United States Patent [19]

Easley

[11] **3,778,944**

[45] **Dec. 18, 1973**

[54] **EARTH ANCHOR**

[76] Inventor: **Challice F. Easley,** Rt. 4, Box 894, Millington, Tenn.

[22] Filed: **July 12, 1972**

[21] Appl. No.: **271,626**

[52] **U.S. Cl.** **52/159,** 52/166
[51] **Int. Cl.** **E02d 5/80**
[58] **Field of Search** 52/159, 166, 156, 52/153, 160, 162, 164, 155

[56] **References Cited**

UNITED STATES PATENTS

2,672,961	3/1954	Mead et al.	52/159
1,343,384	6/1920	Blackburn	52/156
766,100	7/1904	Carson	52/159
975,543	11/1910	Lichtenberg	52/159
1,239,820	9/1917	Peterson	52/159
1,742,162	12/1929	Birkenmaier	52/159
2,490,187	12/1949	Young	52/159

Primary Examiner—Price C. Far, Jr.
Attorney—John R. Walker

[57] **ABSTRACT**

An earth anchor for insertion into a prepared hole in the ground. The anchor includes a rod having the first of two substantially identical disks perpendicularly disposed and fixedly attached to the lower end thereof. The rod is freely received in an aperture provided in the second disk. The second disk contiguously engages the first disk. The aperture in the second disk is positioned a predetermined distance from the center thereof and the predetermined distance corresponds to the location to which the rod is attached to the first disk. Therefore, rotational movement of the rod is effective to align or misalign the two disks. The prepared hole preferably is slightly larger in diameter than are the diameters of the disks so that when the disks are aligned, they may be inserted into the hole. Subsequent application of rotational force to the rod drives one of the disks into the undistrubed earth defining the hole. The disks are locked one to the other after being misaligned by thrusting a lock pin into lock pin apertures provided in both the disks. Additional rotational force applied to the rod may now drive the other disk into the undistrubed earth.

3 Claims, 5 Drawing Figures

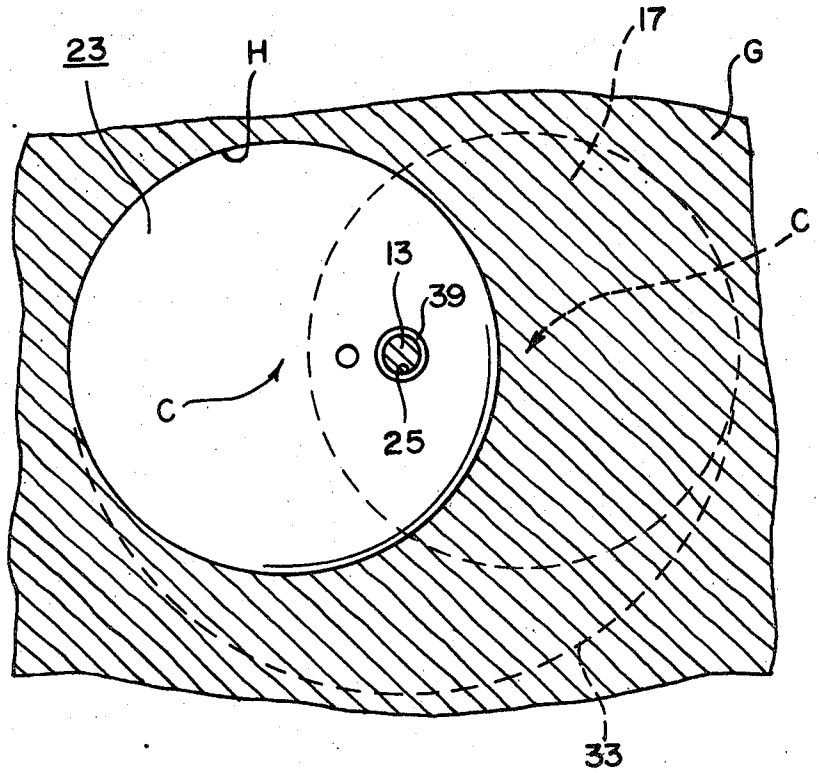


FIG. 1

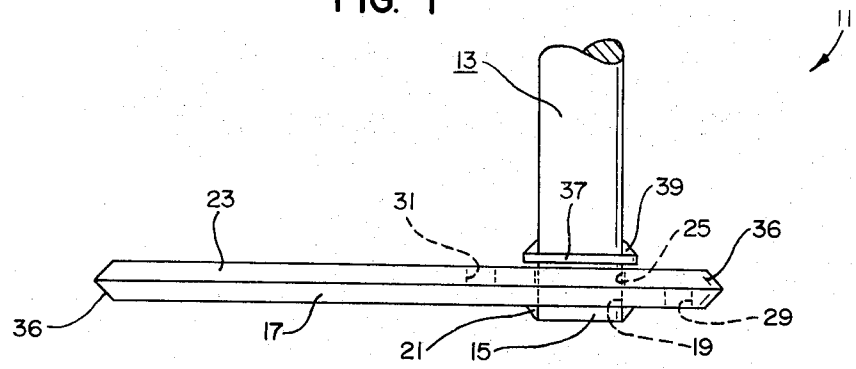


FIG. 2

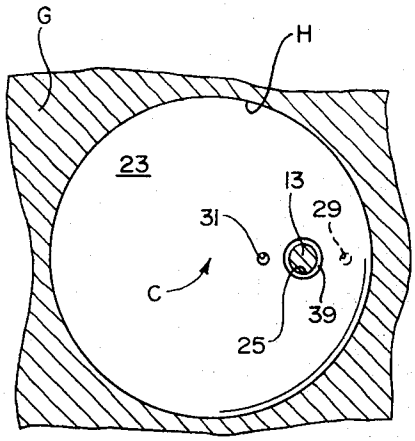


FIG. 3

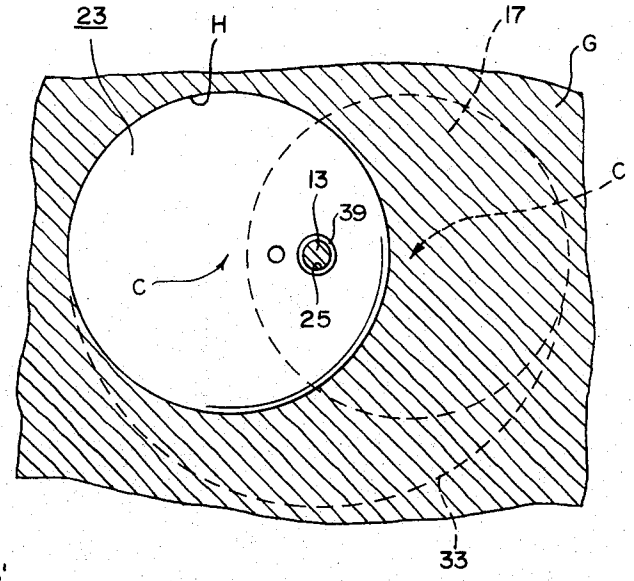


FIG. 4

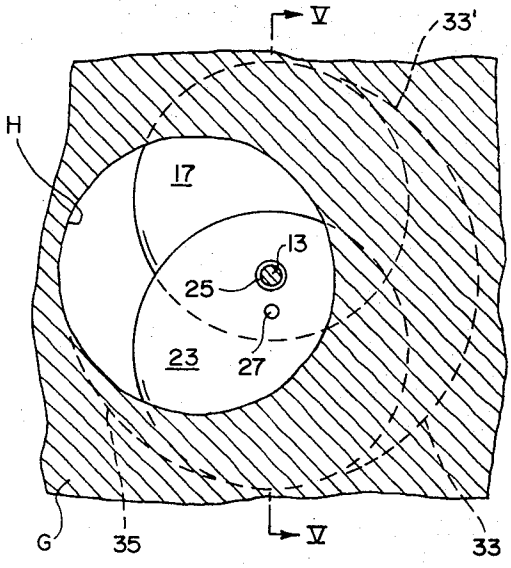
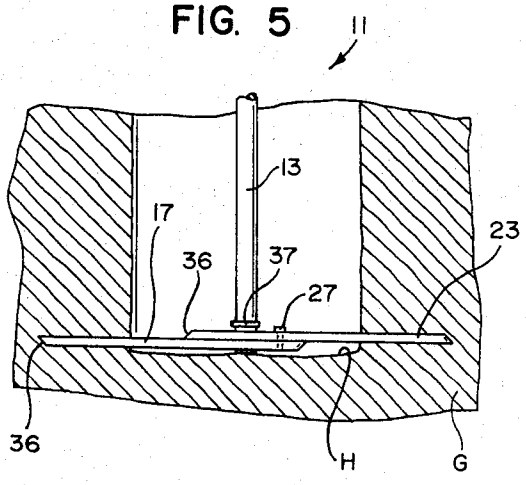


FIG. 5



EARTH ANCHOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to earth anchors and is particularly directed toward expandable earth anchors.

2. Description of the Prior Art

A preliminary patentability search revealed the following U. S. patents: Carson Pat. No. 766,100; Lichtenberg Pat. No. 975,543; Peterson Pat. No. 1,239,820; Birkenmaier Pat. No. 1,742,162; Young Pat. No. 2,490,187; and Mead et al. Pat. No. 2,672,961. None of the above patents show or suggest applicant's device.

SUMMARY OF THE INVENTION

The concept of the present invention is to provide an earth anchor for insertion into a prepared hole in the ground after which the anchor may be expanded outwardly into the undisturbed earth. The anchor includes a rod having the first of two substantially identical disks perpendicularly disposed and fixedly attached to the lower end thereof. The rod is freely received in an aperture provided in the second disk. The second disk contiguously engages the first disk. The aperture in the second disk is positioned a predetermined distance from the center thereof and the predetermined distance corresponds to the location to which the rod is attached to the first disk. Therefore, rotational movement of the rod is effective to rotate the first disk or to align or misalign the two disks. The prepared hole preferably is slightly larger in diameter than are the diameters of the disks so that when the disks are aligned, they may be inserted into the hole. Subsequent application of rotational force to the rod drives one of the disks into the undisturbed earth defining the hole. The disks are locked one to the other after being misaligned by thrusting a lock pin into lock pin apertures provided in both the disks. Additional rotational force applied to the rod may now drive the other disk into the undisturbed earth.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the lower end of the earth anchor of the present invention.

FIG. 2 is a top view of the earth anchor of the present invention shown as it would appear when placed in a prepared hole in the ground.

FIG. 3 is a view somewhat similar to FIG. 2 except one of the disks has been rotated into the undisturbed earth defining the hole.

FIG. 4 is a view somewhat similar to FIG. 3 except the other disk has been driven into the undisturbed earth defining the hole.

FIG. 5 is a sectional view taken as on the line V—V of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The earth anchor 11 of the present invention is intended for insertion into a prepared hole H in the ground G. The anchor 11 includes an elongated rodlike member 13 having a lower end 15 thereto. It should be understood that the upper end of the rodlike member 13 (not shown) includes suitable attachment means for attaching the anchor 11 to whatever structure that may be intended to be anchored, e. g., a mobile home or the like.

The anchor 11 also includes a first disk 17 having a diameter substantially equal to the diameter of the prepared hole H as clearly shown in FIG. 3 of the drawing, i. e., the hole H being slightly larger than the disk 17 to allow insertion thereof in a manner yet to be described. The plane of the first disk 17 is perpendicularly disposed with respect to the longitudinal axis of the rodlike member 13, as best shown in FIGS. 1 and 5 of the drawings. The lower end 15 of the rodlike member 13 is fixedly attached to the disk 17 at a location thereon which is a predetermined distance from the center C of the disk 17, i. e., member 13 is eccentric relative to disk 17. In this regard, I prefer that the disk 17 be provided with an aperture 19 for receiving the lower end 15, i. e., a portion of the lower end 15 protruding through the aperture 19 and the lower end 15 preferably being welded to the disk 17 as by the weld 21 and as clearly shown in FIG. 1 of the drawings.

The anchor 11 also includes a second disk 23 which is provided with an aperture 25 with the rodlike member 13 being freely received therethrough so that disk 23 may be freely rotated 360° relative to member 13. The aperture 25 is disposed a predetermined distance from the center C of the second disk 23 as clearly shown in FIG. 2 of the drawings. In other words, the disks 17,23 are substantially identical one with the other and may be aligned so that the aperture 25 is aligned with the aperture 19 whereby rotational movement of the upper end (not shown) of the rodlike member 13 is effective to align and misalign the first and second disks 17, 23 one with the other. In this regard, the first and second disks 17, 23 are inserted in the prepared hole H while aligned one with the other and subsequent application of rotational force in any well known manner to the rodlike member 13 is effective to drive at least one of the disks 17, 23 into the undisturbed earth defining the prepared hole H as the first and second disks 17, 23 are caused to become misaligned.

The anchor 11 preferably includes a lock pin 27 which locks the first and second disks 17, 23 one to the other. More specifically, the disk 17 is provided with a lock pin aperture 29 and the disk 23 is provided with a lock pin aperture 31 for selectively removably receiving the lock pin 27 in a manner yet to be described.

It should be observed that the lock pin aperture 29 is at a different location than the lock pin aperture 31; however, the lock pin apertures 29, 31 are positioned at equal distances from the rodline member 13 or more specifically, from the respective apertures 19, 25. Therefore, it should be apparent that misaligning the disks 17, 23 is a manner previously described and at a predetermined degree, e. g., 180° or the like, is effective to align the lock pin apertures 29, 31 one with the other, as shown in FIGS. 4 and 5 of the drawings.

Subsequent to aligning the apertures 29, 31 the lock pin 27 may be placed therethrough and is effective to lock the disk 17 to the disk 23. Therefore, subsequent application of additional rotational force to the rodlike member 13 is effective to drive the other one of the disks 17, 23 into the undisturbed earth defining the prepared hole, in a manner similar to that depicted in FIGS. 4 and 5 of the drawings.

In other words, FIG. 2 shows the disks being perfectly aligned so that only the disk 23 is visible when viewed from the top. Additionally, FIG. 3 shows the major portion of the disk 17 engaged with the undisturbed earth

defining the hole H while the disk 23 remains substantially in the same position as depicted in FIG. 2. It should be pointed out that the disk 17 generates a generatrix 33 depicted by the broken line in FIG. 3 of the drawings as it is driven into the undisturbed earth.

FIG. 4 shows the major portion of not only the disk 17 but also the disk 23 engaging the undisturbed earth defining the hole H. It should be pointed out that the disk 17 generates the remainder of the generatrix character referenced by the numeral 33' while the disk 23 generates the generatrix 35 as it is driven into the undisturbed earth.

In order to facilitate penetration through the undisturbed earth, the disks 17, 23 have the peripheral edges thereof beveled as at 36 and clearly shown in FIGS. 1 and 5 of the drawings.

Additionally, in order to prevent axial movement of the disk 23 along the rodlike member 13, the anchor 11 preferably includes means such as a collar or washer 37 which is fixedly attached as by the weld 39 to the rodlike member 13. Therefore, the disk 23 will be held substantially contiguous with the disk 17 regardless of the degrees of misalignment therebetween. It should also be mentioned that the depth of the hole H may be several feet; therefore, placing the lockpin 27 through the apertures 29, 31 directly by a workman would be rather difficult. Accordingly, various well known means may be employed for placing the lock pin 27 through the apertures 29, 31. For example, a magnet (not shown) might be attached to the end of a pole (not shown) and the lock pin 27, being attracted to the magnet, may then easily be guided into the apertures 29, 31 by means of the pole or the lock pin 27 might be fixed to the plate 23 by a leaf spring (not shown) which urges the lock pin 27 downwardly whereby alignment of the aperture 29 with the aperture 31 is effective to allow the spring to drive the lock pin 27 therethrough.

Although the invention has been described and illustrated with respect to a preferred embodiment thereof, it is to be understood that it is not to be so limited since changes and modifications may be made therein which are within the full intended scope of the invention.

I claim:

1. An earth anchor for insertion into a prepared hole in the ground, said anchor comprising an elongated rodlike member having a lower end thereto, a first disk having a diameter substantially equal to the diameter of the prepared hole, the plane of said first disk being perpendicularly disposed with respect to the longitudinal axis of said rodlike member, said rodlike member having said lower end thereof fixedly attached to said disk at a location thereon which is a predetermined distance from the center thereof for concurrent movement of said disk with said rodlike member, a second disk contiguously engaging said first disk and being substantially identical therewith, said second disk having an aperture provided therein with said rodlike member being freely received therethrough, said aperture being disposed a predetermined distance from the center of said second disk with rotational movement of said upper end of said rodlike member being effective to align and misalign said first and second disks one with the other, said first and second disks having lock pin apertures positioned equal distance from said rodlike member so that when said first and second disks are misaligned a predetermined amount said lock pin apertures are aligned, and a lock pin, said first and second disks being adapted to be inserted in the prepared hole while aligned one with the other and subsequent application of rotational force to said rodlike member being effective to drive said first disk into the undisturbed earth defining the prepared hole as said first and second disks are caused to become misaligned and said lock pin apertures are caused to become aligned whereby said lock pin is placed therethrough to lock said first and second disks together to prevent movement therebetween and subsequent application of rotational force to said rodlike member being effective to drive said second disk into the undisturbed earth defining the prepared hole.

2. The earth anchor of claim 1 in which is included means fixedly attached to said rodlike member for preventing axial movement of said disk along said rodlike member.

3. The earth anchor of claim 2 in which the perimeters of said first and second disks are beveled to knifelike edges to facilitate penetration through the undisturbed earth.

* * * * *