

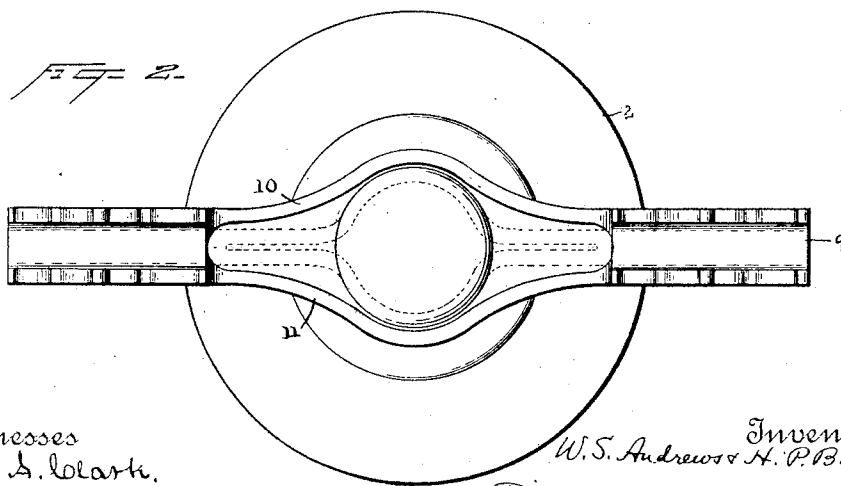
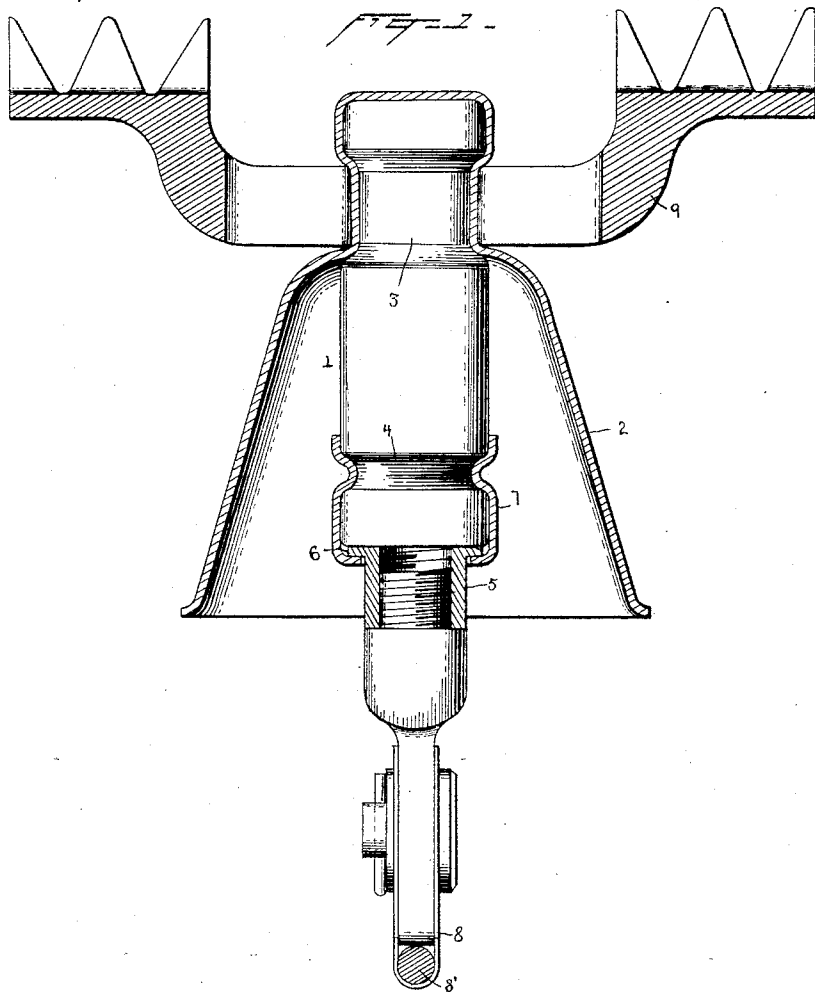
(No Model.)

2 Sheets—Sheet 1.

W. S. ANDREWS & H. P. BALL.
INSULATOR FOR TROLLEY WIRES.

No. 470,417.

Patented Mar. 8, 1892.



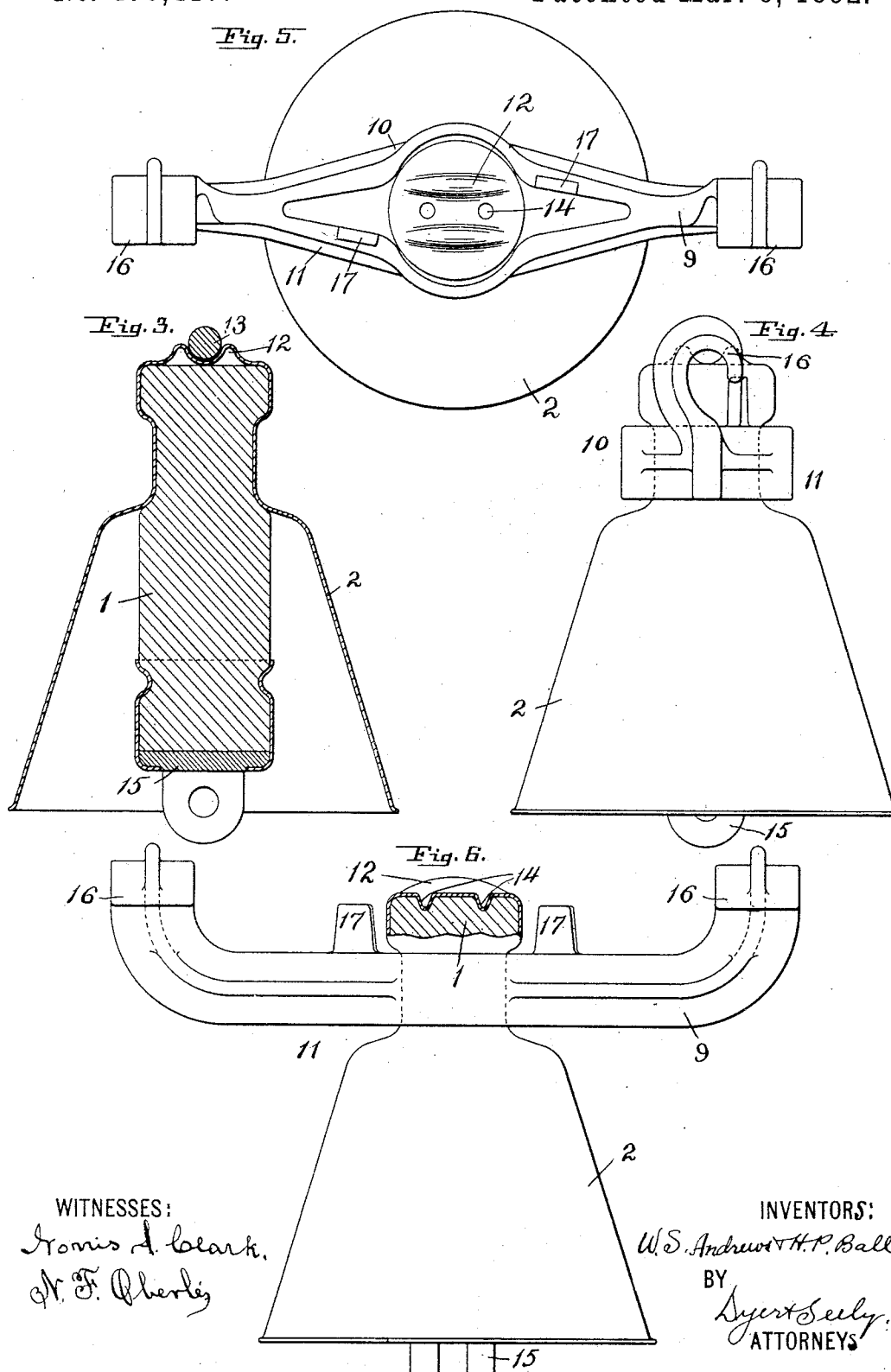
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UNITED STATES PATENT OFFICE.

WILLIAM S. ANDREWS, OF NEW YORK, AND HENRY PRICE BALL, OF
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INSULATOR FOR TROLLEY-WIRES.

SPECIFICATION forming part of Letters Patent No. 470,417, dated March 8, 1892.

Application filed October 1, 1891. Serial No. 407,399. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM S. ANDREWS, residing at New York city, county and State of New York, and HENRY PRICE BALL, residing at Brooklyn, in the county of Kings and State of New York, both citizens of the United States, have invented a certain new and useful Improvement in Insulators for Trolley-Wires, of which the following is a specification.

The present invention relates to devices for suspending wires, and especially wires designed for trolley-wires in electric-railway systems, the main object of the invention being to provide a strong and simple device for this purpose.

In the accompanying drawings, illustrating the invention, Figure 1 is a side view, partly in section, of the device. Fig. 2 is a plan view of the supporting-arm, showing the method of securing it to the insulator. Fig. 3 is a central section of an insulator embodying additional features of improvement. Fig. 4 is a side view of the same. Fig. 5 is a plan view; and Fig. 6 is a side view at right angles to Fig. 4, the upper end of the body being in section.

The insulator consists of a main body 1, of insulating material, preferably a block of wood, and a metal bell or cap 2, which surrounds the insulating-body. Said body is provided near one end with a circumferential groove or depression 3, and the metal of the bell is spun into this groove, so that it securely holds the bell and body together and entirely covers the upper end of the insulating-body, there being no opening through the bell to the body of the insulator at this end, although certain features of the invention may be used without having a bell formed to entirely cover and inclose the insulating-body. Near the opposite end of the insulating-body is a groove 4, and at the end of the body is a screw-threaded sleeve 5, which may be provided with a flange 6. 7 is a metal sleeve, which is placed over this end of the block or body 1 and which is spun into the groove 4 and around the sleeve 5 to hold it in place. The exposed part of the wood within the bell is preferably painted with a water-proof composition, such as ordinary paint or bituminous paint. It will be understood that any suitable clamp or trolley-

wire hanger 8 may be secured to the insulator by means of this screw-threaded sleeve and that this clamp supports the trolley-wire 8'.

9 is an arm, which supports the insulator from a suitable span-wire running across the street from one post to another or extending between other supports. This arm is divided near the center into two branches 10 11. When the insulator is being made, after the bell has been spun onto the insulating-body, as described, this arm is placed over the head at the upper end of the bell and the two branches 10 11 are bent inward to bring them close together around the neck formed by the groove 3, as indicated in dotted lines in Fig. 2. This secures the supporting-arm to the body of the insulator without separate fastening devices and is a very quick and ready means for accomplishing that object.

In the insulator shown on Sheet 2 the parts are modified to some extent. The bell is formed at the upper end of the insulator-body with a cross-groove 12, in which the span-wire 13 rests. The metal of the bell is forced into the body of the insulator by suitable punches at two or more points, as at 14, for the purpose of holding the body in position while spinning the bell on. Instead of the threaded sleeve 5 of Fig. 1, we may use the device 15, to which any suitable trolley-wire hanger may be pivoted. The arm 9 is provided at each end with a hook 16, adapted to fit over the span-wire. Since the span-wire cannot pass in a straight line over the insulator, but is bent upward slightly to rest in the groove 12, the insulator will not slip along the span-wire. The two branches of the arm 9 have lugs 17, which may be bent over when the branches are forced together around the neck of the insulator, as before explained, to lock them against spreading apart.

It will be evident that the form of the body of the insulator, as well as the form of the bell and the means for securing the trolley-wire to the insulator, may be otherwise varied somewhat without departing from our invention.

What we claim is—

1. The combination of the insulating-body consisting of a block of wood having a groove

or depression at one end, a metal bell into which the body is placed, the metal of the bell being formed into said groove or depression, whereby the body and bell are secured together, and means at the other end of the insulating-body for supporting a wire, substantially as described.

2. The combination of the insulating-body having a groove or depression at one end, a metal bell into which the body is placed, the metal of the bell being formed into said groove or depression, whereby the body and bell are secured together, a flanged trolley-wire-hanger support at the opposite end of the body, and a sleeve over said flange and secured to the body, substantially as described.

3. The combination of the insulating-body having a groove or depression at one end, a metal bell into which the body is placed, the metal of the bell being formed into said groove or depression, whereby the body and bell are secured together, and a hanger-support comprising a screw-threaded sleeve secured to the body at the opposite end by means of a sleeve spun or otherwise formed around the screw-threaded sleeve and entering a groove or depression in said insulating-body, substantially as described.

4. The combination of the insulating-body having a groove or depression at one end, a metal bell into which the body is placed, the

metal of the bell being formed into said groove or depression, whereby the body and bell are secured together, and a supporting-arm secured to the bell where it enters said groove, substantially as described.

5. The combination of the insulating-body having a groove or depression at one end, a metal bell into which the body is placed, the metal of the body and bell being formed into said groove or depression, whereby the body and bell are secured together, and a supporting-arm having two branches which clamp the bell where it enters the groove, substantially as described.

6. The combination of an insulator-body of wood, a spun-metal cover therefor, said cover being formed with a groove across one end of the insulator, and a supporting-arm, substantially as described.

7. The combination, with the body of an insulator, of a hanger-support at one end thereof and a sleeve formed over the same and secured to the body of the insulator, substantially as described.

This specification signed and witnessed this 16th day of September, 1891.

W. S. ANDREWS.
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Witnesses:

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