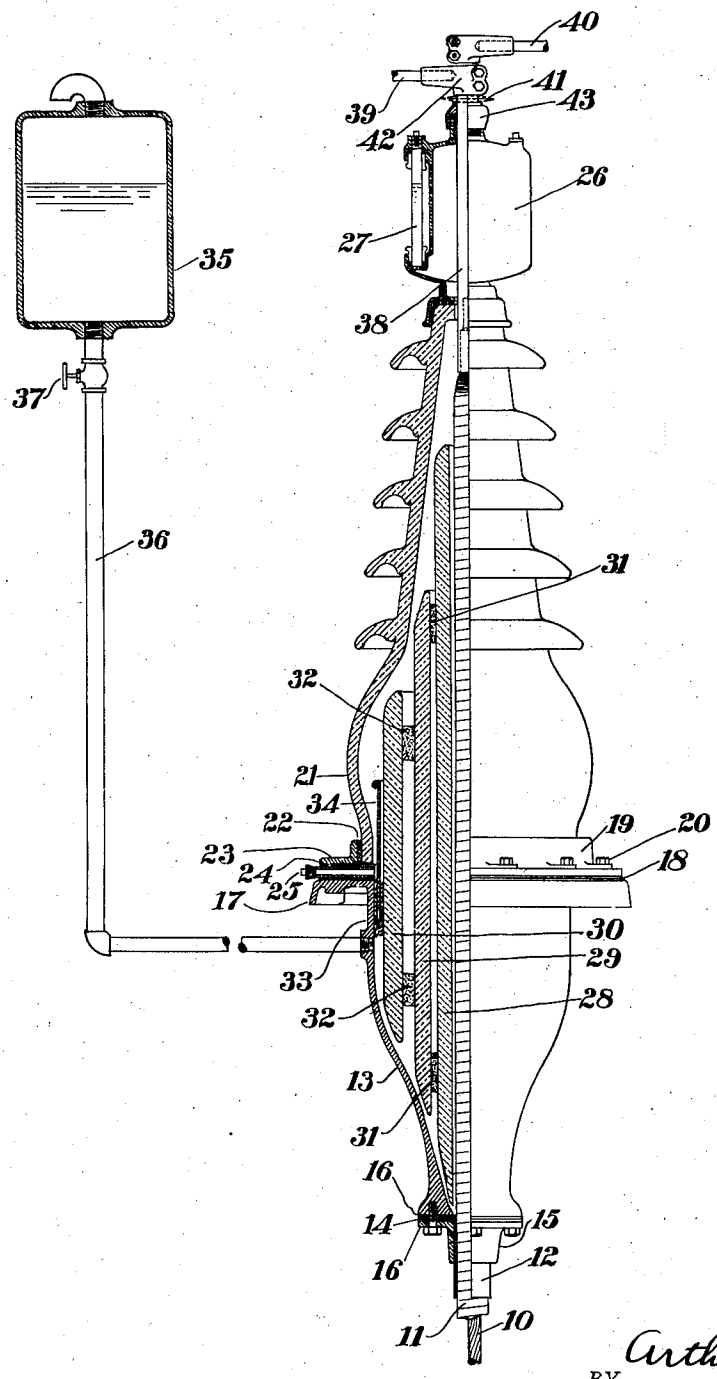
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POTHEAD FOR INSULATED CONDUCTORS

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POTHEAD FOR INSULATED CONDUCTORS

Application filed January 16, 1925. Serial No. 2,754.

This invention relates to outlet housings commonly known as potheads such as are used for the transition of a conductor from an insulated cable to a bus bar or overhead support, and has for its object the provision of a device of the class named in which the exposed portion of the insulating material will be protected from the atmosphere and supplied with an insulating liquid or compound and in which flash-over between the conductor and its sheath or other grounded objects will be prevented.

The invention is exemplified in the combination and arrangements of parts shown in the accompanying drawing and described in the following specifications and it is more particularly pointed out in the appended claims.

In the drawing—

The figure is an elevation of a pothead construction showing one embodiment of the present invention, parts of the device being shown in vertical section.

The numeral 10 designates a conductor cable having an insulated winding 11 applied thereto, the outer surface of the winding being covered by a sheath 12 of lead or other suitable material. The insulation 11 is commonly made up of narrow strips of paper saturated with oil or other insulating compound and wound in layers upon the conductor 10. The outer sheath 12 protects the insulating material and prevents the escape of the insulating liquid with which the material is saturated. It will be apparent that at the termination of the sheath 12 and the insulating material 11, it will be necessary to make some provision to protect the insulating material so as to retain the insulating fluid and prevent entrance of moisture. It will also, be apparent that there will be a concentration of electrostatic lines of force at the termination of the sheath which would give rise to discharge from the conductor to the sheath unless some provision is made to provide sufficient insulation at this point. In the construction shown in the drawing for taking care of these conditions, a metal tubular housing or bell 13 is provided which is tapered inwardly at its lower end to fit closely about the insulation 11. The conductor 10 and insulation 11 pass through the opening in the lower end of the housing but the sheath 12 is terminated adjacent the end of the housing and is flared outwardly as shown at 14 to provide a circumferential flange. The locking collar 15 surrounds the sheath 12 below the flange 14 and is provided with a flange 16 which grips the flange 14 against the lower end of the housing 13. A gasket 16 is interposed between the housing and the flange 14 to provide a tight joint between the housing and the sheath 12.

At the upper end of the housing 13, there is provided a supporting flange 17 having a gasket 18 thereon, and a ring 19 is secured to the flange 17 on top of the gasket 18 by bolts 20. A tubular dielectric member 21 is secured to the interior of the ring 19 by cement 22 or other suitable means so that when the ring 19 is securely fastened to the flange 17 the parts 13 and 21 are united at their adjacent ends to form a continuous casing. The ring 19 may be provided with a boss 23 having a conduit 24 extending therethru to permit the interior of the casing to be supplied with an insulating oil or compound. The conduit 24 may be closed by a plug 25. A reservoir 26 may be provided at the upper end of the housing member 21 for containing a reserve supply of insulating liquid, and a gauge glass 27 is provided for indicating the height of liquid in the reservoir 26. Temperature changes will vary the amount of the insulating liquid held by the covering 11 for the conductor 10. During warm weather, the insulating liquid will expand and some of it will be forced from the interior of the sheath 12. At lower temperatures, the liquid will contract so that an additional amount will enter the end of the cable. For this reason, it is advisable to supply a considerable body of insulating liquid which may be drawn upon by the insulating material within the sheath 12.

The pothead construction shown, provides a reservoir for supplying this material and at the same time protects the covering for the conductor from exposure to the atmosphere. The metallic member 13 diverges

gradually from the conductor 10 so that there is no point afforded for a large concentration of static lines of force. Moreover a series of tubular dielectric members 28, 29 and 30 are interposed between the casing member 13 and the conductor 10 so that a large amount of insulation is provided between the conductor and the termination of the outer sheath which is continued upwardly by means of the flaring pothead 13 to the flange 17 which is spaced outwardly a considerable distance from the conductor. The insulating member 28 extends between the covering 11 and the casing member 13 to a point closely adjacent the lower end of the casing member. The wall of the insulating member being tapered at its lower end to permit the end to extend well down into the tapered opening between the insulating covering 11 and the member 13. The tubular member 29 is concentric with the member 28 and is spaced outwardly therefrom and secured thereto by rings of cementing material 31. The tubular member 30 is likewise secured to the outer face of the member 29 by cement 32. The entire series of tubular dielectric members is supported from the housing member 13 by a cement zone 33 which connects the outer surface of the tubular member 30 with the inner surface of the casing member 13 near the top of this member. A flux control screen 34, consisting of a sheet metal sleeve surrounding tubular member 13 may be supported between the tubular member and the lower edge of the housing member 21 by having its lower edge embedded in the cement 33. In order to provide an additional supply of insulating liquid, it may sometimes be advisable to use a supplemental supply reservoir 35 which may be connected by a pipe 36 to the interior of the housing member 13. A valve 37 is provided to control the supply of liquid through the pipe 36. The upper end of the conductor 10 is connected to a conductor rod 38 which extends upwardly through the reservoir 26 and is connected at its upper end with conductors 39 and 40. A spring washer 41 may be interposed between the clamp 42 for the conductor 39 and the stuffing box 43 at the upper end of the rod 38, within the pothead and compensates for unequal expansion and contraction between the conductor and the casing due to temperature changes.

I claim—

1. The combination with a conductor having a dielectric covering and an outer metal sheath, of a pothead for said conductor comprising an inverted metallic bell having an opening through its lower end for receiving said conductor, means for securing said sheath to said bell adjacent said opening, resilient means for supporting the portion of said conductor within said pothead and a tubular dielectric member surrounding said conductor within said pothead and supported on said bell.

2. The combination with a conductor of a pothead therefor, a reservoir for insulating compound supported by said pothead and resilient means for supporting the portion of said conductor in said pothead.

3. The combination with a conductor having a covering of dielectric material and an outer metal sheath, of a pothead for said conductor comprising a lower metallic bell and an upper dielectric casing member, a reservoir supported on said dielectric casing member and communicating with the interior thereof, means extending through said reservoir for supporting the portion of said conductor within said pothead and a resilient member supported by said reservoir for sustaining said conductor supporting means.

4. The combination with a conductor having a covering of dielectric material and an outer metal sheath, of a pothead for said conductor comprising an inverted flaring metallic bell having an opening through its lower end for receiving said conductor, means for forming a tight joint between said sheath and said bell adjacent the lower end of said bell, a series of concentric tubular insulating members surrounding said conductor within said bell and supported on said bell, a dielectric casing member connected with the upper end of said bell to form a closed housing therewith, a reservoir for insulating compound communicating with the upper end of said dielectric casing member, a connector extending through said reservoir and secured to said conductor and means for supporting said connector to said reservoir.

5. In combination, a conductor having an insulating covering and an outer metal sheath, and a terminal housing for said conductor comprising a metallic casing member having an opening at one end through which said conductor and covering extend into said casing member, said casing member being flared outwardly away from said covering, a complementary casing member of dielectric material having one end thereof arranged in registration with the upper end of said metallic casing member, means for securing the registering ends of said casing members together, a cap supported on the upper end of said dielectric casing member and provided with a terminal for said conductor, and a porcelain tube disposed within said casing members and overlapping the joint between the connected ends of said casing members, the lower end of said tube being tapered and extending into the tapered opening between said metallic casing member and said insulating covering.

6. In combination a conductor having a covering of dielectric material, a liquid tight casing of conducting material having an opening through the outer wall thereof

through which said conductor and covering extend, a sheath surrounding said dielectric covering outside of said casing and terminating in an outwardly bent flange at the outer wall of said casing, said flange being electrically and mechanically connected with said outer wall about said opening, a tubular, dielectric member surrounding said covering within said casing and extending to a point within said opening, means for supporting said tubular member on said casing, and an insulating liquid within said casing.

In testimony whereof I have signed my name to this specification on this 13th day of January, A. D. 1925.

ARTHUR O. AUSTIN.