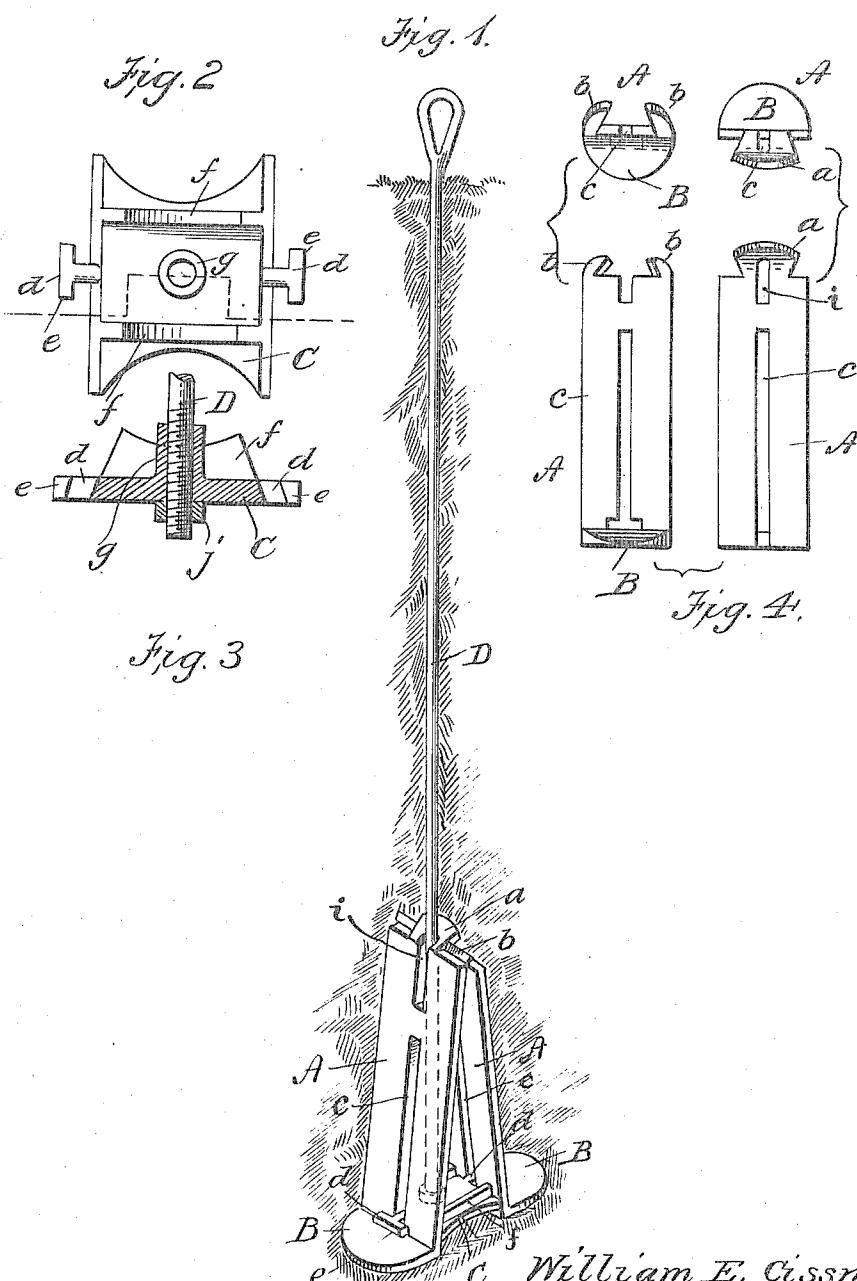


No. 817,044.

PATENTED APR. 3, 1906.

W. E. CISSNA.  
LAND ANCHOR.  
APPLICATION FILED AUG. 29, 1905.

2 SHEETS—SHEET 1.



Inventor:

C. William E. Cissna.

Witnesses:  
Anthony W. Crossley  
S. S. Surket

By Louis Pagger, Sec.  
Attorneys

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2 SHEETS—SHEET 2.

Fig. 6

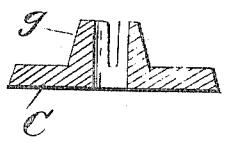
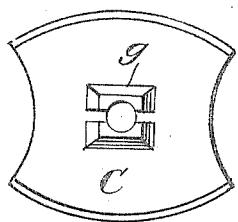


Fig. 7.

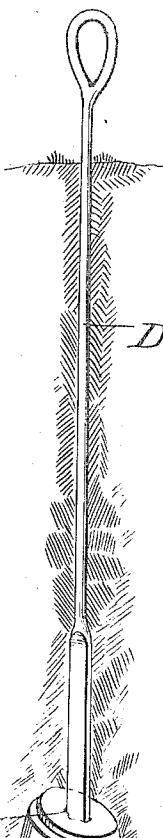


Fig. 8.

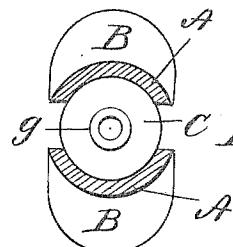
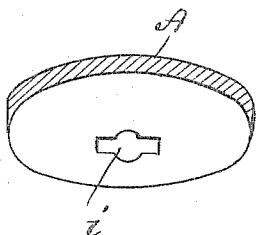


Fig. 5.

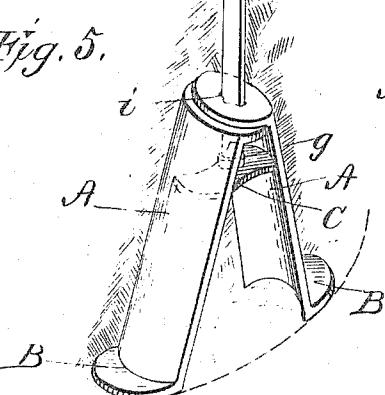
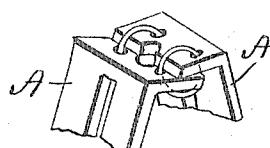


Fig. 10.



Inventor:

William E. Cissna

Witnesses:

Arthur W. Bradley,  
S. S. Burket

By John Baggett Lee,  
Attorneys

# UNITED STATES PATENT OFFICE.

WILLIAM E. CISSNA, OF MOUNT VERNON, INDIANA.

## LAND-ANCHOR.

No. 817,044.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed August 29, 1905. Serial No. 276,300.

To all whom it may concern:

Be it known that I, WILLIAM E. CISSNA, a citizen of the United States, residing at Mount Vernon, in the county of Posey and State of Indiana, have invented new and useful Improvements in Land-Anchors, of which the following is a specification.

This invention has relation to land-anchors for fixing and maintaining an object in place in contradistinction to marine anchors for use in connection with ships to hold them in place.

The chief difficulty with land-anchors heretofore has been to operate the arms so that the flukes would take sufficiently secure hold to keep the anchor from being pulled up. A "sufficiently secure hold" in a land-anchor is one that will allow the anchor to be subjected to the utmost strain that it is known to be capable of without breaking, the hold of the flukes under these conditions being perfectly safe, and safe, for that matter, if the strain on the anchor should go much beyond the known danger-point to itself.

By long and careful research and experiment I have been able to produce an anchor meeting the foregoing requirements, and this I do by a construction and mode of operation hereinafter fully set forth, reference being had to the annexed drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of one form of means in which my invention is embodied, showing the arms as closed and the anchor in position in the earth ready to have the draft-rod drawn upon to spread the arms and give the flukes an initial hold. Fig. 2 is a plan of the center piece shown in Fig. 1. Fig. 3 is a sectional detail view of the same. Fig. 4 is a detail view relating to the hook-and-eye connection of the arms at the top as shown in Fig. 1. Fig. 5 is a perspective view of a modified form of means from that shown in Fig. 1 and showing the invention in anchored position in the earth. Fig. 6 is a plan of the center piece shown in Fig. 5. Fig. 7 is a sectional detail view of the same. Fig. 8 is an under side view of the upper bent end of one of the arms A. Fig. 9 is a plan of a modified form of center piece from that shown in Fig. 5. Fig. 10 is a plan of a modified form of means for hingedly connecting the upper ends of the arms.

Similar letters of reference designate similar parts wherever they occur.

Heretofore the forms of earth-anchors

most generally employed, so far as I have been able to learn, have been those constructed on the principle of augers for giving the flukes of the arms a hold in the ground, or such as approach the form of scoops, which slide into a hole in the earth and are supposed to be turned over. Whether they have been of the form mentioned or of other construction they have been open to failure because the flukes do not take safe hold and the anchor pulls up when subjected to the strain put upon it in desired or necessary work. By my construction the faults mentioned are overcome and the difficulties removed, and this is accomplished by means and methods as will presently appear.

Of course it is the object of these improvements from what has been previously stated to provide an earth-anchor that only will not pull up, but one in which the greater the strain and draft upon it the greater the surface of earth the anchor has to pull against and displace. By actual experiment it has been found that this anchor will not only operate with entire safety in solid dry earth, but that it may be employed in marshy or wet soil to resist quite as much strain as the old and well-known "dead-man."

The anchor is composed of but four principal parts—namely, the two arms A, to which are connected the flukes or holding means B; the center piece C between the arms upon which the draft is made and which by reason of the difficulty of spreading the arms resists displacement, and the draft-rod D, connected at one end to the center piece and arranged to pull in a direction tending to spread the arms.

While it is not proposed to limit this invention to particular size, form, or material of which it is made, it may be remarked for the purpose of giving artisans a clear conception of the invention that in the present case the machine for the most part is composed of steel. The arms A are constructed of different widths, ranging from six inches to one foot in width. The flukes B are made of width corresponding to the arms and taper somewhat from base to edge. In Fig. 1 the form of the flukes in top view is half-round or half-moon shape. The arms are connected at their tops by any means that will hold them there in hinging or pivoted order and so that their lower ends may swing outward or apart to the extent of allowing the arms to stand in a substantially straight line. The anchor

here shown may further be supposed to be six feet long, have arms two feet long nine inches wide and one inch thick, flukes or toes five inches long, and center piece six inches long, with a width the same as the arms. This anchor makes a total width of eighteen inches. However, it may be repeated that the size and proportion of parts will depend upon the requirements of the machine, and these are 10 easily ascertainable from the foregoing.

In Fig. 1 the arms A are shown as having a sort of hook-and-eye connection—that is, one arm has at its top a dovetail projection a, through which a hole or eye is formed bent 15 inwardly from its center, and the top of the opposite arm is provided at its sides with two inwardly - bent hooks b b, adapted to catch over the top of the first - mentioned arm at the sides of the eye projection and 20 rest thereon. Each arm is slotted longitudinally, as at c, for the reception of the shanks of the lugs d, formed on the sides of the center piece. The shanks d have transversely-arranged heads e formed on their outer ends, 25 which provides for a kind of "buttoning" of the shanks in the slots and necessitates the turning of the center piece at an angle to the arms in order to get the shanks d into the slots c. Transverse ribs f are formed on the top 30 of the center piece, and a sort of thimble g extends up from the hole through which the draft-rod passes. The former are for strengthening purposes and the latter for the same and as a guide.

35 The parts being constructed as so far described they may be assembled as shown in Fig. 1, where they are shown as set in the earth to any suitable depth and the ground around the arms solidly tamped. By drawing 40 upward on rod D there will be a tendency to raise the center piece C between the arms, swing the flukes or holding means outwardly on the arc of a circle, as indicated in Fig. 5, and cause the flukes to fasten themselves in the earth. This displacement of 45 the arms and their connections, it will be understood, will be resisted by the earth over the arms and all that may be influenced by it through the tendency of adhesion and other 50 properties and will be most powerful. Friction alone operating upon the arms and center piece in opposition to their displacement by an upward pull on the rod D has been found sufficient almost to render safe the 55 anchorage of the flukes to the entire strength of the machine, and where the first-mentioned resistances to the displacement of the arms are added to these last-mentioned it can be readily understood and appreciated that 60 the anchor once properly set cannot be pulled up through use.

In primarily setting the anchor a hole will be dug just large enough to allow the anchor to pass down, with all of the parts assembled 65 as shown in Fig. 1. The upper ends of the

arms having the hook-and-eye connection already described and as shown in the last-mentioned figure, the rod D will be passed through the eye i at the top of the arms, thence to and through the thimbled hole g in 70 the center of the center piece, and a nut j may be turned on its threaded lower end. A string or piece of wire (not shown) may be secured to the top of the arms in letting them down into the hole in the earth. This string 75 will support the arms and keep them from spreading while the center piece is being put in place and other matters are being arranged.

In my experiments I have discovered a 80 greatly-improved method of setting anchors which is applicable not only to this invention, but others of a cognate nature.

The idea of securing and holding the anchor by spreading the arms and making the 85 flukes take into the earth through the intervention of the center piece gives rise to many different forms of means that may be used. For instance, the arms may be given the form of a segment of a cylinder, as shown in 90 Fig. 5, in which case the sides of the center piece may be as represented in Fig. 6 or it may be round. Again, the arms may be made as one longer than the other. Still again, the arms may be made with flanges at the top, so 95 that one flange may overlap the other and a lifting - rod be passed through both. The flukes may be of varying shape, with advantages under different circumstances; but it is unnecessary to explain in detail all of the 100 changes that may be made in the many different forms and arrangement of parts. These are obvious and within the scope of a skilled mechanician and would not constitute a departure from the nature and spirit of this invention, which, being broadly stated, consists of the two arms of any suitable form, size, &c., provided with flukes, catches, toes, or other means to make fast in the earth, rocks, &c., and a center piece, being a device of any suitable nature for spreading the arms and the flukes carried by them. The rod D can be threaded for; say, three and one-half inches from the extreme lower end upward, so that one tap or nut may be screwed on the end below the center piece and another tap on the rod just above the center piece. By this construction the anchor may be released from its hold in the ground by striking the top of the rod D with a hammer or the like and driving 110 the center piece down and drawing the arms together.

I claim—

1. In an earth-anchor of the character described, the combination of separable arms 115 having the upper ends overlapping provided with flukes, with a center piece to operate between the flukes to separate them and means for operating the center piece.

2. In an earth-anchor of the character de- 120

scribed, the combination of arms pivotally connected and overlapping at their upper ends, with a center piece for operating between the arms, and means for operating the 5 center piece.

3. An earth-anchor, consisting of a pair of arms pivotally connected and overlapping at their upper ends, and provided with flukes on their lower ends; combined with means for 10 separating and bringing together their lower ends.

4. The combination, of the arms pivotedly connected and overlapping at their upper ends, with a center piece operatively arranged between the arms. 15

5. The combination, of the arms pivotedly connected and overlapping at their upper ends, and provided with flukes on their lower ends, with a center piece operatively 20 arranged between the arms, and means for operating the center piece.

6. The combination, with the arms, each slotted vertically, of the center piece provided on its opposite sides with means to engage the said slots, the said arms being pivoted together at their upper ends, and a vertically-movable 25 rod engaging the said center piece.

7. The combination, with the arms each slotted vertically, of the center piece provided on its opposite sides with shanks and transversely-arranged heads to engage the said slots, the said arms being pivoted together at their upper ends, and a vertically-movable rod engaging the said center piece. 30

35 8. The combination, with the arms having flukes at their lower ends, each slotted ver-

tically, of the center piece provided on its opposite sides with means to engage the said slots, the said arms being pivoted together at their upper ends and provided with eyes in 40 their pivotal parts and a vertically-movable rod engaging the said center piece and extending upward between the arms and through the said eyes.

9. The combination, with the arms pivoted together at their upper ends and provided with eyes in their pivotal parts, of a center piece arranged between the arms and provided at its center with a hole, a thimble-like projection extending upward around the 50 hole, and a vertically-movable rod engaging the said center piece in said hole and extending upward through the thimble-like projection between the arms and through the eyes. 45

10. The combination, with the arms having their upper ends overlapping, provided with eyes, and pivoted together, and outwardly-extending flukes on their lower ends, of a center piece arranged between the arms and provided at its center with a hole, a 60 thimble - like projection extended upward around the hole, and a vertically - movable rod engaging the said center piece in said hole and extending upward through the said thimble-like projection between the arms and 65 through the eyes.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

WILLIAM E. CISSNA.

Witnesses:

E. K. RIDENOUR,  
NEALE CAVANAH.