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DRIVEN ANCHOR.

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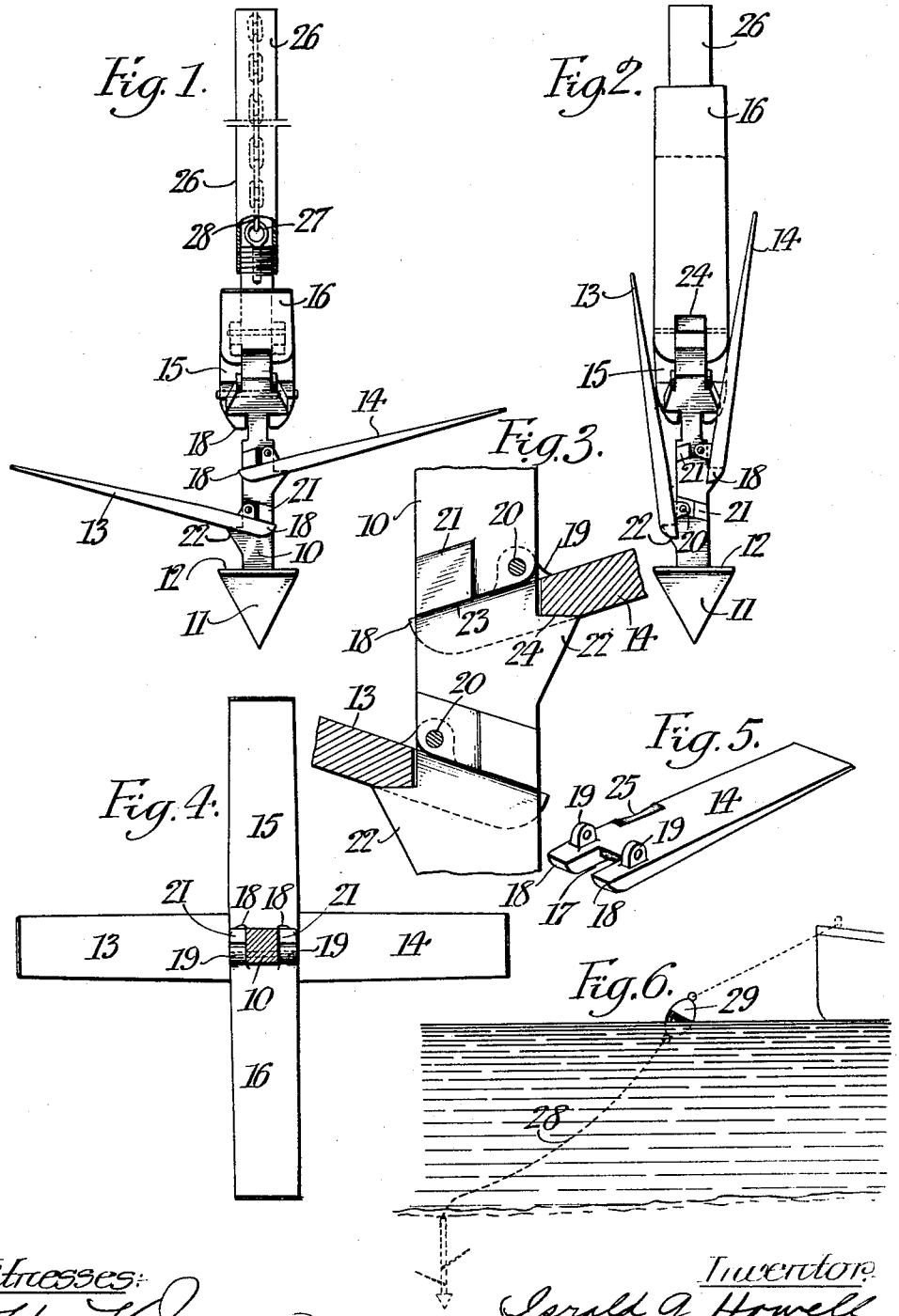

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DRIVEN ANCHOR.

1,086,053. Specification of Letters Patent. Patented Feb. 3, 1914.

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To all whom it may concern:

Be it known that I, ISRALD G. HOWELL, a citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Driven Anchors, of which the following is a specification.

This invention relates to certain improvements in driven anchors and more particularly to a type in which there are a plurality of separate arms or members which are foldable toward the body portion prior to the driving of the anchor into position and which may swing outwardly to present a greatly increased surface upon an upward or return movement of the anchor. An anchor of this character may be driven into the ground without disturbing the latter to any material extent, but can not be withdrawn without displacement of a large amount of the earth. In my improved construction I so connect the movable arms to the body portion that when they are swung outwardly to the limiting position the stress does not come on the pivot pins but upon shoulders or stops specially provided for this purpose. I also make the head of such shape that it serves to protect the arms during the driving of the anchor and produces an opening of sufficient size for the arms to pass through.

A further important feature of my invention resides in the formation of the upper end of the body in such a manner that when said anchor is to be used as a mooring, a chain, cable, or the like may be connected to the anchor, before the latter is driven and after the driving the upper section of the body may be removed so as to leave the lower section or anchor proper buried and the chain or cable free to be attached to a suitable float.

My invention may be employed as a part of a mooring as above indicated, but may also be used for any purpose where it is desired to form a firm anchorage in the ground. The device may be used as a base for posts, or telegraph poles or as the anchorage for guy wires.

Reference is to be had to the accompanying drawing forming a part of this specification and in which similar reference characters indicate corresponding parts throughout the several views, and in which—

Figure 1 is a side elevation of one construction embodying my invention and shown with the arms in open or expanded position; Fig. 2 is a side elevation similar to Fig. 1, but showing the arms in closed or folded position; Fig. 3 is a side elevation of a portion of the body on an enlarged scale and showing portions of two arms attached thereto; Fig. 4 is a top plan view, showing the arms in opened position and the body in transverse section; Fig. 5 is a perspective view of one of the arms, and Fig. 6 is a view illustrating one use to which my invention may be put.

In the preferred embodiment, I employ a body portion 10 which may be of any suitable form in cross section but which is preferably rectangular. The body portion is in the form of a bar having a head 11 pointed at its lower end and having its upper end of somewhat larger cross sectional area than the body portion. In other words the head presents a shoulder or flange 12 projecting outwardly in all directions from the sides of the body.

Pivotally secured to the body portion are a plurality of arms so mounted that their outer ends may swing downwardly away from the body portion until nearly at right angles thereto. These arms may be of any desired shape or size and the number may be varied to suit the purpose for which the anchor is to be employed, but as a simple embodiment of my invention, I have illustrated four of these arms 13, 14, 15 and 16, each pivoted at a different point along the length of the body and each pivoted upon a separate side. Each of the arms is in the form of a flat blade of a width preferably approximating the width of the head and of a length dependent upon the character of the material into which the anchor is designed to be driven. The thickness of each arm is dependent upon its width and length and upon the amount of stress which may be exerted tending to remove the anchor from its position after it has been once driven home. The arms may be pivotally connected to the body in various different ways preferably each arm has a recess 17 extending into one end thereof, so as to form two separate side portions 18 adapted to lie upon opposite sides of the body 10. Each arm adjacent said recess has two upwardly extending lugs 19 as is clearly shown in Fig. 5. These lugs 19 have openings in alinement and are adapted to lie upon opposite sides of the body, so that a pivot pin 20

may extend through the two lugs 19 and through the body 10 and permit the vertical swinging of the arm. The pivot pin is at such distance from the adjacent side of the arm and the lugs 19 are so positioned and so formed that each arm may swing upwardly to a position substantially parallel with the body portion. Adjacent to the pivot pin the body is provided with stops for limiting the downward swing of each arm and preventing it from passing beyond a position inclined upwardly to a slight extent from the horizontal. These stops preferably include two separate lugs 21 upon the opposite sides of the body and adjacent to the surface opposite to the corresponding arm and a lug 22 on the surface bearing the corresponding arm. The two lugs 21 present shoulders 23 set at the desired angle so that the projecting ends 18 of the arm will come into engagement with the under sides of the lugs 21 as is clearly indicated in Fig. 1. The lug 22 presents an upper face 24 upon which the lower side of the arm may rest as is clearly indicated in Fig. 3. In order to prevent the necessity of undercutting the surface 24 at an angle corresponding to that of the arm, the arm itself is provided with a recess in its lower side into which the upper portion of the lug 22 may extend so that the upper surface of the said lug 22 may be horizontally or downwardly and outwardly inclined.

The two lowermost arms 13 and 14 are preferably upon opposite sides and at different elevations and the next two arms are at different elevations and up on the other two sides of the rectangular body. If desired each of the three lower arms may be provided with suitable recesses 25 in which portions of the upper arms may extend when the arms are folded upwardly as indicated in Fig. 2.

I have only illustrated one construction of arms and one method of securing them in position but it is evident that various changes may be made in the proportions of the arms and the method of attaching without departing from the spirit of my invention. I have shown the projecting ends 18 of the arms abutting against stops 21, but I may form these stops by providing the said projecting ends with pins movable in curved slots in the sides of the body so that the ends of the slots constitute the stops which limit the upward movement of the opposite or free ends of the arms. I have also illustrated the arms as being attached only to the body, but it is evident that arms may be secured to the body closely adjacent to the head or may even be pivotally secured to the upper surface of the head itself, or to the head adjacent its outer edges. The body might be of greater length than that illustrated and there might be a second set of four arms or any additional number of arms desired. There might be more arms on one side than on another if the strain to which the anchor is to be subjected is one tending to tilt the anchor laterally as well as to pull it out of the material within which it is embedded.

As previously indicated my invention may be utilized as an anchor for any structure or flexible connecting member, but is particularly designed for use as a part of a mooring and I provide means whereby it may be firmly driven into the material at the bed of the body of water where the mooring is to be used. The upper end of the body portion is preferably made cylindrical and is exteriorly threaded so that a tube 26 of any desired length may be detachably secured thereto and used as a handle for positioning the anchor and as a means whereby the anchor may be driven into position. The upper end of the body is also provided with an eye 27 or any other suitable means to which a chain, cable, hawser, or other flexible connecting means 28 may be secured. Preferably this connecting means is extended up through the tube 26 when the parts are assembled and by means of the tube the anchor is held in place while blows are delivered to the upper end of the tube. When the anchor has been driven down into the bottom to the desired distance, and preferably to such a distance that the upper end of the body will come flush with or below the surface of the bed, the tube is rotated to unscrew it from the body and is pulled up off of the chain or the like so that the chain will be free to swing from the upper end of the body. A suitable float 29 may be permanently attached to the upper end of the body as is common practice in mooring for boats.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. An apparatus of the class described, including an elongated body portion, and a plurality of arms pivotally secured thereto, each of said arms having lugs extending upon opposite sides of said body portion and spaced pivot lugs projecting upwardly from the face of each arm adjacent to the base of the first mentioned lugs and adapted to engage with opposite sides of said body portion, a pivot pin extending through said body portion and said pivot lugs adjacent to one side surface of said body portion, the said first mentioned lugs terminating adjacent to the opposite surface of said body portion, and means independent of said pivot pins for limiting the downward swinging movement of said arms.

2. An apparatus of the class described including a body portion, an arm having spaced portions disposed upon opposite sides of said body and terminating adjacent to the side opposite to said arm, lugs upon said

first mentioned sides and presenting lower contact surfaces for the spaced portions of said arm, a lug on the side bearing said arm and beneath the latter and presenting an upper bearing surface for said arm and pivotal connections between said body portion and said arm intermediate of said first mentioned lugs and said last mentioned lug.

3. An apparatus of the class described including a body portion, an arm having a recess in one end thereof and intermediate of the side edges and adapted to receive said body portion, said body portion having outwardly projecting lugs adapted to engage with the upper surface of said arm upon opposite sides of said recess, and a lug adapted to engage with the under surface of said arm adjacent the base of said recess and pivotal connections between said arm and said body portion.

4. A driven anchor including a body portion in the form of a bar substantially rectangular in cross section and having a projection upon one side thereof presenting a substantially horizontal upper face and projections upon the two adjacent sides and presenting inclined lower faces, an arm having a recess in one end thereof adapted to receive said body with the portions of said arm upon opposite sides of said recess disposed beneath the inclined surfaces of said second mentioned projections and having a recess communicating with the first mentioned recess and receiving the upper surface of said first mentioned projection and means for pivotally connecting said arm to said body portion to permit the outer end of the arm to swing upwardly toward a position parallel with said body.

5. An apparatus of the class described including a body portion, an arm having a recess in one end thereof intermediate of the side edges and adapted to receive said body portion, said body portion having stops adapted to engage with the upper surface of said arm upon opposite sides of said recess and a stop adapted to engage with the under surface of said arm adjacent the base of said recess and pivotal connections between said arm and said body portion.

Signed at New York city, in the county of New York and State of New York, this 20th day of December, A. D. 1912.

ISRALD G. HOWELL.

Witnesses:
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Florence Levien.