

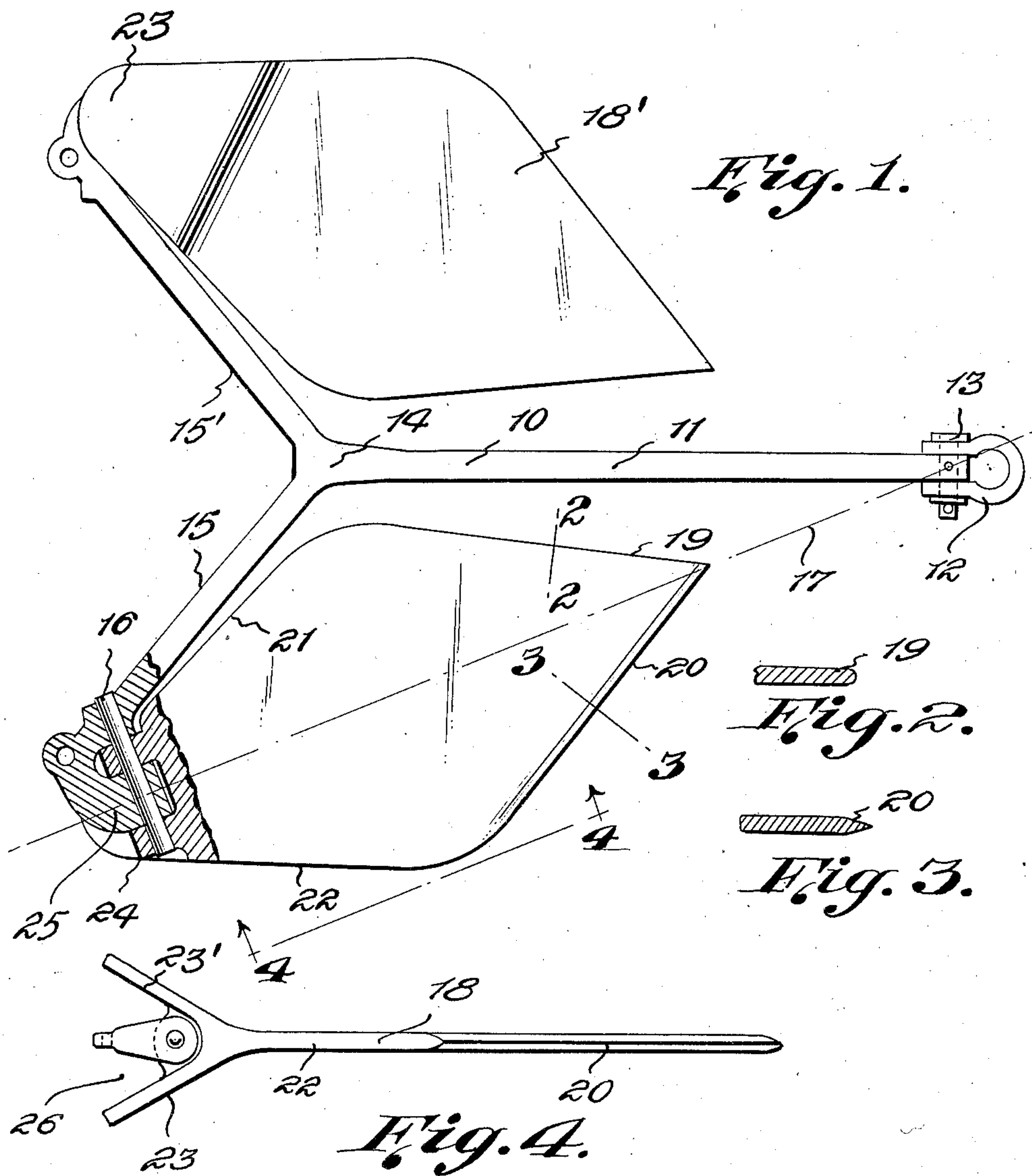
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5 Claims. (Cl. 114—208)

This invention relates to anchors suitable for mooring all kind of water borne vessels.

The object of my invention is to provide an efficient anchor easy to handle in large and small sizes, in that with large vessels it can be hoisted through the hawse pipe and kept suspended on its chain adjacent to and flat against the outer end thereof, while with small vessels, where the anchor is manually handled, it can be conveniently stowed away in that it will lie flat when not in use. Compared with other such anchors of similar size and weight, my anchor will hold to the bottom with larger gripping power, so that its drag/weight ratio is particularly high. My anchor will preserve this large gripping force even while moved or dragged along the bottom.

The object of my invention is thus a compact, economic, comparatively light anchor of consistently large gripping power.

My anchor is of the stockless type. From ordinary stockless anchors of equal size my anchor is distinguished by a generous fluke area and by the elimination of a bulky anchor head or lower extremity, whereby the anchor is better enabled to penetrate deep into the sea bottom. The fluke area is evenly distributed among a pair of two independently movable fluke vanes each hinged independent of the other to one of a pair of arms of a common shank. The capacity of each fluke for digging itself into the ground and for keeping dug in even while dragged is increased and any tendency of the anchor to evade the pull of the anchor chain or cable by side motion and by turning about the shank axis is overcome by distributing the area of each fluke reasonably equally on each side of a mathematical plane at right angles to the fluke hinge axis and passing through the anchor ring or shackle. In the preferred embodiment, the fluke contour is substantially symmetrical with respect to that plane. This leads to an acute angle between the hinge axis and the shank axis. The penetration of the anchor into the bottom is facilitated by eliminating as far as possible any material on the inner and lower fluke sides. This makes it necessary to branch the common shank of the anchor into two arms forming an obtuse angle with the shank; the two arms and the shank being coplanar. The angle between each fluke hinge axis and its arm becomes likewise obtuse, that is larger than 90 degrees. The arms are disposed adjacent the inner and lower fluke edges, because in that position they are interfering least with the digging in of the flukes.

The digging in and holding down of the flukes

is further facilitated and aided by providing a pair of fluke wings adjacent their lower ends projecting from the flukes so as to form an evenly curved hollow therewith. The two fluke wings form between themselves a pocket in which the fluke hinge is sheltered and protected against being clogged by dirt.

These and other desirable objects and advantages of the present invention will be illustrated in the accompanying drawing and described in the specification, a certain preferred embodiment being disclosed by way of illustration only, for, since the underlying principles may be incorporated in other specific devices, it is not intended to be limited to the one here shown except as such limitations are clearly imposed by the appended claims.

In the drawing like numerals refer to similar parts throughout the several views, of which

Fig. 1 represents an elevational and partly sectional view of the anchor with the flukes turned into the plane of the arms.

Figs. 2 and 3 are cross-sectional views of the fluke edges, taken on lines 2—2 and 3—3, and

Fig. 4 is a side view of a fluke, as seen in direction of the fluke hinge axis, as indicated by the line 4—4.

The anchor is composed of a shank body broadly designated by 10 and consisting of a straight shank 11 and two arms 15 and 15'. An anchor shackle 12 is hinged to the shank at its upper end by means of shackle pin 13. This shackle is intended to receive the anchor chain or cable, not shown, which may be fastened thereto in any conventional manner, and the shackle will be referred to broadly in this specification as cable fastening means. The arms 15 and 15' branch off the shank at its lower end 14, the angle formed by the arms and the shank being larger than 90 degrees. The arms are preferably straight. At their other, the outer and lower end, the arms are bent back and shaped for the accommodation of a rotatable fluke and for the reception of the fluke hinge pin 16. Flukes 18 and 18' are plane vanes, except for the fluke wings 23 and 23' to be described later. Their contour is roughly diamond shaped, formed of an upper inner edge 19, an upper outer edge 20, a lower inner edge 21 and a lower outer edge 22. The side corners and the rear of this diamond are slightly rounded. The diagonal 17 of the diamond connecting the upper and the lower corner is the larger diagonal. It is at right angles to the axis of hinge pin 16, and in the position shown passes through the center of

the anchor shackle pin 13. At their lower end, the flukes are shaped to match the arm extremities in hinged relation thereto. The flukes diverge into two fluke wings 23 and 23' connected by two ribs 24. These ribs are spaced for receiving the arm extremities 25, hinge pins 16 passing through said extremities and through said ribs. Each pair of wings 23 and 23' forms a pocket 26 which protects pin 16 and its bearings against mud. The outside surfaces of the wings and the fluke vane surfaces may continuously merge into each other, and are thus shown in the drawing.

If the fluke vane turns about its hinge, the center line 17 moves through and describes a mathematical plane at right angles to the axis of pin 16, said plane passing through the center of the hinge of anchor shackle 12. This plane divides the fluke vane surface into two substantially equal parts, the one part being contained between edges 19 and 21 and line 17, and the other part being contained between edges 20 and 22 and line 17. Arm 15 is disposed adjacent edge 21 and extends along the inside of fluke vane 13. The angle between pin 16 and its arm 15 is larger than 90 degrees. The two hinge pins 16 and 16' are inwardly and downwardly inclined relative to shank 11.

I have found it advantageous to sharpen the outer upper edges 20. Such sharpening may be dispensed with for the inner upper edges 19, and the same may be made round or blunt.

Wings 23 serve also to limit the hinge motion of the fluke vanes relative to the arms to which they are hinged. The total fluke vane motion should be between 60 degrees and 90 degrees.

I claim:

1. An anchor having a shank, cable fastening means at the upper end of the shank, a pair of arms branching off the shank at its lower end on opposite sides thereof forming obtuse angles with the shank, two fluke vanes, each arm having at its outer and lower end one of said fluke vanes separately hinged thereto, the axis of either fluke vane hinge motion being inclined downwardly and inwardly relative to the shank and forming outwardly and upwardly an obtuse angle with the arm guiding the motion, and stop means for limiting the hinge motion of the fluke vanes.

2. An anchor having a shank, cable fastening means at the upper end of the shank, a pair of arms branching off the shank at its lower end on opposite sides thereof forming obtuse angles with the shank, two fluke vanes each arm having at its outer and lower end one of said fluke vanes separately hinged thereto, and stop means for limiting the hinge motion of the fluke vanes; the area of each fluke vane being approximately bisected by a reference plane drawn through the upper end of said shank at right angles to the axis of hinge motion of that vane.

3. An anchor having a shank, cable fastening

means at the upper end of the shank, two arms branching off the shank at its lower end on opposite sides thereof forming obtuse angles with the shank, two approximately diamond-shaped fluke vanes each arm having at its outer and lower end one of said fluke vanes separately hinged thereto, and stop means for limiting the hinge motion of the fluke vanes; the inner edges of the fluke vanes being disposed adjacent the shank and their associated arm, and each fluke vane occupying in neutral position a major portion of the triangular space bounded by the shank, the associated arm, and a reference line connecting the upper end of the shank with the outer end of the arm.

4. An anchor having a shank, cable fastening means at the upper end of the shank, two arms branching off the shank at its lower end on opposite sides thereof forming obtuse angles with the shank, two fluke vanes each arm having at its outer and lower end one of said fluke vanes separately hinged thereto, and stop means for limiting the hinge motion of the fluke vanes; the inner edges of the fluke vanes being disposed adjacent the shank and the associated arm, and each fluke occupying in neutral position a major portion of the triangular space bounded by the shank, the associated arm, and a reference line connecting the upper end of the shank with the outer end of the arm.

5. An anchor having a shank, cable fastening means at the upper end of the shank, two arms branching off the shank at its lower end on opposite sides thereof forming obtuse angles with the shank, two approximately diamond-shaped plane sheet-shaped fluke vanes rotatable about axes of hinge motion downwardly and inwardly inclined relative to the center line of the shank, each arm having at its outer and lower end one of said fluke vanes separately hinged thereto, and stop means for limiting the hinge motion of the fluke vanes; each fluke vane branching at its lower end into a pair of approximately plane sheet-shaped fluke wings inclined to each other and intersecting with each other and with the associated fluke vane along a line disposed approximately parallel to the hinge axis of the fluke vane and positioned in upward relation thereto, said wings forming a pocket housing said axis; the inner edges of the fluke vanes being disposed adjacent the shank and the associated arm, each fluke vane occupying in neutral position a major portion of the triangular space bounded by the shank, the associated arm, and a reference line connecting the upper end of the shank with the outer end of the arm; and the area of each fluke vane being approximately bisected by a reference plane drawn through the upper end of the shank at right angles to the axis of hinge motion of that vane.

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