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C. E. HANDEL

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EARTH ANCHOR

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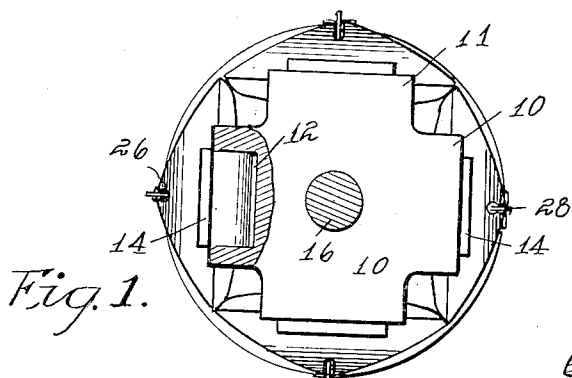
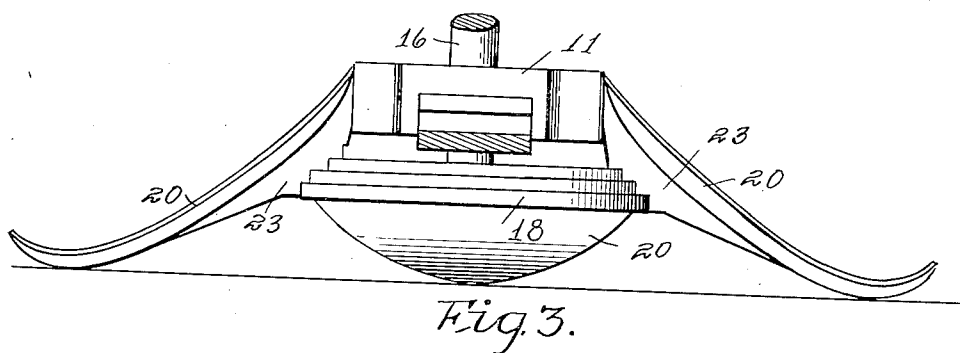


Fig. 4.

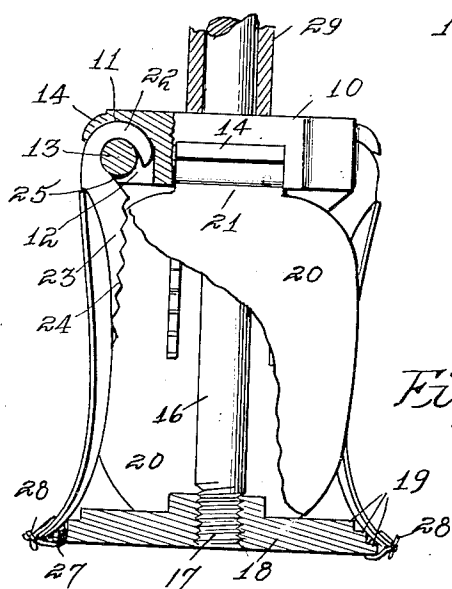
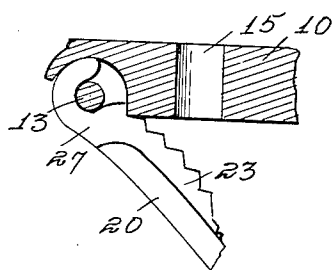


Fig. 2.

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2 Claims. (Cl. 189—92)

My invention relates to that class of earth anchors which are now commonly employed in anchoring guy wires for telephone poles and high-way guard cables and the like which are designed to be inserted in a suitable hole formed in the earth, when in a collapsed position, and expanded to anchoring position by tension being applied to a rod provided for that purpose, after which the hole is filled with dirt.

The object of my invention is to provide an anchor of this class of simple, durable and inexpensive construction, made of a minimum number of parts most of which may be formed complete of cast metal, such as iron, in the casting process, and which may be assembled with a comparatively small amount of machine work.

More specifically, it is the object of my invention to provide in that type of earth anchor having a series of pivoted wings which are adapted to be folded to a collapsed position to occupy a minimum space transversely so that the anchor may be inserted in a relatively small hole bored in the earth and when expanded will offer a maximum of wing surface for earth engaging purposes, improved means for securing the tips of the wings in a folded position whereby the securing means may be easily broken as the wings are moved to their unfolded position.

A further object is to provide in an earth anchor of the type above described, an improved means for hinging the wings to the anchor head wherein the hammering strains applied to the anchor head will not be applied directly to the pivot of the hinge member but rather to the pivoted end of the wing, to thereby relieve the pivot member of said strains, so that a comparatively light head member may be provided for the anchoring device.

A further object is to provide in an anchor device of the type employing a series of pivoted wings and a spreader plate for spreading and locking the wings, together with a rod connecting the spreader plate with the head, improved means for hinging the wings to the head whereby the wing will be locked in position so that it cannot be removed after the spreader plate and rod have been assembled.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a plan view of my improved earth anchor, the anchor rod being in section.

Figure 2 is a side elevation of the same, a portion of which is broken away and shown in section, illustrating the anchor in its folded position.

Figure 3 is a side elevation of the anchor in its unfolded and operative position, the front anchor wing being removed.

Figure 4 is a detail sectional view of a portion of the anchor head and a portion of one of the wings, showing the position that the wing is placed in when locking the wing to position on the head.

In the drawing I have used the reference numeral 10 to indicate the anchor head the side edges of which are provided with laterally extending lugs 11, each of the lugs 11 having in its under surface a socket 12, the bottom end of the sockets being open. A pivot pin 13 is mounted through each of said sockets, said pivot pins being parallel with the outer edges of the lugs 11. The outer edge of each of the lugs 11 is provided with an outwardly extending and curved flange 14, the lower edge of the flange 14 terminating a slight distance above the center of the pivot pin 13 so that a concaved surface is formed to incline downwardly and outwardly from a vertical plane extending through the center of the pivot pin 13 for receiving the top end of hook devices formed on the spreader wings hereinafter to be described, as illustrated in Figures 2 and 4.

The center of the head member is provided with an opening 15 for slidably supporting an anchor rod 16, the lower end of which is provided with a screw threaded portion 17. A spreader and anchor plate 18 is secured to said screw threaded portion, said anchor plate being preferably circular and having its periphery provided with a series of steps 19, the diameter of the spreader and anchor plate 18 being slightly greater than the width of the head 11.

I have also provided a series of anchor wings 20, each of which has a contracting portion 21 at its upper end terminating in a hook portion 22. The inner face of the body portion of the wing 20 is also provided with vertical and spaced ribs 23, the inner edge of each of the said ribs having notches 24 designed to engage the steps 19 of the plate 18 when the wings 20 are in their unfolded position, as illustrated in Figure 3, for locking the wings in said folded position. The upper ends of the ribs 23 terminate in inclined portions 25 which incline downwardly and inwardly when the wings are in the folded position illustrated in Figure 2, the free end of the hook

portion 22 terminating in a portion substantially parallel with the inclined edges 25, the parts being so proportioned and arranged that the hook member 22 may be caused to enter the corresponding socket 12 only when the wing 20 is in the position illustrated in Figure 4, at which time the body of the said wing 20 will intersect the longitudinal axis of the opening 15, this also being the position in which the unlocking will take place. It will therefore be seen that if the hook 22 is placed in the socket 12 in the manner illustrated in Figure 4, and the lower end of the body 20 is swung to a vertical position or to an outwardly and substantially horizontal position as illustrated in Figure 3, then the wing will be locked into said head and at the same time permit it to swing freely from its folded position to its unfolded position.

In actual assembling of the wings 20 I usually place the head 15 in an upside down position, after which the wings may be hooked in position and each moved to an unfolded or horizontal position after being assembled, thereby permitting another wing to be assembled. Otherwise, it will readily be seen that none of the wings can be removed while they are in their folded position. The rod 16 and the spreader plate 18 may then be assembled and the free end of the rod 16 placed in the opening 15, after which the assembled unit may be moved to its upright position illustrated in Figure 2, with the free ends of the wings 20 resting against the periphery of the spreader plate 18. The free end of each of the wings 20 is provided with an opening 26, while the spreader plate 18 is provided with an opening 27 for each of the openings 26, and in alignment therewith. A wire 28 may then be passed through the corresponding openings 26 and 27 and tied. The device is then installed ready for use. The wires 28 serve to hold the anchor plate 18 in its proper elevated position relative to the wings 20 such as are required at the time the anchor is placed in a suitable hole in the ground surface. After the anchor has been placed in the hole, then a suitable tool, such as the pipe 29, may be placed over the upper end of the rod 16 and the head tamped or hammered by said pipe by elevating and dropping the same. This hammering action will cause the wires 28 to be broken inasmuch as the plate 18 is resting on the bottom of the hole. Further tamping action with the pipe 29 will cause the wings 20 to enter the ground surface and move to the position illustrated in Figure 3, after which the steps of the plate 18 will rest in the notches 23 and the wings will be locked in their operative position.

Thus, it will be seen I have provided an earth

anchor of simple, durable and inexpensive construction having improved means for hinging the wings to the head, wherein the strains applied to the head by the tamping action will be applied to the top portions of the hooks 22 and thence to the wings 20, without being applied to the pivot members 13, the pivot 13 being small enough to permit a certain amount of space between the pivot and the hook when downward pressure is being applied to the hook.

I claim as my invention:

1. An improved earth anchor comprising a head member having a series of sockets in its under surface, a pivot pin in each socket, a series of wings, each formed with a circular hook portion to enter corresponding sockets and to be pivotally placed and secured on said pivot pins as the wings are moved from a downwardly and inwardly inclined position to a substantially vertical position with the upper surfaces of the hook portions engaging the under surfaces of the sockets, each socket having a circular concaved upper surface inclined downwardly and outwardly from a vertical plane intersecting the longitudinal center of the corresponding pivot pin, whereby the circular surface of the upper end of said hook portion will engage and enter said concaved surfaces to support the upper end of the hook and the wing to which it is connected, against lateral movement, and to relieve the pivot pins of driving strains applied to the upper end of said head.

2. An improved earth anchor comprising a head member, a spreader plate, a rod connecting said spreader plate and passing through said head, said head having a series of sockets in its under surface a pivot pin in each socket, and a series of wings each formed with a hook portion to enter corresponding sockets and to be pivotally placed and secured on said pivots as the wing is moved from a downwardly and inwardly inclined position intersecting the position of said rod when mounted in said head, to a substantially vertical position with the upper surface of the hook portion engaging the under surface of the socket, each socket having a circular concaved upper surface inclined downwardly and outwardly from a vertical plane intersecting the longitudinal center of the corresponding pivot pin, whereby the circular surface of the upper end of said hook portion will engage and enter said concaved surfaces to support the upper end of the hook and the wing to which it is connected, against lateral movement, and to relieve the pivot pins of driving strains applied to the upper end of said head.

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