March 17, 1964 R. B. BENDER 3,125,499

COMBINATION INSULATING GUARD AND WIRE SUSPENDED ANODE

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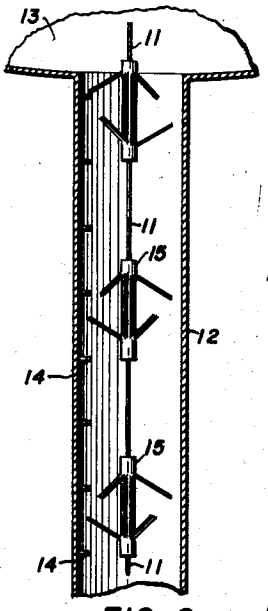


FIG. 2.

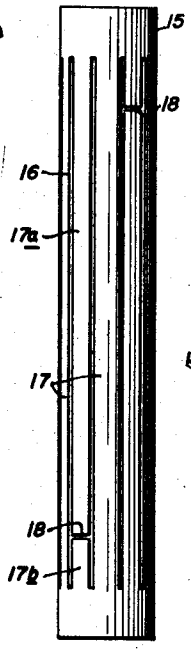


FIG. 3.

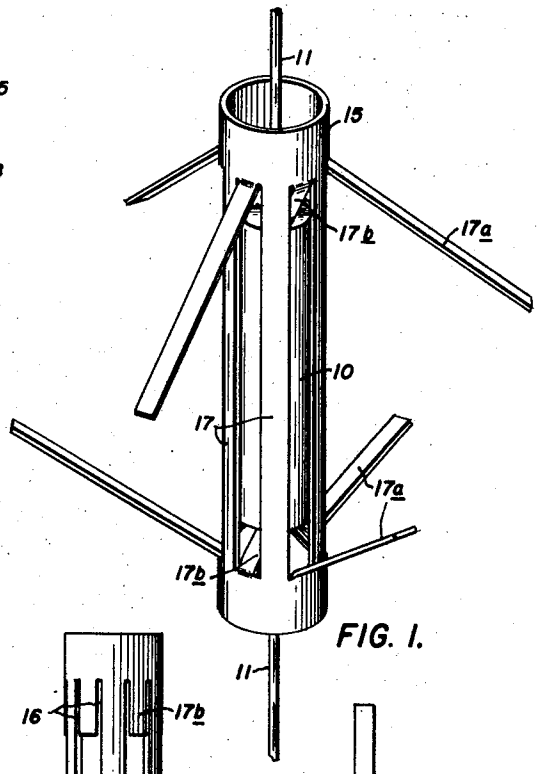


FIG. 1.

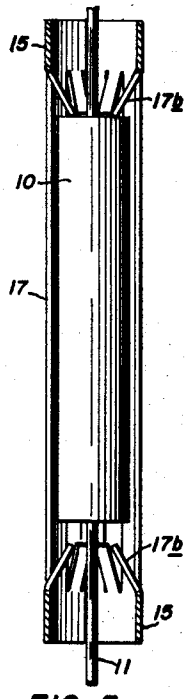


FIG. 5.

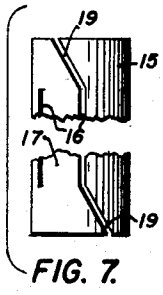


FIG. 7.

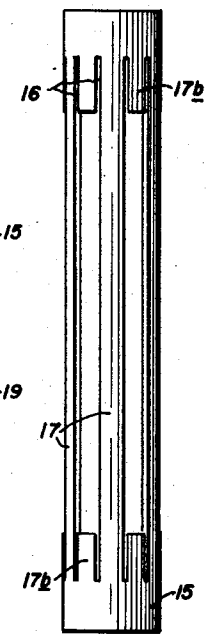


FIG. 4.

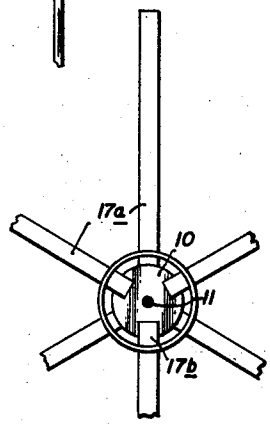


FIG. 6.

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COMBINATION INSULATING GUARD AND WIRE SUSPENDED ANODE

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This invention relates to cathodic protection and has reference to insulators for protecting strings of cylindrical anodes suspended in metal tanks.

Although the invention may be used to advantage in various types of tanks, it is particularly useful in water tanks where at least one string of anodes is suspended in a standpipe and is thus subjected to the turbulence of water pumped into the tank and discharged therefrom. Under such conditions the anodes contact the inner wall of the standpipe and cause a short in the imposed electrical circuit. Some standpipes have metal ladder rungs therein, further increasing the possibility of shorting, and, from a practical standpoint, it is nearly impossible to suspend a string of anodes in the true axial center of the standpipe to reduce the likelihood of shorting.

Since the conductor wires, which are usually copper, must be insulated from the water in the tank or standpipe, the assembly of wire and anodes is not practical at the place of installation. However, insulators comprising the present invention may not be required at all installations; thus, it is preferable to install the present insulators in the field as the need may arise.

An object of the invention is to provide insulators and bumper guards for anodes suspended in vertical strings within metal tanks.

A particular object of the invention is to provide insulators and bumper guards which may be applied to anodes in the field without disconnecting the suspending conductor wires.

Another object of the invention is to provide bumper guards for anodes which will not impair the efficiency of the latter.

These and other objects will become apparent from the following description and the accompanying drawings, wherein:

FIGURE 1 is a perspective view of one embodiment of the invention mounted on a suspended anode.

FIGURE 2 is a broken vertical sectional view of a water tank and standpipe and showing the first form of the invention installed therein.

FIGURE 3 is an elevational view of the first form of the invention prior to installation.

FIGURE 4 is an elevational view of a second form of the invention prior to mounting on an anode.

FIGURE 5 is a vertical sectional view of the second form of the invention mounted on an anode.

FIGURE 6 is a broken plan view of FIGURE 1, and

FIGURE 7 is a broken elevational view of a further modified form of the invention including diagonal cuts in the ends thereof to accommodate the suspending wire and whereby the insulators or bumper guards may be applied to the individual anodes independently of adjacent anodes.

A typical installation is shown in FIGURE 2 wherein cylindrical anodes **10** are connected in a length of suspended insulated conductor wire **11** which extends into the standpipe **12** of a water tank **13**. In large standpipes **12** there may be inwardly projecting ladder rungs **14**.

An insulator and bumper guard **15** comprising a preferred form of the invention, FIGURES 1, 2, 3 and 6, is made of a length of tubular bendable dielectric synthetic

resin, for example, polyvinyl chloride, each length being greater than the length of the anode it is to protect. Each insulator **15** is longitudinally slotted between its ends, as at **16**, to provide parallel bars **17** therearound. Alternate bars **17** are transversely slotted near their alternate ends, as at **18**, to provide laterally extending spacer arms **17***a* at each end and inwardly projecting anode engaging clips **17***b*. The cylindrical anode **10** is loosely received in the insulator **15** and the clips **17***b* engage the ends thereof. By reason of the deformable characteristic of the insulators **15**, the arms **17***a* and clips **17***b* may be bent outwardly and inwardly, respectively, at the installation location.

The form of the invention illustrated in FIGURES 4 and 5 is for installation in small diameter standpipes and is identical with the foregoing except that the spacing arms **17***a* are eliminated and additional inwardly projecting anode engaging clips **17***b* are provided instead. The further modified form of the invention illustrated in FIGURE 7 is applicable to either of the first two described forms of the invention and includes diagonal cuts **19** in the ends thereof and connecting with one of the longitudinal slots **16** whereby the insulator **15** may be caused to receive the conductor wire between anodes **10** and then moved longitudinally to enclose one of the latter, after which the clips **17***b* are pressed inwardly to engage the anode ends as shown in FIGURES 1 and 5.

The operation of all forms of the invention shown or described is substantially the same. The installed insulators **15** present relatively small additional resistance to flow of water in the standpipe and prevent electrical contact therewith. Moreover, by reason of the open construction of the insulators **15**, and by reason of their loosely fitting the anodes **10**, there is no effective shielding which might impair efficiency. As shown in the foregoing, the insulators **15** may be installed at the water tank site without removing insulation from the conductor wire on which the anodes are suspended.

The invention is not limited to the exemplary construction herein shown and described, but may be made in various ways within the scope of the appended claims.

What is claimed is:

1. In combination:
a cylindrical anode suspended at one end on a conductor,
a tubular body of deformable dielectric material loosely receiving said anode, the length of said anode being less than the length of said body,
said body including spaced longitudinal openings between the ends thereof, and
inwardly directed clips integral with said body at the ends of said openings and positioned to engage the ends of said anode.

2. The combination defined in claim 1, and including:
outwardly projecting spacer arms of dielectric material adjacent at least one end of said body.

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