

J. BLACKBURN.
EARTH ANCHOR.
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1,041,233.

Patented Oct. 15, 1912.

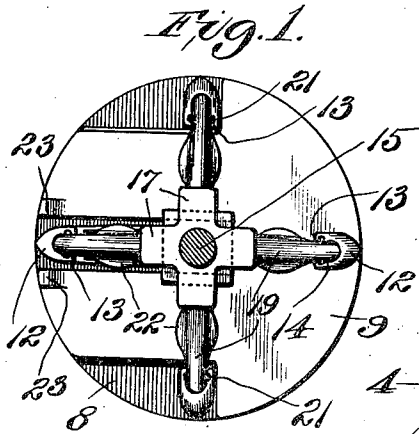


Fig. 2.

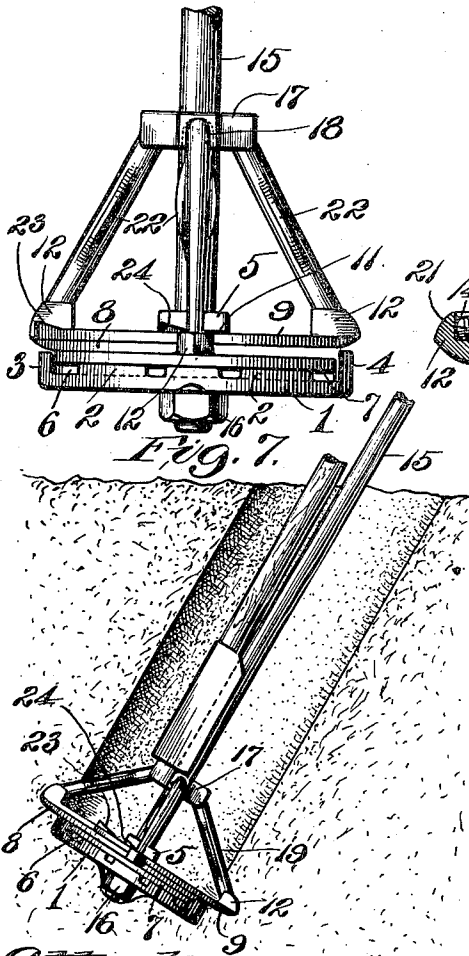


Fig. 3.

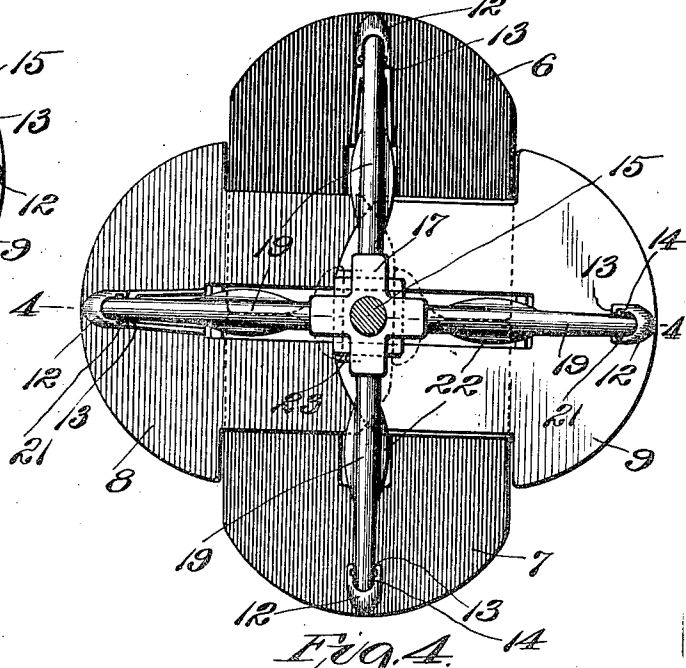


Fig. 4.

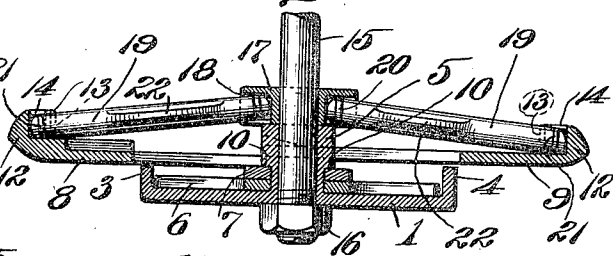


Fig. 5.

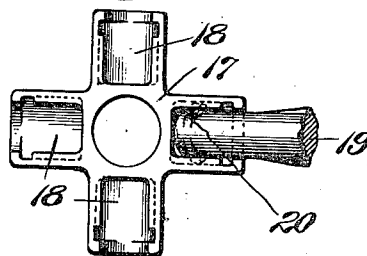
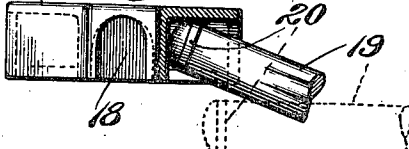


Fig. 6.



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UNITED STATES PATENT OFFICE.

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EARTH-ANCHOR.

1,041,233.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JASPER BLACKBURN, a citizen of the United States, and resident of Kirkwood, St. Louis county, Missouri, have invented certain new and useful Improvements in Earth-Anchors, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in earth anchors and is especially directed to improvements in that class of earth anchors having a crown, in the form of a plate, and flukes supported over the crown and arranged to move laterally relative each other, the object of my invention being to generally improve the construction of the anchor proper, consisting of the crown and the flukes, and to construct a novel means for the lateral movements of the flukes.

With the above purposes in view my invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated by the accompanying drawings, in which—

Figure 1 is a plan of the complete anchor, the shank being shown in section; Fig. 2 is an elevation of the complete anchor, the upper end of the shank being broken away; Fig. 3 is a plan of the complete anchor with the flukes shown extended, the shank being shown in section; Fig. 4 is a transverse, sectional elevation taken on the indicated line 4—4 of Fig. 3; Fig. 5 is an inverted plan of the spider forming a part of the fluke spreading means and shows a portion only of one of the spreading rods; Fig. 6 is an elevation of the spider and a portion of one of the spreading rods, showing a portion of the spider in section; Fig. 7 illustrates my improved anchor in a partially spread condition showing a means for conveniently and rapidly accomplishing the spreading.

Referring by numerals to the accompanying drawings: 1 designates the crown or base plate, the body portion of which is preferably disk-shape and arranged adjacent the margin of the crown 1 are the fluke supports and guides 2, 3 and 4. Centrally disposed relative the crown is an integral post 5 which together with the crown proper is centrally apertured.

6, 7, 8 and 9 designate flukes, the outer

margin of each of which is segmental, and each of the flukes is longitudinally slotted on a median line so that they may have movements relative the post 5 and each of the flukes at its outer end is reduced in thickness so that it may be more readily forced into the earth. The fluke 6, which is the lowermost one, is arranged to slide directly upon the upper face of the crown 1, the slot therein permitting its movement relative the central post and its side margins are straight and substantially parallel so that the fluke will be guided between the guides 3 and 4. The fluke 7 is of substantially the same conformation as the fluke 6, above described, and is arranged for movement over the fluke 6, is guided by the guides 3 and 4 and the post 5, and is arranged to slide over the support 2, the only function of this support 2 is to cause the fluke 7 to be held in a substantially parallel plane relative the crown, the support 2 being of a height about equal to the thickness of the fluke 6. The post 5 is provided with shoulders 10 which overlie the upper portion of the fluke 7 at its inner end so as to guide the fluke in a plane parallel with the body of the crown. The fluke 8 at its outer end is shaped identically like the flukes 6 and 7, but its innermost half comprises two spaced-apart and substantially rectangular shaped portions, the slot or space between which serves as a guide together with the post 5 to cause the fluke 8 to be moved laterally in a straight line. The guide 3 which serves to engage the flukes 6 and 7 to cause them together with their slots and the post 5 to be moved in a straight line also acts as a support for the fluke 8, the combined guide and support 3 being of a height approximately equal to the combined thickness of the flukes 6 and 7. The fluke 9 generally is of identical construction with the fluke 8 and is arranged for movement over the fluke 8 and the guide 4, the guide 4 being of a height approximately equal to the thickness of the three flukes 6, 7 and 8. The inner ends of the fluke 8, as shown by dotted lines in Fig. 3, are substantially straight so that they will butt against the inner straight face of the guide 4. The inner end of the fluke 9 is segmental so as to conform with the crown 1. Carried by the post 5, arranged at right angles to the shoulders 10 and in planes above the shoulders 10 are the shoulders 11 which serve to cause the fluke 9 to be moved

in a plane substantially parallel with the crown, the fluke 8 being thus guided by the fluke 9.

Formed integral with each of the flukes and located on a median line of the fluke adjacent its periphery is a socket 12, each of which is open at its inner end and also open at its top. The outer end of each of the sockets is pointed so as to offer as little resistance as possible to the movement of the socket into the earth when it is desired to expand the anchor. On the inner face of each of the side walls of each of the sockets 12 are the ribs 13 which project inwardly beyond the faces of the side walls and are disposed vertically adjacent the inner end of each socket, and each of the sockets is provided with a horizontally disposed rib 14 which project inwardly beyond the faces of the walls and are located adjacent the upper margins of said walls.

15 designates the shank of the anchor which is preferably a cylindrical rod, the lowermost end of which is inserted through the post 5 and the crown 1, and is provided with a nut 16 at its lower end so as to prevent movement of the shank upwardly relative to the crown. Embracing the shank 15 is a spider 17 which is provided with a series of sockets 18 constructed in a manner similar to the sockets 12. The sockets 12 and 18 are connected by means of rods 19, each of which is provided at each of its ends with laterally projecting ribs 20 and 21, the ribs 20 arranged to hold the rods 19 in the sockets 18 and the ribs 21 arranged to hold the rods in the sockets 12. The body portion of each of the rods is substantially oval shape in cross section, its dimensions being greatest from top to bottom and on the side faces of each rod are the integral strengthening ribs 22. By this construction the rod has a maximum of strength and is constructed of a minimum of material. By reason of the rod being constructed with its greatest dimensions up and down there is sufficient body to withstand the strains incident to the impacting of the spider 17, when setting the anchor, and by reason of the ribs 22 the rod is of sufficient strength to stand torsional strain incident to the tendency of the entire anchor to twist or turn, when being set.

As a means for limiting the outward movement of the fluke 9 so that it may always be kept within the bounds of its guides the fluke 9 is provided with integral, inclined planes 23 and the shoulder 11 is chamfered at 24 to receive said inclined planes. As shown in dotted lines in Fig. 4, the fluke 9 is extended and the inclined plane is brought to a position to engage with the chamfered portion 24 of the shoulder 11 and thus prevented from a further outward movement. By reason of all of the flukes

being connected with the rods 19, this inclined plane limits the outward movements of all of the flukes.

In the practical operation of my improved anchor, and as is common with anchors of this class, a hole is formed in the earth of a diameter approximating that of the crown of my anchor and the anchor proper, including the shank fixed to the crown as described, is introduced into said hole.

In order to expand the flukes a tamping instrument is employed and the spider 17 is impacted and, by reason of the connection between said spider and the flukes, each fluke is forced outwardly in the earth surrounding the hole.

In Fig. 3 the anchor is shown in a fully extended condition. It is to be observed that there is a considerable area of anchor and that when the device is in this condition the hole is filled up, the earth being tamped solidly over the anchor.

One of the leading and distinctive features of my invention is the means for extending the flukes and comprises a spider having arms with sockets therein, the sockets on each fluke and connecting rods having ribs at each of its ends. This means practically forms a connection, between the spider and the flukes, having ball and socket connections. By means of this connection the spider may be connected with the flukes by simply placing the head, at each end of the rod, into the socket, the ribs on the rod and the ribs formed in the sockets serving to hold the ribs in said sockets. In this manner the rods are connected to said spider and the flukes without the employment of rivets, bolts or other extraneous devices.

While I have shown the anchor equipped with four flukes, I do not wish to be understood as limiting myself to the employment of four flukes only, as it obvious that the anchor may be constructed of two and in some instances even more than four flukes as desired without departing from the spirit of my invention.

I claim:

1. In an anchor of the class described, a crown, flukes carried by the crown and arranged for lateral movements relative to each other and the crown, combined guides and fluke supports of varying heights carried by the crown for directing the movements of and supporting said flukes, one of said flukes arranged to slide directly upon said crown and the remaining flukes positioned one above the other and arranged to slide upon each other and said supports.

2. In an anchor of the class described, a substantially disk-shaped crown, a plurality of flukes carried by the crown and arranged for lateral movement relative each other and the crown, one of said flukes arranged to slide directly upon said crown, the re-

maining flukes arranged to slide upon each other, a support carried by the crown for each of the flukes save the one sliding directly upon the crown, a shank secured to the crown, a member loosely embracing said shank, and a connection between said member and each of said flukes whereby when said member is moved the flukes will be moved.

10 3. In an anchor of the class described, a crown having a substantially flat body portion, a post, a plurality of superimposed flukes, one of which lies directly upon the crown, the remaining flukes arranged to
15 slide over each other, a pair of guides for directing the movement of a pair of said flukes, said guides being of different heights and each arranged to support one of the flukes when extended, there being a slot in
20 the body portion of each fluke to embrace said post, a socket carried by each fluke, a shank secured to the crown, a spider having a number of sockets, and a rod, having an enlarged head at each of its ends, connecting
25 the sockets of the spider and the sockets carried by the flukes.

4. In an anchor of the class described, a crown, a pair of flukes arranged for movement relative each other over said crown, a shank secured to the crown, a member having a pair of sockets arranged to slide relative the shank, a socket carried by each fluke, and a rod, having an enlarged head at

each of its ends, connecting each pair of said sockets, said heads being inmovable lengthwise relative to the sockets. 35

5. In an anchor of the class described, a crown, a pair of flukes carried by the crown and arranged to be moved laterally relative each other, a shank secured to the crown and
40 projecting through said flukes, a socket carried by each fluke, a member having projecting arms in each of which there is a socket, all of said sockets being open at one end and at their tops, ribs surrounding the
45 open portions of the sockets, a rod, having adjacent each of its ends opposing ribs, connecting each pair of sockets, said member arranged to be moved relative the shank and in its movement effect a movement of
50 said flukes.

6. In an anchor of the class described, a rod, integral ribs adjacent each end of the rod, the body portion of said rod being substantially oval in cross section, and integral
55 laterally projecting strengthening ribs arranged at a right angle relative the longest diametrical dimension of the rod.

In testimony whereof, I have signed my name to this specification, in presence of two
60 subscribing witnesses.

JASPER BLACKBURN.

Witnesses:

E. L. WALLACE,
N. G. BUTLER.