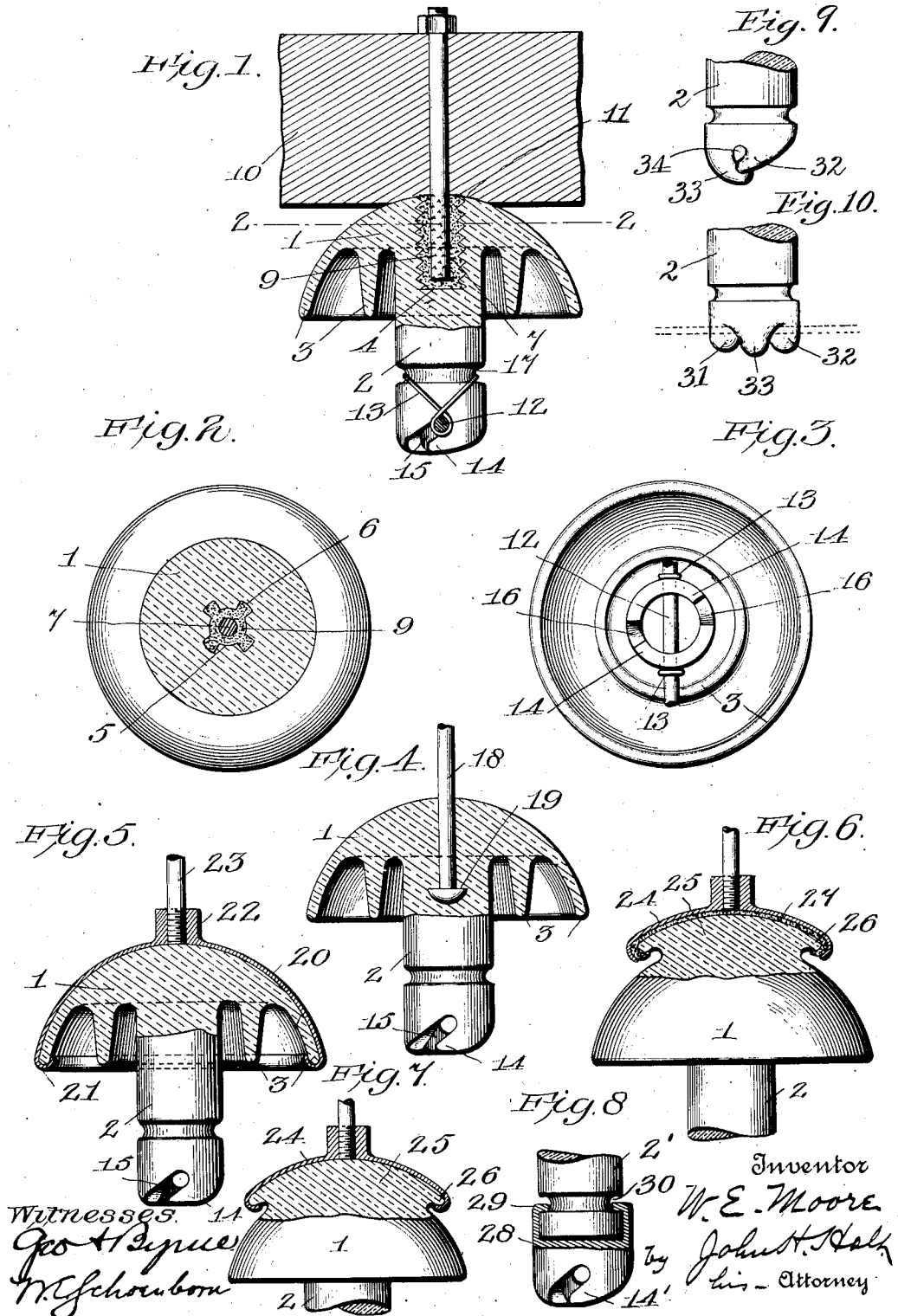


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INSULATOR.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM E. MOORE, citizen of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented certain new and useful Improvements in Insulators, of which the following is a specification.

This invention relates to improvements in insulators for supporting electric wires, and has for its principal objects to lessen the cost and increase the ease of manufacture; to improve the insulation especially in high tension line work; to lessen breakage, and to produce insulators with which installation and repair of lines may be greatly facilitated and danger to workmen by shocks lessened.

To the above ends my invention consists in the combination and arrangement of parts herein described and more particularly pointed out in the accompanying claims.

Referring to the accompanying drawings which illustrate several embodiments of my invention:—Figure 1 represents one form of my improved insulator partly in section and partly in side elevation, secured to a cross-arm or other support; Fig. 2, a section taken along the line 2—2, Fig. 1, and looking down on top of the insulator, and Fig. 3, a bottom plan view of the insulator shown in Fig. 1; Figs. 4, 5, 6 and 7 illustrate different arrangements for securing the insulator to its support, the said insulator being shown partly in section and partly in elevation; Fig. 8, is a detail view partly in section of an alternative form of device for securing the line wire to the insulator, and, Figs. 9 and 10 show in elevation the lower portion of the pendent member of the insulator provided with still another form of wire holding device.

In the form of my invention shown in Fig. 1, 1 represents the body of the insulator, consisting of a mass of insulating material, such as glass, porcelain, or other suitable substance, provided with a central pendent wire supporting member 2 and suitable petticoats 3, for keeping dry the surface of insulator between the upper surface and point of attachment of the line wire.

In the upper end of the insulator, opening at the top thereof, is a cavity 4 provided with a series of projections 5, which, in the form illustrated are separated by the ver-

tical recesses 6, though any other suitable arrangement of projections may be employed. Into this cavity extends one end of an attaching bolt or its equivalent 7, suitably roughened as at 9 to provide retaining points. This bolt is held within the cavity by cement, sulfur or other suitable substance 9, poured into the cavity around the bolt and allowed to "set" or become hard, thus engaging the projections on the side of the cavity and the roughened part of the bolt and firmly holding the latter in place. By means of this attaching bolt 7, the insulator may be secured to a cross-arm 10, as shown in Fig. 1, or to any other support and thus held in a depending position. In thus securing the insulator to a cross arm or other support, it is advisable to slightly countersink the insulator in the cross arm as at 11, to prevent the accumulation of water between the cross arm and insulator, which, after freezing would have a tendency to crack the insulator and corrode the bolt. Whether the supporting arm is countersunk or not, it is always advisable to draw the top of the insulator tightly against the arm or other support.

It will further be seen that as the top of the insulator forms a continuous curve, that is, continuously convex, the insulator at every point recedes from the support, which does not allow water to accumulate between the insulator and support, as would be the case were the insulator flattened on top.

The line wire is supported at the depending end of the insulator as shown in Figs. 1 and 3, in which 12 represents the line wire and 13 the tie wire. For the purpose of supporting the line wire I provide upon the lower end of the member 2, two oppositely disposed lugs or horns 14, formed by the oppositely inclined grooves or slots 15. These lugs hold the line wire firmly without bending it, which will readily be seen is a great advantage. In securing the line wire to the insulator it is merely necessary to place the wire so that it registers with the openings 16 between the lugs 14, and then turn the insulator, when the two lugs will pass over the wire and hold it as shown. By this arrangement a lineman is enabled to hook the insulator on a live wire and lift the line up and bolt the insulator to a cross arm or other support without danger. This not only reduces the danger of shocks, but

greatly facilitates repair work and becomes an important feature in high tension line work.

At a suitable point or points on the member 2 are located one or more annular grooves 17 around which pass the tie wire, or, if desired, a line wire may be tied in said groove.

In Fig. 4, I have shown another arrangement for supporting the insulator. In this case the material of the insulator is molded directly around the attaching bolt 18, which is preferably provided with some enlargement, irregular or roughened portion surrounded by the material of the insulator. In the case shown the bolt is provided with a head 19.

In the form of my invention shown in Fig. 5, an inverted bowl-shaped cap, consisting of a metal stamping, spinning or casting 20, covers the top of the insulator and is bent over the edge of the outer petticoat as at 21. From the center of the convex surface of the cap 20, extends a lug 22, into which is fastened the end of an attaching bolt 23 by which the insulator is secured to its support. By virtue of the protection given the insulator by the metal cap 20, this form of my invention is especially applicable to use in localities where insulators are apt to be broken by being shot or thrown at. Instead of spinning the cap 24 directly on the insulator, it may be attached to the insulator with cement, or some substance which will "set" when cool, such substance being poured around between the cap and insulator.

A form of insulator in which the supporting cap is secured to the insulator by cement or the like is shown in Fig. 6. In this form, however, the insulator differs somewhat from that shown in Fig. 5 in that the cap 24 does not extend over the whole of the outer portion of the insulator, but over only a portion thereof, the said insulator being molded with a head 25 having an annular flange 26 over which the cap 24 fits; the connection between the cap and insulator being formed by the cement or its equivalent 27.

In Fig. 7, I have shown a form of my invention in which the cap 24 is spun directly over the head 25 of the insulator, passing around and under the flange 26.

In Fig. 8, I have shown an alternative arrangement for securing the line wire to the insulator. In this case, instead of forming the wire holding horns or lugs 14 integral with the lower end of the central member 2, I replace these by similarly shaped horns or lugs 14' upon a metal cap 29, which extends up the sides of the lower end of the central member 2'. The upper end of the cap is bent over as at 29 to engage an annular groove 30 in the insulator for the pur-

pose of securing the cap in place. Any other suitable means may be employed for attaching the cap 28 to the end of the insulator.

In Figs. 9 and 10 I have shown still another form of device for securing the line wire to my improved insulator. In this case there are formed on the bottom end of the depending member 2, three wire holding lugs 31, 32 and 33, preferably molded integral with the insulator. Two of these lugs, 31 and 32, extend in the same direction, while the lug 33 extends in an opposite direction and between the lugs 31 and 32 as shown, forming between said lugs a wire retaining opening 34 through which a line wire is intended to pass, as indicated in dotted lines in Fig. 10.

By means of the foregoing constructions, I am enabled to attain the highest efficiency in insulation with a comparatively simple construction, wherein the point of contact of the line wire with the insulator is protected from drippings or moisture as far as possible by placing such point of contact beneath protecting petticoats, and wherein the insulation is further strengthened by the prevention of the accumulation of moisture between the insulator and the support as described; this also prevents the danger to breakage due to the freezing of such accumulated moisture.

The insulator is further improved by the avoidance of the use of wooden plugs inserted into the insulator which absorb and retain moisture and not only thereby cause the breakage of the insulator by swelling but greatly impair the insulation.

In addition to the above features, the manner of securing the line wire to the insulator, and other points before mentioned, all constitute, it is believed, a distinct advance in the art.

What I claim is:

1. A wire supporting petticoat insulator, having attaching means secured thereto for supporting said insulator from above, a pendent member extending from beneath the petticoat of said insulator and having an annular groove in its periphery near its depending end, a metal cap having a recessed end into which the lower end of said pendent member extends, the side walls of said recess being bent to extend into said annular groove, and wire retaining lugs formed on said cap.

2. A wire supporting insulator, having a metal cap secured to one end thereof, said cap having oppositely directed lugs arranged to grip and support the wire.

3. A wire supporting petticoat insulator, having attaching means secured to the said insulator for supporting the same from above, a pendent member extending from beneath the petticoat of said insulator, and

wire retaining lugs formed on the end of said pendent member.

4. A wire supporting petticoat insulator, having attaching means extending from the top of said insulator for supporting the said insulator from above, a pendent member extending from beneath the petticoat of said insulator, and oppositely directed wire gripping lugs formed on the end of said pendent member.

5. A wire supporting petticoat insulator, having an attaching bolt extending from the top of said insulator for supporting the same from above, a pendent member extending from beneath the petticoat of said insulator, and oppositely directed wire retaining lugs formed on the end of said pendent member, adapted and arranged to grip a wire passing straight across said pendent member.

6. A wire supporting insulator, having a body portion and annular petticoats formed thereon, a central pendent member extending from the body of said insulator beneath

said petticoats, oppositely directed wire supporting lugs formed on the lower end of said pendent member and arranged to grip and support a wire passing straight across the said member, and attaching means adapted and arranged to secure said insulator to a support in a pendent position.

7. A wire supporting insulator, having a body portion and annular petticoats formed thereon, a central pendent member extending from the body of said insulator beneath said petticoats, oppositely directed wire supporting lugs formed on the lower end of said pendent member and arranged to grip and support a wire passing straight across the said member, and means extending from the top of said insulator for attaching the same to a support in a pendent position.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ENOCH MOORE.

Witnesses:

BYRON PORTER,
EDW. K. DICK.