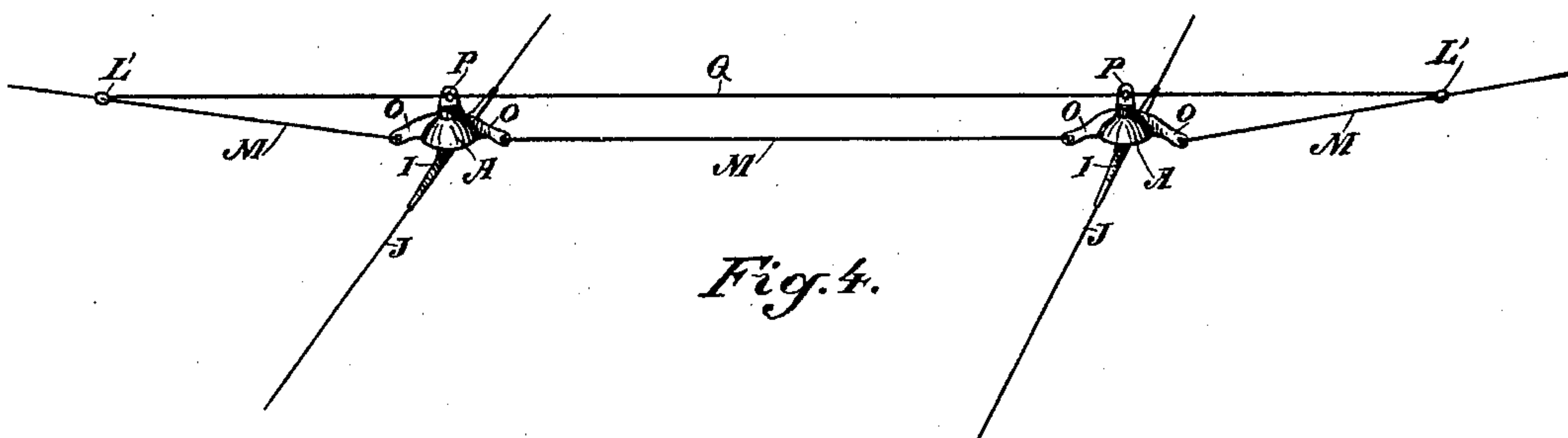
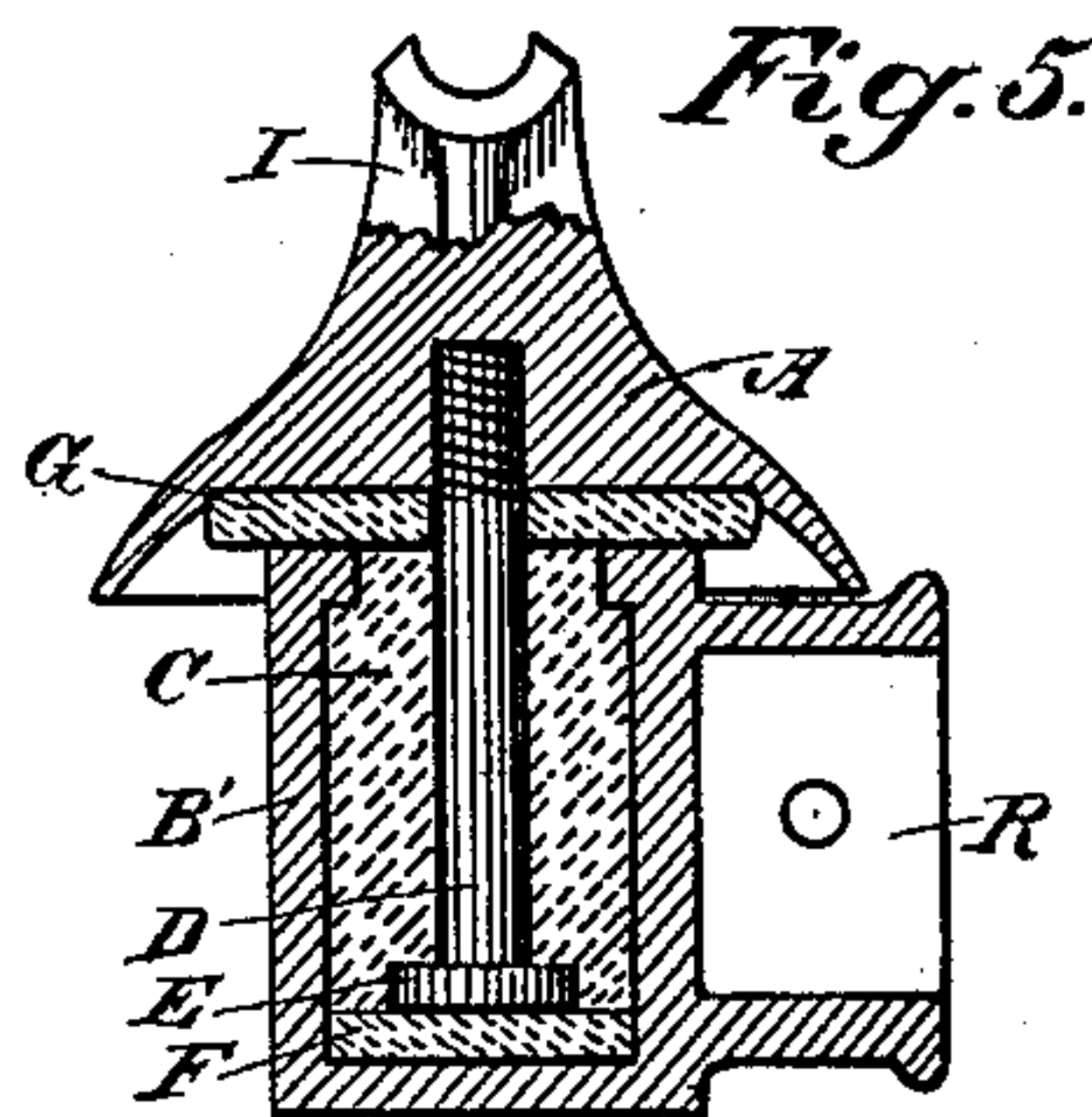
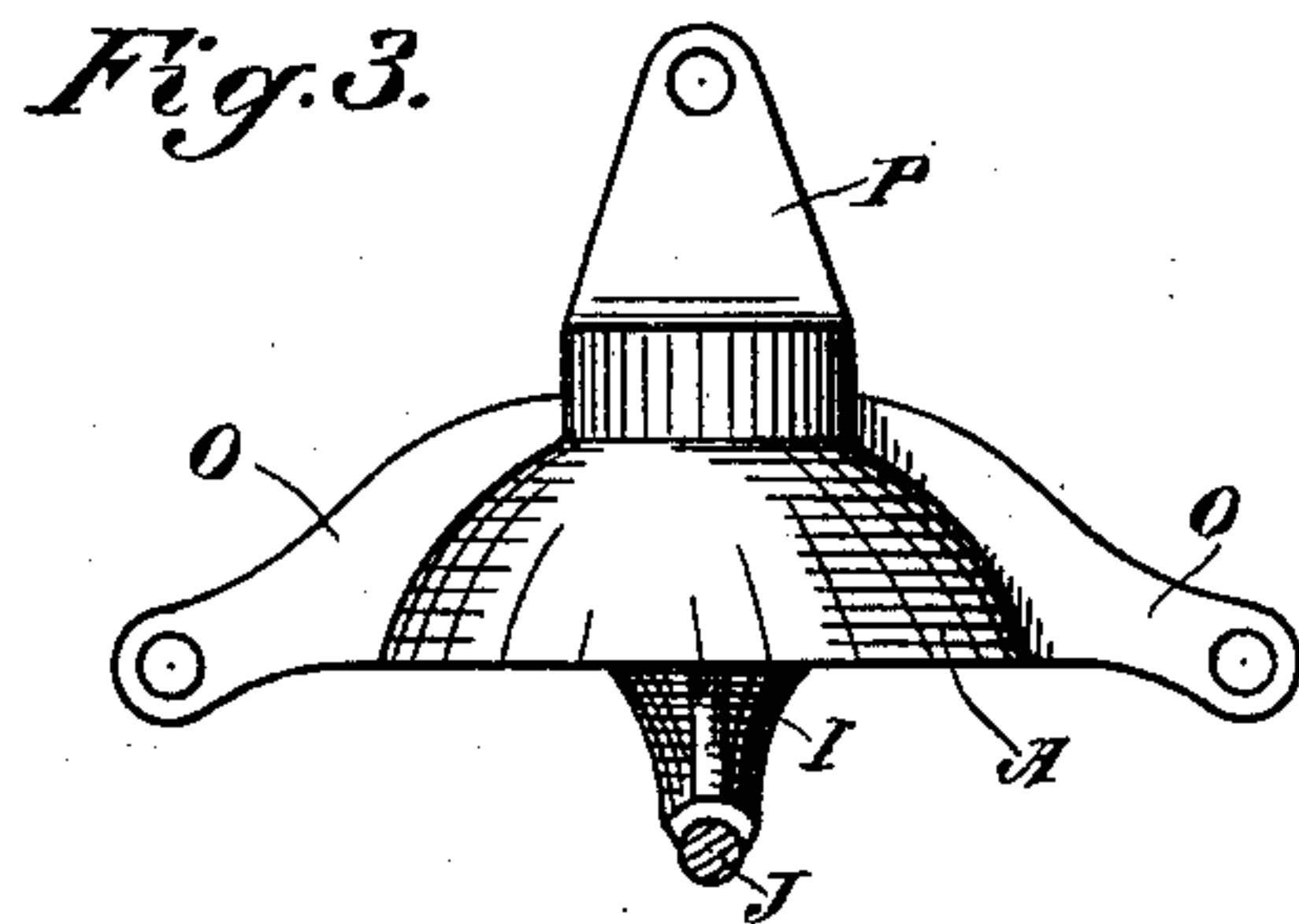
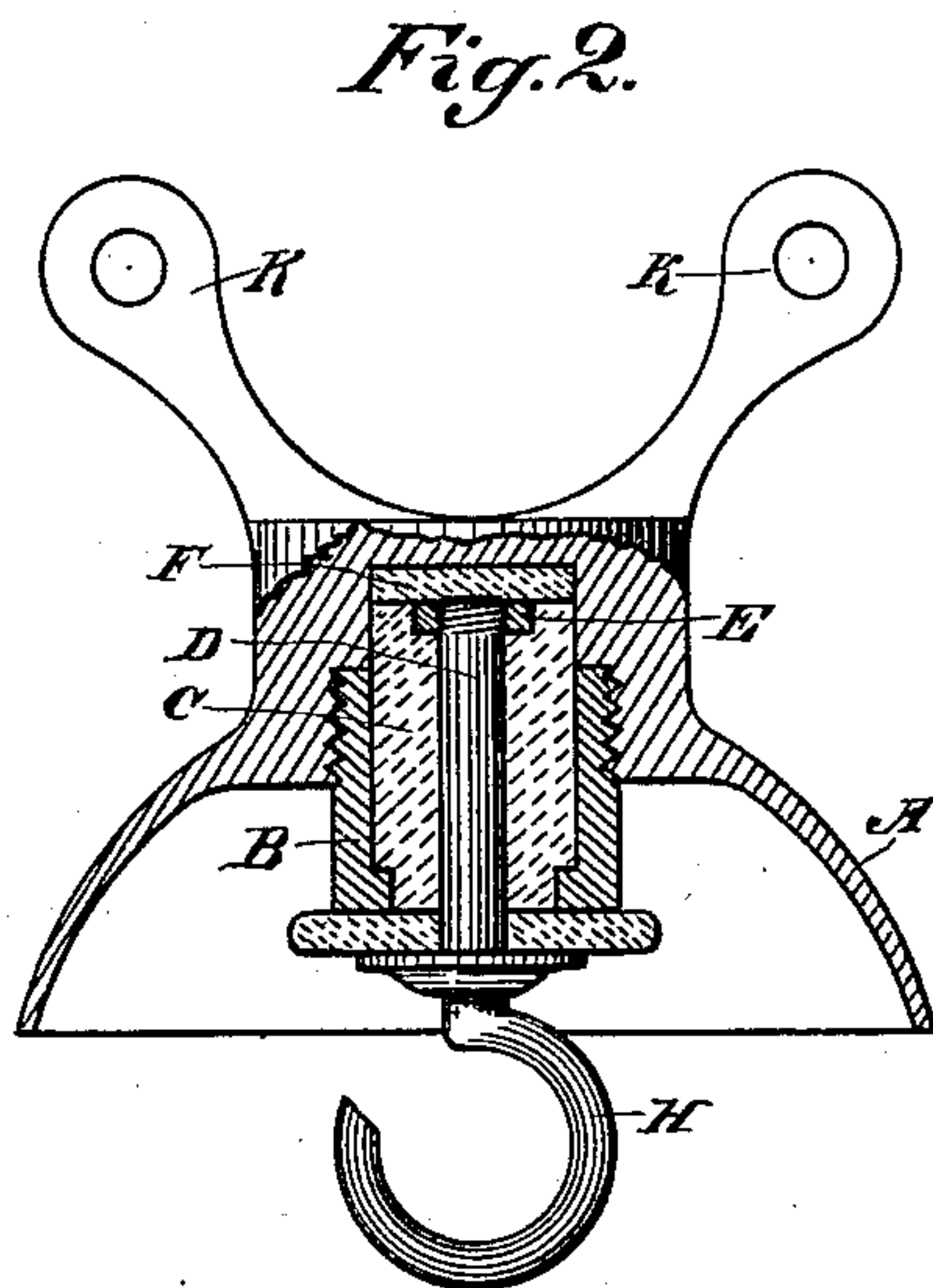
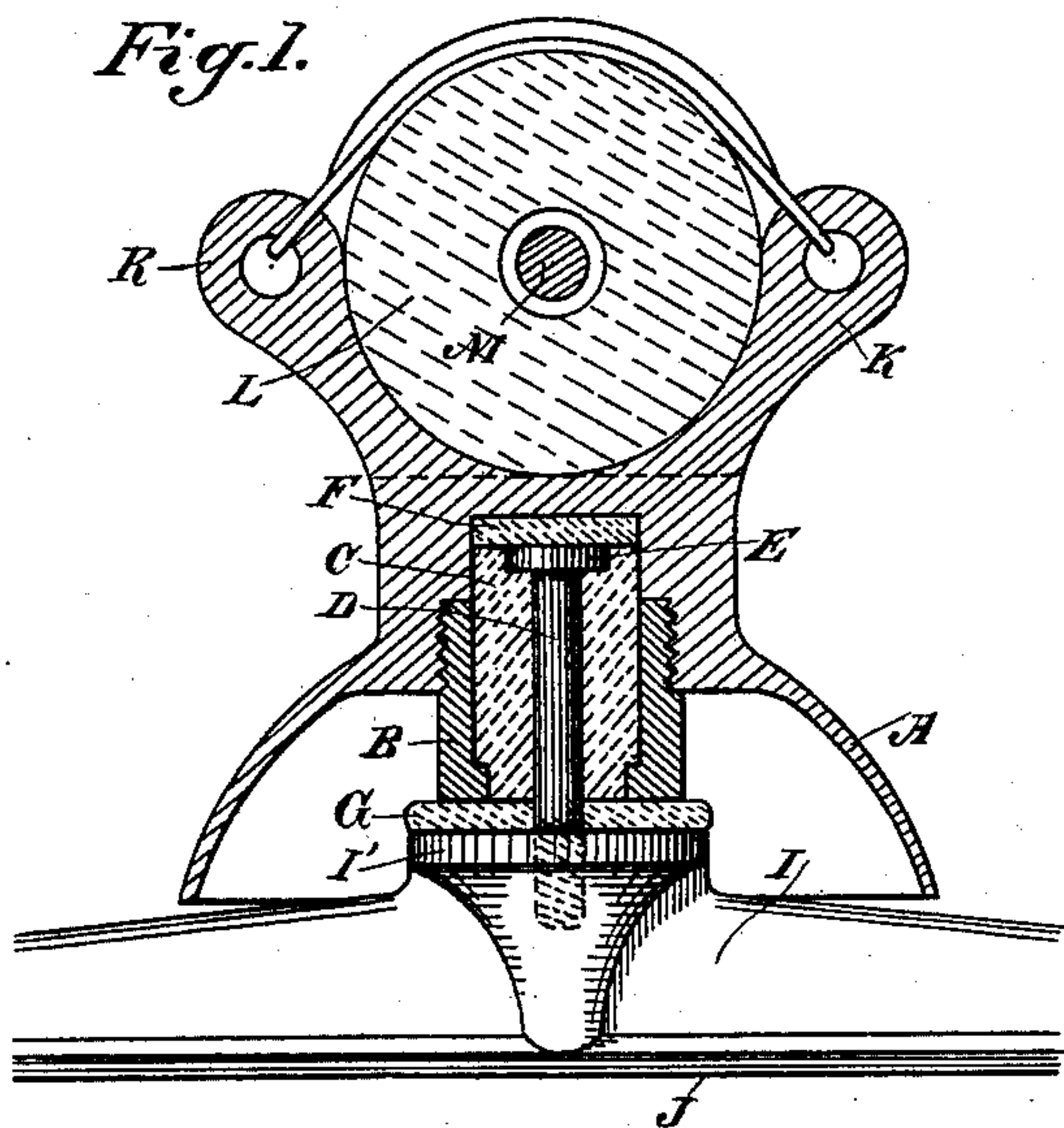


(No Model.)

B. JENNINGS.  
INSULATOR HOLDER FOR ELECTRIC RAILWAYS.

No. 452,645.

Patented May 19, 1891.



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# UNITED STATES PATENT OFFICE.

BYRON JENNINGS, OF SAN JOSÉ, ASSIGNOR OF ONE-HALF TO JAMES BRUSIE,  
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## INSULATOR-HOLDER FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 452,645, dated May 19, 1891.

Application filed November 5, 1890. Serial No. 370,409. (No model.)

*To all whom it may concern:*

Be it known that I, BYRON JENNINGS, a citizen of the United States, residing at San José, Santa Clara county, State of California, have  
5 invented an Improvement in Insulator-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 which I  
10 term an "insulator-holder," and which is especially adapted for use in connection with the conducting-wires of electric railways.

It consists of a protecting hood or cap, a means for supporting the conducting-wire  
15 therefrom and providing an insulation between the two, and a means for supporting the hood or cap in an upright position when used upon curves, and in certain details of construction, all of which will be more fully  
20 explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section taken through the hood or cap, the insulator, and suspending device, showing a part of the conducting-  
25 wire and the means for supporting the hood or cap from the transverse wires. Fig. 2 shows the hood or cap with the yoke to hold the insulator by which it is suspended, the insulating devices within the hood or cap, and a hook  
30 by which a suspended insulator for the conducting-wires may be attached. Fig. 3 shows an exterior view of the hood or cap with a lug upon the top for the attachment of the supporting or steadying wire. Fig. 4 shows  
35 the application of the hood or cap with the brace-wires connected. Fig. 5 shows a construction of the hood or cap when applied to underground conducting-wires.

Great difficulty is experienced in maintain-  
40 ing a sufficiently perfect insulation of the current-conducting wires of electric railways and in protecting the insulated material from rainy or damp weather, which greatly deteriorates the insulating qualities and correspond-  
45 ingly diminishes the effective current upon the wires.

In my device I have shown a bell-shaped head or cup A, having an opening or cham-  
50 ber extending into the body from the bottom of the interior of the bell, and a sleeve or collar B screws or is otherwise secured into this bell, as shown in Figs. 1 and 2. Within

this sleeve is fitted the plug of wood or other insulating material C, which projects from the inner end so as to fill the inner part of  
55 the chamber, into the outer part of which the sleeve B is secured. The outer portion of the opening in the sleeve B is slightly contracted, and the insulating material C is correspond-  
60 ingly shaped, so that the shoulder of the contracted portion holds the insulator firmly within the sleeve, and the sleeve being screwed into the bottom of the cup A it will be mani-  
65 fest that the insulator is firmly held in place. Through the center of this insulator is made  
65 a hole, into which the bolt D is fitted, and the inner end of the insulator is countersunk, so as to receive the enlarged head E of this bolt,  
70 which is thus firmly held in place. In Fig. 2 this head is shown in the form of a nut, and the inner end of the bolt D is screw-threaded,  
so as to screw into this nut, thus holding it firmly in place.

In the bottom of the depression which contains the insulator C is an insulating washer  
75 F, which, lying between the head of the bolt D and the bottom of the chamber, insures a perfect insulation and prevents any communication between the bolt D and the metal of the cup A. An insulating-washer G sur-  
80 rounds the outer end of the bolt D and rests upon the outer face of the sleeve or collar B, and the conducting-wire is connected in any suitable or desirable manner with the bolt D. If a suspended insulator is employed for this  
85 conducting-wire, it will be connected with the bolt D by simply forming a hook H in the outer or projecting end of the bolt, and upon this hook the suspending device may be hung; but if the conducting-wire is to be rigidly  
90 connected with the bolt D the latter is screw-threaded at its outer end and the bail I, to which the wire J is connected, has an enlarged boss or nut I' formed at or near its center, so that it may be screwed directly  
95 upon the end of the bolt D and screwed firmly up against the insulating-washer G, and as the bolt D is insulated within the plug C and by the washer F it will be manifest that there  
100 can be no communication between the parts.

The inverted-cup-shaped head A extends downward over the insulator so far that no rain or moisture can come in contact with these parts, and the insulation will thus be



maintained perfectly, the head being so close to and extending so far over the insulator as to prevent the possibility of rain or snow driving in against the insulator.

5 In Figs. 1 and 2 I have shown the ears or lugs K formed upon the upper part of the body of the hood A, and these lugs have perforations to receive wires or attachments by which the insulators L are firmly secured be-  
10 tween the lugs. The transverse wires M, by which the whole device is suspended at intervals along the line of the road, pass through holes made in the center of the insulators L, the insulation doubly thus being assured.

15 In turning corners it is necessary to hold the insulators by which the conducting-wires J are supported in such position as to maintain them approximately above the line of the track as it passes around the curve. This  
20 is done by means of wires M, which extend from the insulators to poles set up on either side of the roadway and also extend between the insulators of the two parallel lines of wire where a double line of road is used. These  
25 wires are connected with the hoods A by means of arms or lugs O, which project out upon each side and have their ends perforated to receive the wires. On account of the tension upon the conducting-wires and the  
30 corresponding strain upon the wires M which hold them on a curved line the tendency of the insulators and cups A is to turn over and become more or less displaced. In order to overcome this I employ in these insulators  
35 and hoods which are used on the curved portions of the track a single upwardly-projecting lug P, which in these insulators takes the place of the lugs K, which are used on the straight portion of the road. This upwardly-  
40 projecting arm or lug P has a hole in the top and through this hole extends a wire Q.

In Fig. 4 I have shown two lines of conducting-wire J, one for each line of the parallel tracks, and the two holders A being con-  
45 nected by the wires M and also connected with the post upon each side, as before described, by similar wires. The steadying-wires Q, passing through the upper ends of the arms or lugs P, are carried to the wires M,  
50 where they are secured to insulators L', which are secured to the wires M, and are in all respects similar to the insulators shown at L in Fig. 1. As the wires M upon each side of the holders A extend slightly upward toward the  
55 posts to which they are attached, the wire Q extends through the lugs P in an approximately straight line until it intersects the wires M upon each side, where it is connected with the insulators L', and by this construc-  
60 tion the holders are steadied and prevented from tipping over without the use of supplemental wires.

In Fig. 5 I have shown the hood or holder A arranged especially for use in underground lines, where the conducting-wire must neces- 65 sarily be supported from below. In this case the conducting-wire is connected with the upper part of the hood, passing through the groove or channel shown in the part I. The insulator C is contained in casing B', and the 70 bolt D, secured within the insulator C, as previously described, screws into the inner part of the cup A, thus holding the casing B and the insulator firmly beneath the cup or hood. At one side of the casing B is the extension 75 R, which serves for the connection of this hood and support with the usual supports within the tube or tunnel, through which the conducting-wire passes. This being fully 80 shown in devices connected with this particular style of electric road, I have not further illustrated here, as it forms no part of this invention.

In the device as illustrated in Figs. 1, 2, and 3 the hood is cast with the insulator-holder, 85 and in Fig. 5 it is shown as cast with the current-wire holder, but in each case the insulation and protection are the same.

Having thus described my invention, what I claim as new, and desire to secure by Letters 90 Patent, is—

1. An insulator-holder for the electric conducting-wires, consisting of a hood or inverted bell having an interior chamber, an insulator fitted into said chamber, a collar or 95 sleeve surrounding the insulator and threaded into said hood, whereby said insulator is held in place, a bolt having one end fixed in the insulator and the other extending out through it, the insulating-washers F and G, 100 the means for supporting electric conducting-wires from the insulator, and a means for supporting the insulator-holder and the wire, substantially as herein described.

2. An insulator-holder for electric conduct- 105 ing-wires, consisting of an inverted cup or bell, a chamber in the interior of said cup containing the insulator, means by which the insulator is held in place, and means for sus- 110 pending the conducting-wire from said insulator, side lugs by which the insulator-holder is connected with posts upon opposite sides of the line, and upwardly-projecting lugs, a wire attached to said lugs and leading to the side wires or braces, the steadying-wires, and 115 insulators L', to which the steadying-wires are connected, substantially as herein described.

In witness whereof I have hereunto set my hand.

BYRON JENNINGS.

Witnesses:

S. H. NOURSE,  
H. C. LEE.