May 17, 1949. O. F. TALLMAN ET AL 2,470,326

EARTH ANCHOR

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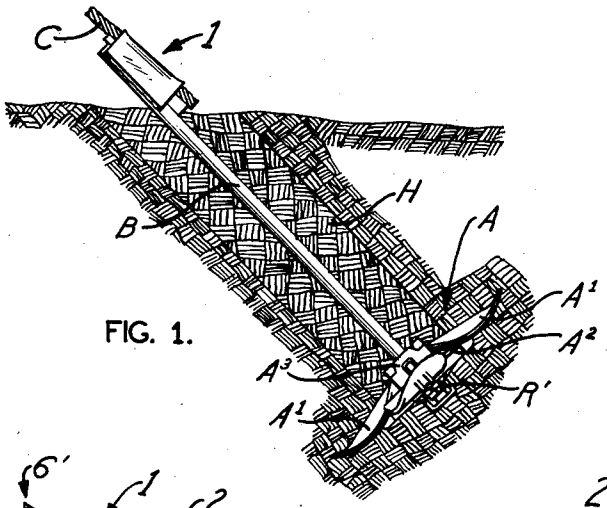


FIG. 1.

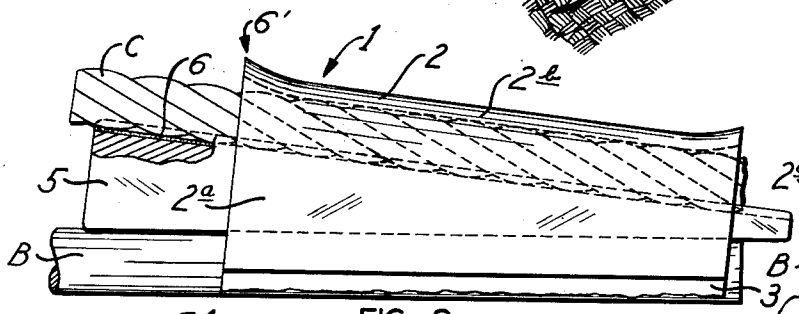


FIG. 2.

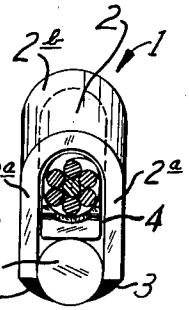


FIG. 3.

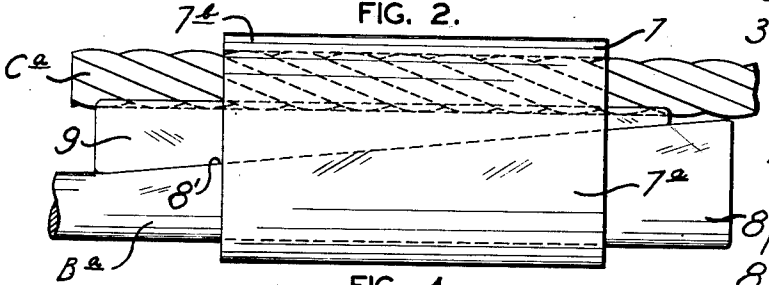


FIG. 4.

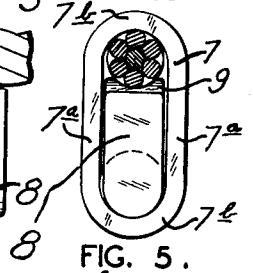


FIG. 5.

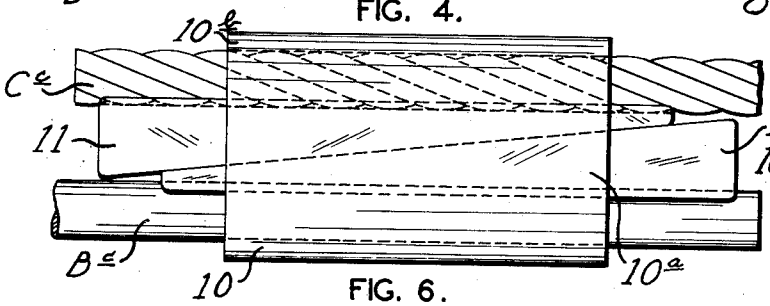


FIG. 6.

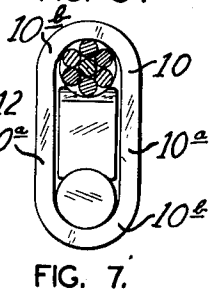


FIG. 7.

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EARTH ANCHOR

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3 Claims. (Cl. 24—136)

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This invention relates generally to earth anchors and more specifically to earth anchors that are provided with elongated anchor rods which are connected at ends thereof to the portions of the earth anchors that are buried in the ground and whose opposite end portions extend above the ground for attachment thereto of supporting guys, the predominant object of the invention being to provide an anchor rod for such an earth anchor which is provided with improved means for attaching a guy thereto.

Prior to this invention anchor rods of earth anchors of the type referred to above were provided with eyes at their upper ends through which end portions of the related guys were passed and secured in the form of loops so as to provide for attachment of the guys to the anchor rods. In many cases the forming of sharp bends in the guys was found to be objectionable in that said sharp bends tended eventually to weaken the guys at the locations of the bends, and when the guys were galvanized the protective coatings of the guys were frequently cracked because of such bending of the guys, the latter situation being particularly true when the guys were in the form of stranded cables.

The invention disclosed herein is intended to eliminate the above noted objections encountered in the use of anchor rods having eyes for attaching guys thereto, and this object is accomplished by providing the improved anchor rod of the present invention with guy-securing means which is of such construction and arangement that the guy is not bent, or otherwise distorted, by its attachment to the guy rod. Thus, because the guy is not subjected to bending, or other distortion, when it is secured to the anchor rod, there is no weakening of the guy at its point of attachment to the anchor rod, and in the case of a galvanized guy the protective coating of the guy will not be injured because of the attachment of the guy to the guy rod.

Fig. 1 is a sectional view showing an earth anchor installed in the ground, said earth anchor being provided with an improved anchor rod of the present invention, and said earth anchor and anchor rod being shown in elevation.

Fig. 2 is an enlarged, fragmentary elevational view of an anchor rod constructed and arranged in accordance with the present invention, and showing a portion of a guy attached thereto.

Fig. 3 is an end elevation of the anchor rod illustrated in Fig. 2, the guy being shown in section.

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Fig. 4 is a fragmentary, elevational view which illustrates a modified form of the invention.

Fig. 5 is an end elevation of the structure illustrated in Fig. 4, the guy being shown in section.

Fig. 6 is a fragmentary, elevational view which illustrates another modified form of the invention.

Fig. 7 is an end view of the structure illustrated in Fig. 6, the guy being shown in section.

In the drawings wherein are shown for purposes of illustration, merely, several embodiments of the invention, A designates in Fig. 1 a conventional earth anchor of the type which includes pivotally supported blades A^1 that are capable of being expanded from retracted positions to expanded positions. The anchor A is provided with an anchor rod B which is fixed to the earth anchor A by a nut R' in the usual and well known manner. In installing the earth anchor A in the ground the anchor rod B is applied thereto and the earth anchor is introduced into and is disposed at the bottom of a previously prepared hole H formed in the ground. The earth anchor is moved to the bottom of the hole H in a collapsed condition, that is with its blades contracted, the hole H being only of such diameter as to permit the collapsed earth anchor to pass therethrough. The earth anchor includes a blade spreader A^2 with which the blades A^1 contact, and said earth anchor includes also a head portion A^3 to which the blades are pivoted and which is slidable on the anchor rod B.

With the earth anchor disposed at the bottom of the hole H in a collapsed condition a suitable tamping bar is passed downwardly into the hole H and is employed to subject the head portion A^3 of the anchor to tamping blows. Such tamping blows drive the head portion of the earth anchor downwardly relative to the anchor rod B and with respect to the blade spreader A^2 with the result that the blades A^1 are expanded into undisturbed earth adjacent to the hole H, as is shown in Fig. 1. After the blades of the earth anchor have been fully expanded, the hole H is filled in and the upper portion of the anchor rod extends above the surface of the ground for attachment thereto of a guy C.

The anchor rod B has associated therewith at its upper end a clamping device which is designated generally by the reference character 1 in Figs. 1, 2, and 3. This clamping device comprises an elongated, housing 2 which is tapered longitudinally as is shown to good advantage in Fig. 2, said housing having spaced side walls 2a

and an arcuate wall portion 2b which joins said spaced side walls 2a (see Fig. 3) so as to give said housing a U-shaped cross-sectional shape. The end portions of the spaced side walls of the housing 2 remote from the arcuate wall 2b of said housing 2 are fixedly secured to the anchor rod B, preferably by means of heavy fillet welds 3, as is shown in Figs. 2 and 3. Because of such attachment of the housing 2 to the anchor rod, the side of said housing opposed to the arcuate wall 2b thereof is closed by a portion of said anchor rod and a tapered space 4 is provided within the housing between the portion of the anchor rod which closes said side of the housing and the arcuate wall 2b of said housing which is inclined relative to said portion of the anchor rod.

An end portion of a guy C which is to be attached to the anchor rod B through the instrumentality of the clamping device 1 is extended through the housing 2 of said clamping device wherein a part of said end portion of said guy is disposed in contact with the inner curved face of the arcuate wall 2b of said housing, as is shown in Fig. 2, and arranged in the space 4 within the housing 2 in interposed relation between such part of the guy and a corresponding part of the anchor rod B is an elongated wedge-shaped member 5. The face of the wedge-shaped member 5 that contacts with a portion of the anchor rod B is preferably, though not necessarily, flat, as is shown in Fig. 3, while the opposite face of said wedge-shaped member which contacts with a part of the guy is concave transversely of said face, as is also shown in Fig. 3, the curvature of said concave face corresponding approximately with the cross-sectional curvature of the guy portion with which it contacts. If desired, the concave face of the wedge-shaped member may be coated with emery dust 6, or other suitable grit, for increasing the gripping power of said concave face, such emery dust or other grit being retained in place with respect to said concave face by a coating of enamel or other suitable material which is applied to said face.

In the use of the form of the invention illustrated by Figs. 1, 2, and 3, the wedge-shaped member 5, coacting with the parts of the anchor rod and the guy with which opposed faces of said wedge-shaped member contact, very securely attaches the guy to the anchor rod in an obvious manner, it being plain that the holding power of the clamping device is increased in proportion to increased strain imposed on the guy because of the presence of the wedge-shaped member 5. Also, by attaching a guy to an anchor rod in accordance with the present invention all bending or other distortion of the guy in attaching it to the anchor rod is avoided whereby the objections to such method of attaching a guy to an anchor rod, which are pointed out above, are eliminated. Also, by preference, the opposite end portions of the arcuate wall 2b of the housing 2 of the clamping device 1 are curved outwardly, as is shown at 6 in Fig. 2, so as to remove from contact with the guy sharp edges which if permitted to contact with the guy might nick the surface of the guy.

In accordance with the form of the invention illustrated by Figs. 4 and 5, the housing 7 of the clamping device is not tapered longitudinally, as is the clamping device housing 2 of the device shown in Figs. 1, 2, and 3, but instead said housing 7 is of constant height, the housing 7 comprising spaced side walls 7a which are joined by

opposed arcuate end walls 7b (see Fig. 5). The anchor rod Ba is provided with a wedge-shaped end portion 8 which is extended through the housing 7 in contact with an arcuate wall 7b thereof, and a wedge-shaped member 9 is interposed between and in contact with an inclined face 8' of the wedge-shaped end portion 8 of the anchor rod Ba, and an adjacent part of a guy Ca which extends through the housing 7 in contact with the other arcuate wall 7b thereof. The structure of Figs. 4 and 5 functions in the same manner as the structure of Figs. 1, 2, and 3 to securely attach the guy Ca to the anchor rod Ba.

The housing 10 of the clamping device shown in Figs. 6 and 7 is made in accordance with the clamping device housing shown in Figs. 4 and 5; that is to say, said housing 10 is provided with spaced side walls 10a which are joined by opposed arcuate end walls 10b. An end portion of an anchor rod Bc is extended through the housing 10 in contact with the inner face of one of the arcuate walls 10b thereof, while an end portion of a guy Cc is extended through said housing in contact with the opposed arcuate end wall 10b of said housing, and a pair of coacting wedge-shaped members 11 and 12 are interposed between parts of said anchor rod and guy located within the housing 10 in gripping contact with said parts so as to securely attach the guy to the anchor rod.

We claim:

1. An earth anchor which includes an elongated anchor rod, and a clamping device associated with said anchor rod adjacent to an end thereof and adapted to attach a guy to said anchor rod, said clamping device comprising a longitudinally tapered housing of U-shaped cross-section having a wall portion in contact with which a portion of said guy is disposed, and wedge-shaped means located within said housing and interposed between a portion of said anchor rod and a portion of said guy in contact with said anchor rod and guy portions for forcing said portion of said guy into gripping engagement with the wall portion of said housing with which it contacts, a portion of said anchor rod forming a wall portion of said housing.

2. An earth anchor which includes an elongated anchor rod, and a clamping device associated with said anchor rod adjacent to an end thereof and adapted to attach a guy to said anchor rod, said clamping device comprising a longitudinally tapered housing of U-shaped cross-section which is secured to said anchor rod and having a wall portion in contact with which a portion of said guy is disposed, and wedge-shaped means located within said housing and interposed between a portion of said anchor rod and a portion of said guy in contact with said anchor rod and guy portions for forcing said portion of said guy into gripping engagement with the wall portion of said housing with which it contacts, said housing being so secured to said anchor rod that a portion of the anchor rod serves to close a side of said housing.

3. An earth anchor which includes an elongated anchor rod, and a clamping device associated with said anchor rod adjacent to an end thereof and adapted to attach a guy to said anchor rod, said clamping device comprising a longitudinally tapered housing of U-shaped cross-section which is welded to said anchor rod and having a wall portion in contact with which a portion of said guy is disposed, and wedge-shaped means located within said housing and interposed between a portion of said anchor rod

and a portion of said guy in contact with said anchor rod and guy portions for forcing said portion of said guy into gripping engagement with the wall portion of said housing with which it contacts, said housing being so secured to said anchor rod that a portion of the anchor rod serves to close a side of said housing.

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