(No Model.)

W. C. KEITHLY.

INSULATOR AND HOLDER FOR ELECTRIC RAILWAYS.

No. 579,725. Patented Mar. 30, 1897.

Fig. 1.

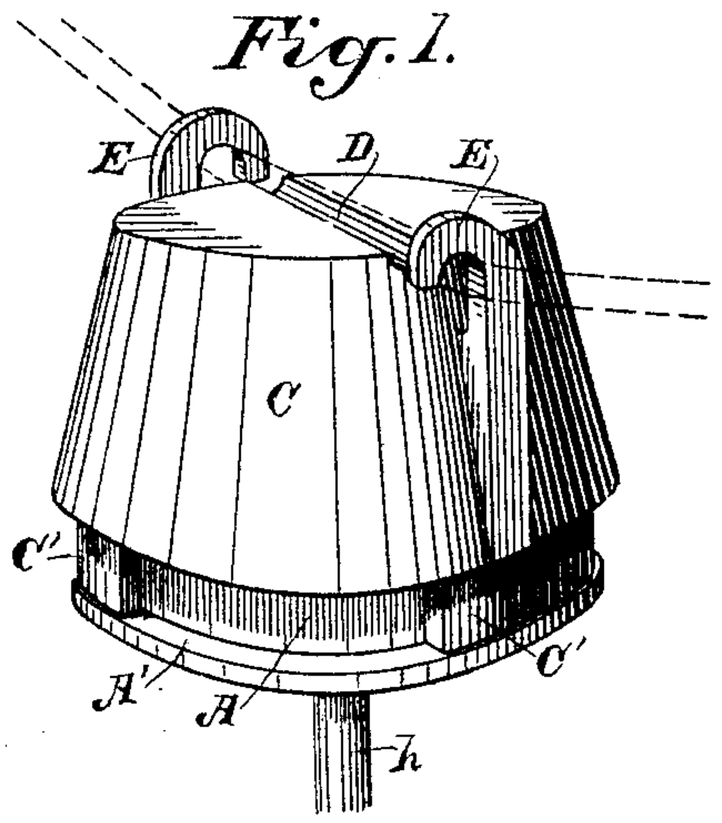


Fig. 2.

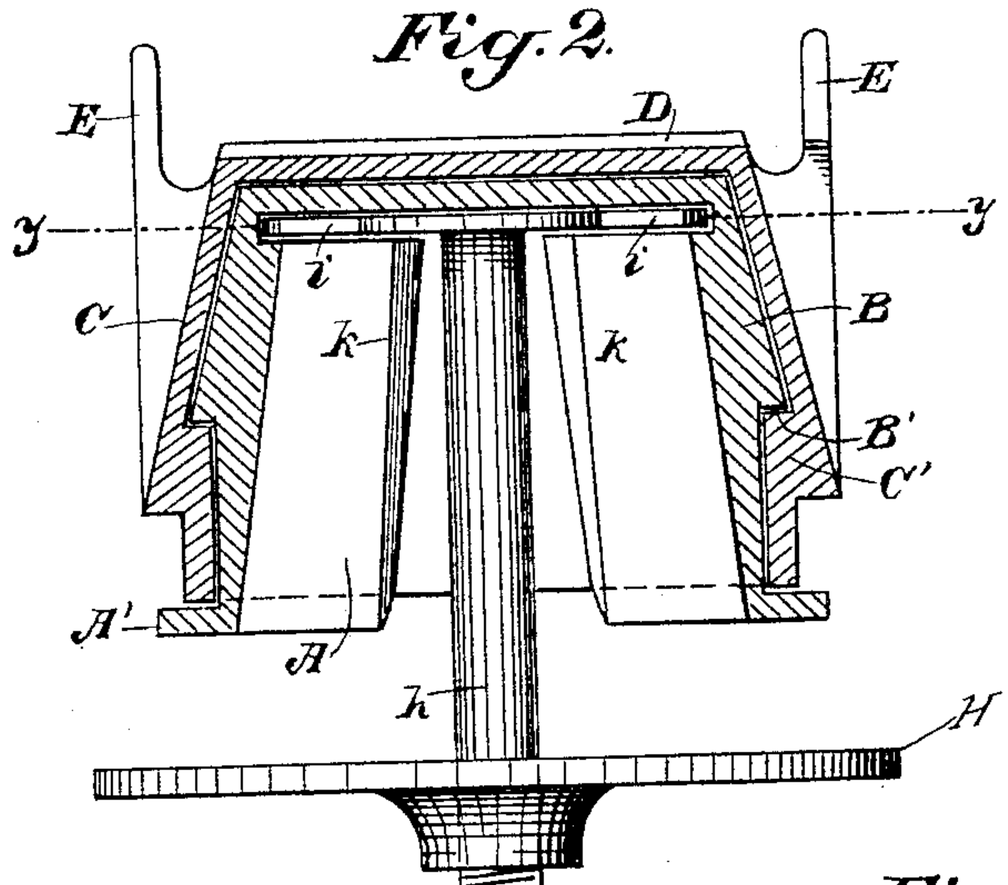


Fig. 3.

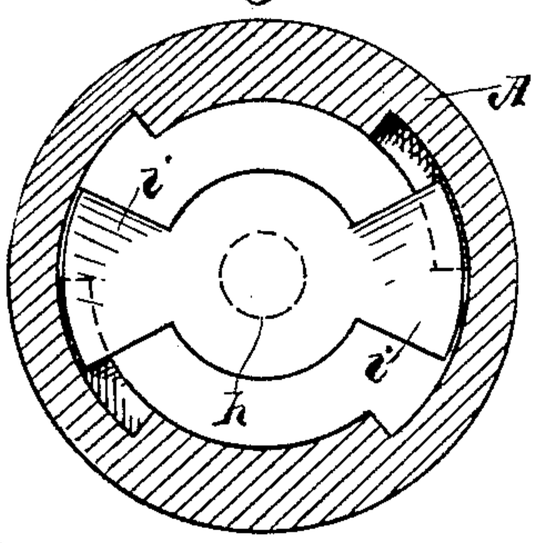
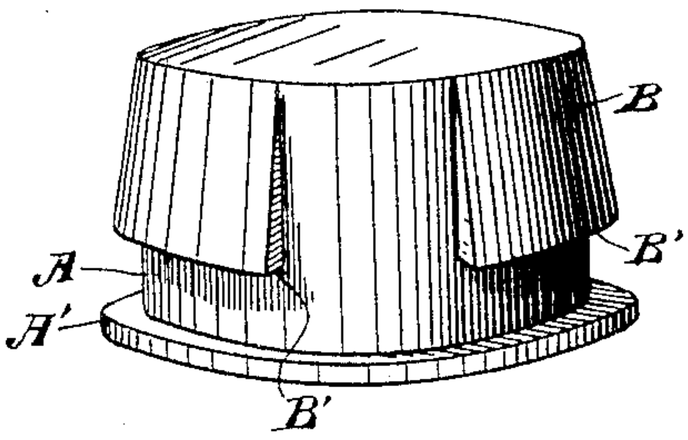


Fig. 4.



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INSULATOR AND HOLDER FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 579,725, dated March 30, 1897.

Application filed November 27, 1896. Serial No. 613,495. (No model.)

To all whom it may concern:

Be it known that I, WILLIE C. KEITHLY, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Insulators and Holders for Electric Railways; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for holding the insulators by which the trolley-wires of electric railways are suspended, and has for its object a novel means for securing the insulator within a protecting cap or cover and removably locking it thereto, and the means for suspending the whole device from the posts which are designed to support the wires along their course.

It consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an exterior view of the insulator and cap, showing the manner of suspending the latter between two poles upon opposite sides of the roadway. Fig. 2 is a sectional view of the cap, the insulator, and a hanger. Fig. 3 is a horizontal section on line *y y* of Fig. 2. Fig. 4 is a separate view of the insulator.

In the construction of my device I employ hollow cup-shaped insulators A, which are preferably made of porcelain or similar non-conductors of electricity, and these insulators have cast or formed on the outside lugs B, diverging downwardly and outwardly from the top of the cap and having inclined shoulders, as shown at B′. These shoulders are adapted to engage with corresponding lugs C′, which are cast or formed inside of the hollow cup-shaped shells or caps C. These caps are made, as shown in the drawings, in the form of frustums of cones diverging from the closed top toward the open bottom, and the insulators A are introduced into the cups by bringing the lugs B′ of the insulators in line with the spaces intermediate between the lugs C′ of the caps. This allows the insulators to be pushed in until the shoulders of the lugs B′ engage the upper shoulders of the lugs C′ of the caps, when they may be turned, and as the meeting faces of these shoulders are inclined or spiral the turning of the insulator within the cap will lock it firmly in place.

The insulator projects below the peripheral edge of the cap C and has a flange A′ formed upon it around the bottom. The lugs C′ are also continued below the lower periphery of the cap C, and when the insulator is locked in place its flange A′ is drawn up against the lower edges of the lug C′.

Across the top of the cap C is a groove or channel D, the concavity of which is such as to allow the suspending-wire to lie in this groove. Upon each side of the cap and in line with the groove D are the hook-shaped lugs E, which are here shown as cast upon the cap curving so that their open ends are presented in opposite directions upon the opposite sides of the cap.

The wire by which the insulator and cap is to be suspended is easily engaged with these hooks by slightly depressing it upon each side and allowing it to enter the inner curvature of the hooks while the intermediate portion lies in the groove D upon the top of the cap. This secures the insulator firmly to the supporting-wire, and at the same time allows it to be removed at any time without difficulty.

In the case of posts upon opposite sides of the roadway the freedom of the cross-wire to which the caps are attached allows a sufficient vertical motion without any especial connection.

The trolley-wire F is itself suspended by being fastened to a bar G, concaved to receive the wire, which is fixed or soldered in the concavity, and this bar is secured by screwing or otherwise fastening upon the stem or shank *h*. This shank extends up to the interior of the insulator A and has fixed upon its upper end the winged disk *i*. The interior of the insulator A has inclined lugs *k*, inclining inwardly from the bottom of the flange A′, where they are flush, to a point near the interior and top, where they project, so as to form grooves or channels upon opposite sides. The winged disk *i* is passed up between these lugs by turning it so that its longest diameter is in line with the oppositely-disposed spaces between the lugs *k*, and after it has been thus inserted it is turned so that the wings pass into the grooves or channels above the lugs *k*, and are thus locked in place. It will be seen

that this construction allows the shank *h* to be easily removed from the insulator, and the insulator itself is as easily removed from the inclosing cap C.

In order to protect the pottery or other easily-breakable insulator A from any danger of breakage by reason of the trolley-wheel being accidentally thrown up against it, I have shown a protecting-disk H secured upon the stem or shank *h*, this disk having a diameter slightly greater than the exterior diameter of the flange A′ of the insulator, and when it is screwed or otherwise secured upon the shank *h* it is only a short distance from the insulator and sufficient to protect it from injury.

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

1. An insulator and holder for electric railways consisting of a metallic cap substantially of the form of a frustum of a cone, having lugs formed upon the interior, a correspondingly-shaped insulator with lugs formed upon the exterior, adapted to engage with those of the cap when the insulator is inserted and turned, whereby it is removably secured therein, means for suspending the cap from supporting-posts, and means for suspending the trolley-wire from the interior of the insulator.

2. In an insulator and holder for electric railways, a cap substantially of the form of a frustum of a cone, having interior lugs upon opposite sides, a correspondingly-shaped hollow insulator with exterior lugs adapted to engage those of the cap and lock the insulator therein when turned, interior lugs within the insulator, a suspending-shank to which the trolley-wire is connected, said shank having a winged disk adapted to engage and lock with the lugs within the insulator.

3. An insulator and holder for electric railways, consisting of a cap substantially of the form of a frustum of a cone, having interior oppositely-placed projecting lugs, a correspondingly-shaped insulator having oppositely-placed lugs upon the exterior, adapted to engage and lock with those in the interior of the cap when the insulator is turned, lugs in the interior of the insulator, a shank or stem adapted to connect with and suspend the trolley-wire, said shank having a winged disk adapted to lock with the lugs in the interior of the insulator, and a protecting-disk secured thereto below the mouth of the insulator.

4. An insulator and holder for electric railways consisting of a metallic cap of the form of a frustum of a cone, an interiorly-secured correspondingly-shaped insulator, a shank having wings for securing the same to the insulator whereby the trolley-wire is suspended therefrom, oppositely-disposed hooks upon the top of the cap adapted to receive the transverse supporting-wire having a groove or channel in the top of the cap, in which said wire lies between the hooks.

In witness whereof I have hereunto set my hand.

WILLIE C. KEITHLY.

Witnesses:
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