end of the central conductor 6 for a short distance from the end of its insulating-sheath 7 and push the conductor through the opening formed in the two parts, so that the insulation itself will be forced snugly into the forward end of the ferrule and the conducting-wire protrude a

short distance on the exterior of the same. This projecting end I secure in its protruding position by solder, as at 8, although any secure means for fastening it on the outside of the ferrule may obviously be used. By this construction all strain which might be taken up by the more or less elastic insulating-sheath 7 is directly taken up by the conductor itself, which is a more rigid part.

10 In Fig. 8 I have shown this invention as applied to a cartridge-fuse. In this modification the ferrule 22 is shown as attached by a hollow rivet 20 to a standard type of connecting-plate 21, adapted to be secured in position by a screw. This plate 21 is riveted in precisely the same manner to the ferrule as shown in the preceding figures. The fuse-wire 17 within an insulating-case 18, which may be an ordinary fiber cylinder, is soldered in place, preferably by hard solder, on the outer side of the ferrule 22. In making cartridge-fuses of this type care should be taken to have the fiber cylinder 18 fit tightly and be grasped by the ferrule 22, as any undue stretching of the wire 17, which is firmly secured to the ferrule, would result in changing its current-carrying capacity. The interior of this cylinder surrounding the conducting-wire 17 may be filled with whiting or some similar compound ordinarily used in this type of device.

What I claim is—

1. An attachment device for electrical conductors comprising a ferrule with an opening in its wall, a terminal with an opening coincident with the opening in the wall of the ferrule, and a hollow riveting means uniting them adapted to permit the passage of an electrical conductor through the opening in the two parts.

2. An attachment device for electrical conductors comprising a ferrule with an opening in its wall, a terminal with an opening coincident with the opening in the wall of the ferrule, a hollow separate rivet uniting them, adapted to permit the passage of an electrical

conductor through the opening in the two parts.

3. An attachment device for electrical conductors comprising a ferrule with an opening in its wall, a terminal portion secured to said ferrule, a hollow rivet passing through the terminal portion and ferrule adapted to unite them, in combination with an electrical conductor passing through the opening in the hollow rivet and soldered in place.

4. An attachment device for electrical conductors comprising a ferrule, of a size adapted to snugly fit the insulation part surrounding an electrical conductor, the ferrule having an opening in its wall, an attachment terminal also with an opening, a hollow riveting means passing through said openings, adapted to permit the passage of a conductor whereby the conductor may be electrically secured upon the outer part of the device.

5. An attachment device for electrical conductors comprising a metal ferrule, of a size adapted to snugly fit the insulation surrounding an electrical conductor, and provided with an opening in its end, a terminal piece with a like opening and a hollow riveting means passing through said two openings, the conductor within the insulation being adapted to be passed through the opening thus formed and secured to the exterior of the device.

6. An attachment device comprising a cylindrical metal ferrule with an opening at one end, and a terminal piece with a bent end, said bent end secured to the end of the ferrule by a hollow rivet passing through the terminal piece and ferrule, an electrical conductor passing through the hollow rivet and soldered in the opening thus formed.

Signed at New York, N. Y., this 14th day of March, 1905.

DAVID B. MILLS.

Witnesses:

EMERSON R. NEWELL,
BEATRICE MIRVIS.