PROTECTION OF ANCHOR RODS AGAINST CORROSION

Inventor: Gary Q. Watson, P. O. Box 283, Crane, Tex. 79731

Filed: Sept. 21, 1970

Appl. No.: 73,872

U.S. Cl. 52/166, 174/138 R
Int. Cl. E02D 5/80


References Cited

UNITED STATES PATENTS
3,145,812 8/1964 Way et al. 52/166
8/1970 Bauer 52/166
4/1932 Cards et al. 52/515 X
10/1968 Goodman 52/170 X

OTHER PUBLICATIONS

Primary Examiner—Price C. Faw, Jr.
Attorney—Charles W. Coffee

ABSTRACT

Rods for connecting anchors to guy wires and the like are protected against corrosion by electrically insulating the rod from the anchor and from the surrounding soil.

3 Claims, 3 Drawing Figures
FIG. 1.

FIG. 2.

FIG. 3.

GARY Q. WATSON INVENTOR.

BY

[Signature]
PROTECTION OF ANCHOR RODS AGAINST CORROSION

BACKGROUND OF THE INVENTION

1. Field of the Invention
This invention relates to anchors and more particularly to protecting anchor rods from corrosion.

2. Description of the Prior Art
It has been recognized that the corrosion of metal objects in the earth is largely an electrolysis process; therefore, people have attempted to prevent the electrolysis by charging the metal object with electrical generators. Generally this process is called "cathodic" protection. However, usually for short, small objects buried in the ground, such as anchors for guy wires, the only effort to protect them is to put a coating on them such as paint.

SUMMARY OF THE INVENTION

New and Different Function
I have solved the problem of preventing corrosion of rods for anchors by electrically insulating the rod from the anchor bottom and earth. Therefore, I have sought to prevent corrosion of a composite metal article in the earth by insulating one portion of the metal article from the other.

Objects of this Invention
An object of this invention is to reduce corrosion of metal members buried in the earth.
Another object is to protect anchor rods against corrosion.
Further objects are to achieve the above with a device that is sturdy, compact, durable, lightweight, simple, safe, efficient, versatile, and reliable yet inexpensive and easy to manufacture, install, and maintain.
Still further objects are to achieve the above with a method that is versatile, rapid, efficient, and inexpensive, and does not require skilled people to install, adjust and maintain.

The specific nature of the invention, as well as other objects, uses, and advantages thereof, will clearly appear from the following description and from the accompanying drawings, the different views of which are not necessarily to the same scale.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a representation of an anchor and rod according to my invention attached to a utility pole.
FIG. 2 is a side elevational view of an anchor with rod according to my invention foreshortened and partially broken away for clarity.
FIG. 2 is an enlarged sectional detail view of a portion thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A typical installation is illustrated in FIG. 1. Anchor 10 with rod 12 is attached to buy 14 used to hold utility pole 16 erect against the tension of wires 18.

It will be understood that ground anchors with rods are used in many installations other than holding utility poles erect.
The soil in which the anchor is buried is illustrated as having a surface strata or layer 20 and subsurface strata or layer 22.
This situation is often encountered and the two stratas or layers of soil will have different chemical compositions; therefore, they also will have different electro motive forces when coupled with iron. If the anchor 10 is electrically connected to the rod 12, as conventional, an electrical current is produced from the large metal anchor 10 which acts as an electrical collector in the subsoil 22, up the rod 12 in soil 20 and back through the soil to the anchor 10. This electrical current causes rapid deterioration of the rod.

Referring to FIG. 2 it will be noted that the anchor 10 is of a particular W-shape. The anchor 10 is circular. I have found that this particular shaped anchor is more efficient in its holding capabilities because of the particular outward flow of the soil over it as tension is placed upon it. I have found that it has a greater holding and has less movement or slip before it fully sets or develops its holding capability. The upper surface is composed basically of two concentric cone frustums, a first inner cone frustum 24 which is convex or slopes away from the rod and a second outer cone frustum 26 which is concave or slopes in the opposite direction. It is sometimes called a W-anchor because of the cross-section appearance.

The rod 12 includes internal metal rod 28 which has cable eye 30 welded to the upper end of it. The lower end 32 is threaded to receive nut 34. The metal rod 38 is covered by a thick coat of pliable asphalt or asphalt mastic 36, which extends from the very top adjacent to the eye 30 down to completely cover the threads 32, which extend below the nut 34. This asphalt mastic 36 is surrounded by plastic tube or pipe 38 which can be made of any conventional material such as is commonly on the market. I prefer polyethylene although it can conveniently be made of polyvinyl chloride, polystyrene or polyurethane. In addition to protecting the asphalt, plastic pipe 38 also acts as an insulator. Furthermore, if the top of the rod extends above the ground a few feet, it acts as a smooth, protective coating over the rod so if the rod is located in the vicinity of people, they are not likely to soil or damage their clothes upon a rough, dirty rod and asphalt mastic. The tube 38 can conveniently be colored to be a brilliant color such as yellow so it can be seen readily by operators of motor vehicles, reducing the possibilities of having automobiles back over it.

The anchor 10 has a hole in the center which telescopes over the rod 12 including the plastic pipe 38. As is more clearly seen in FIG. 3, the anchor 10 telescopes over the entire bottom assembly. The anchor 10 has a short cylindrical anchor tube or axial extension 40 welded to it to hold the anchor 10 in proper orientation on the rod 12. Washer 42 made of electrical insulating material such as Fiberglas is placed between steel washer 44 and the bottom of the anchor 10.
The steel washer 44 is next shown as clearly seen in FIG. 3. The washer 42 abuts the tube 38 and has a larger diameter than the hole in the anchor 10 extension 40. The heavy coating of asphalt mastic 36 is between the nut 34 and the metal anchor rod 28 so that actually the washer 44 and the nut 34 are insulated from the metal rod 28. However, more important, the metal rod 28 is insulated from the large metal anchor 10. I have found that this prevents the electrical corrosive action referred to above.

The embodiment shown and described above is only exemplary. I do not claim to have invented all the parts, elements or steps described. Various modifications can be made in the construction, material, arrangement, and operation, and still be within the scope of my invention. The limits of the invention and the bounds of the patent protection are measured by and defined in the following claims. The restrictive description and drawing of the specific example above do not point out what an infringement of this patent would be, but are to enable the reader to make and use the invention.

I claim as my invention:
1. In an earth anchor assembly having
a. a large metal anchor at the bottom buried below the surface of the earth and
b. a metal rod connected to the anchor extending from the anchor to above the surface of the earth;
c. the improvement comprising:
d. electrical insulating material surrounding the rod, particularly between the rod and the anchor,
e. said anchor having an axial extension thereon,
f. said anchor and extension having axial holes therethrough,
g. said rod extending through said axial holes,
h. asphalt mastic coating said rod from its bottom to above the surface of the earth,
i. a synthetic resin plastic tube telescoped over the rod and asphalt mastic coating through the holes in the anchor and extension to above the surface of the earth,
j. a washer made of electrical insulating material surrounding the rod immediately below the anchor and extension,
k. said washer abutting said tube,
n. said washer having a larger diameter than said holes through the anchor and its extension,
o. a nut threaded to the bottom of the rod, and
p. a metal washer surrounding the rod between the nut and the washer made of electrical insulating material.
2. In an earth anchor assembly having
a. a large metal anchor at the bottom buried below the surface of the earth and
b. a metal rod connected to the anchor extending from the anchor to above the surface of the earth;
c. the improvement comprising:
d. electrical insulating material surrounding the rod,
e. said electrical insulating material completely isolating the rod from the anchor,
f. said electrical insulating material forming the sole link between the rod and anchor, and
3. The invention as defined in claim 2 with the additional limitations of
f. said anchor having a hole therethrough,
g. said rod extending through said hole,
h. a washer of electrical insulating material surrounding the rod immediately below the anchor,
j. a nut on the rod below the washer.