114-253. XR 3,022,763 SR

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Feb. 27, 1962 R. A. TURRENTINE 3,022,763

FLOATING BUOY RETRIEVING HOOK

Filed March 9, 1959

Fig. 1

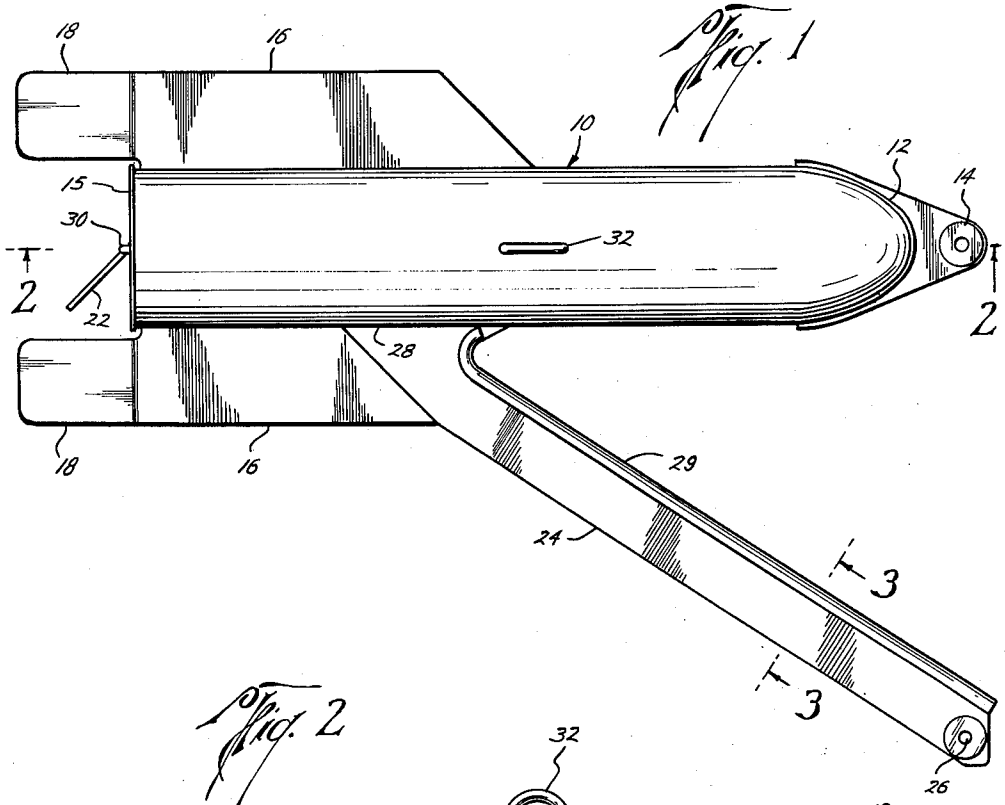



Fig. 2

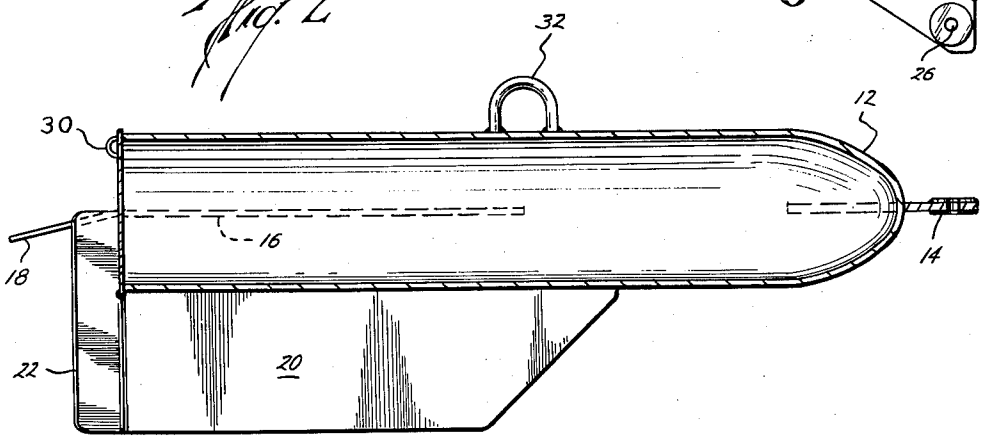
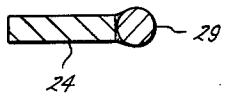



Fig. 3




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United States Patent Office 3,022,763 Patented Feb. 27, 1962



3,022,763

# FLOATING BUOY RETRIEVING HOOK

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Filed Mar. 9, 1959, Ser. No. 798,109
10 Claims. (Cl. 114—221)

This invention relates to new apparatus for retrieving floating marine buoys, and more particularly to means for retrieving such buoys and moving them to new locations.

The use of floating buoys to mark channels and the location of various underwater objects is well known. Such buoys are generally connected to an anchor by means of a chain or cable so that they will remain in the proper location. In many instances it is desirable or necessary to move these buoys from time to time. The movement of a buoy from one location to another is often difficult and time consuming, since it is necessary to bring a boat near the buoy, and send a man over the side to manually fasten a towing line to the buoy before it can be moved.

It is an object of this invention to provide a means for retrieving and moving floating marine buoys without any manual handling. It is another object to provide a means for retrieving and moving such buoys which obviates closely approaching the buoy in a boat. Still another object is to provide a floating retrieving means which can be used to engage a buoy, tow it, and release it at a new, desired location, solely by manipulation of lines attached thereto.

According to the present invention a floating retrieving hook is used to retrieve and move buoys from one location to another. This floating retrieving hook comprises a buoyant body having vertical and horizontal stabilizers, and a lateral diverging arm to which a towing cable can be attached. The stabilizers are so affixed that the retrieving hook will not follow directly behind the towing boat, and so that it will ride under the surface of the water at a desired depth. Means are provided for quickly releasing the buoy upon arrival at the new location.

The invention may more readily be understood by reference to the accompanying drawings, wherein

FIGURE 1 is a plan view of one embodiment of the floating retrieving hook of this invention, FIGURE 2 is is a vertical sectional view taken at 2—2 on FIGURE 1, and

FIGURE 3 is a sectional view of a portion of the retrieving hook, taken at 3—3 on FIGURE 1.

In FIGURE 1, a buoyant elongated body member **10**, having a forward end and a stern end, has a rounded nose **12** at its forward end, and lifting means **14** for convenience in handling the retrieving hook. A closure member **15** at the stern of body **10** is welded or otherwise attached so as to make the body substantially watertight. Stabilizing means **16** are provided for horizontal stabilization of the retrieving hook, and comprise a fin extending longitudinally along the body member to a point beyond the end thereof. The portion **18** of stabilizing means **16** is adapted to be bent upward or downward as necessary to cause the floating retrieving body to submerge to a desired depth when the retrieving hook is moved forwardly through the water. Generally the portion **18** will be bent downwardly a few degrees, but inaccuracies in proportions of various elements on the retrieving hook may require that portions **18** be left horizontal, or even be bent upward slightly, in order for the retrieving hook to travel at the desired submerged depth when moving through the water.

Stabilizing means **20** are provided for vertical stabilization of the retrieving hook, and comprise a fin extending longitudinally along the body member to a point beyond the end thereof. The portion **22** of stabilizing means **20**



is bent at an angle to cause the retrieving hook to move laterally from the towing boat and to be pulled in a position laterally removed therefrom. In the modification shown in the drawing, the vertical stabilizer will cause the floating retrieving hook to follow to the port of the towing boat.

Buoy anchor line engaging means comprising an arm **24** is provided for hooking a buoy anchor line and for attaching a towing line at the outer end at **26**. This arm is affixed to body member **10** at **28**, intermediate the forward end and the stern end of the body member, and extends laterally and forwardly therefrom. The leading edge of arm **24** is preferably rounded to prevent damage to the buoy anchor line. In the modification shown on the drawing, a cylindrical bar **29** is welded along the entire length of the leading edge to provide a smooth, rounded surface. Preferably arm **24** is attached astern of the center of gravity of the floating retrieving hook, since better towing is achieved thereby, in that the floating retrieving hook is less likely to veer from the desired course, and is less likely to be turned by the force of the buoy anchor line.

An eye **30** is provided astern of the juncture of arm **24** with the body. This eye, together with a line (not shown) attached thereto, provides means for releasing the buoy from the floating retrieving hook, as will be shown hereinafter.

Preferably an eye **32** is provided on top of the body **10** and substantially at the center of gravity of the retrieving hook for convenience in handling the retrieving hook when putting it in the water or removing it from the water.

In operation, a tow line is attached to the arm of the floating retrieving hook at **26**, and another line, referred to herein as a releasing line, is attached to eye **30**. The floating retrieving hook is then lowered over the side of the boat, preferably while the boat is moving through the water, and both the tow line and the release line are payed out, the releasing line being maintained in a slack condition. Due to the angle of the vertical stabilizer **20** as bent at **22**, the floating retrieving hook moves to a position off the port beam of the towing boat. It may readily be seen that the position of the floating retrieving hook with relation to the towing boat is dependent on the angle at which stabilizer **20** is bent at **22**, and the speed of the towing boat. Generally stabilizer **20** is bent to an angle of from about 10° to about 45°, although larger angles, up to about 60°, and smaller angles, down to about 5°, may at times be desirable.

The floating retrieving hook is slightly buoyant, so that when at rest it floats on top of the water. When pulled through the water by means of the towline attached at **26**, however, the floating retrieving hook is submerged, due to the action of the bent ends **18** of horizontal stabilizers **16**. The depth to which the floating retrieving hook submerges is dependant on the angle to which ends **18** are bent, and on the speed of the towing boat. Generally these are coordinated so that the floating retrieving hook travels a few feet, say up to about 6 feet, below the bottom of the buoy to be retrieved. Generally ends **18** are bent downward to an angle of up to about 15°, although in some instances it is necessary to leave these ends horizontal, or even to bend them upward slightly, say up to about 15°.

Upon approaching a buoy to be moved, the retrieving hook is guided so that, in the modification shown in the drawing, the body **10** is to the left of the buoy, and the outboard end of arm **24** is to the right of the buoy. Due to the submerged position of the retrieving hook, arm **24** contacts the cable or other line by which the buoy is secured to its anchor, and this cable slides along arm **24** until it is stopped at the juncture of arm **24** and body **10**.

The boat does not slacken speed during this operation, but continues to the new location for the buoy. Upon arrival at the new location, the speed of the tow boat is reduced, or the boat is stopped entirely, whereupon the retrieving hook floats to the top of the water, and generally disengages itself from the buoy. At times, however, it may be necessary to pull the release line attached to eye **30**, so that the retrieving hook is swung about and disengaged from the buoy and its anchor cable.

It will be apparent that arm **24** may be placed on the port side of body **10**, and vertical stabilizer **20** may be bent to port at **22**, whereupon the retrieving hook may be towed on the starboard side of the towing boat. Many other modifications within the scope of the following claims will be apparent to those skilled in the art.

The invention claimed is:

1. A floating buoy retrieving hook comprising a buoyant elongated body member, an arm attached to said body member astern of the center of gravity of said body member and extending outwardly and forwardly therefrom, means on the outboard end of said arm for attaching a towline, horizontal stabilizing means on said body member adjusted to cause said floating buoy retrieving hook to submerge when moved forwardly in water, and vertical stabilizing means on said body member adjusted to cause said floating buoy to move laterally away from a boat towing said floating buoy retrieving hook by means of said towline.

2. A floating buoy retrieving hook comprising a buoyant body member having a forward end and a stern end, an arm attached to said body member intermediate said forward end and said stern end and extending laterally and forwardly from said body member, means on said arm through which said floating buoy retrieving hook is towed, means on said body member providing for submergence of said floating buoy retrieving hook upon forward movement in water, and means on said body member causing said floating buoy retrieving hook to move laterally away from a boat towing said floating buoy retrieving hook by means of the towing means on said arm.

3. A floating buoy retrieving hook as defined by claim 2 wherein the arm is attached to the body member astern of the center of gravity of said floating buoy retrieving hook.

4. A floating buoy retrieving hook as defined by claim 2, and including means on said body astern of the point of attachment of the arm, for attaching a release line.

5. A floting buoy retrieving hook comprising a buoyant elongated body member having a forward end and a stern end, an arm attached to said body member astern of the center of gravity of said body member and extending outwardly and forwardly therefrom, means on said arm outboard of said body member for attaching a towline, horizontal stabilizing means astern of the center of gravity of said body member and adjusted to cause said floating buoy retrieving hook to be submerged upon forward movement in water, and vertical stabilizing means on said body member adjusted to cause said floating buoy to move laterally away from a boat towing said floating buoy retrieving hook by means of said towline.



6. A floating buoy retrieving hook as defined by claim 5 and including means on said body astern of the point of attachment of the arm, for attaching a release line.

7. A floating buoy retrieving hook comprising a buoyant body member having a forward end and a stern end, buoy anchor line engaging means on said body member, towing means attached to said body member intermediate said forward end and said stern and extending laterally therefrom, means on said body member effective to cause said floating buoy retrieving hook to submerge upon forward movement in water, and means on said body member effective to cause lateral movement of said floating buoy retrieving hook upon forward movement in water.

8. A floating buoy retrieving hook as defined by claim 7, and including means on said body, astern of said buoy anchor line engaging means, for attaching a release line.

9. A floating retrieving hook comprising a buoyant body member having a forward end and a stern end, vertical and horizontal stabilizers on said body member, a laterally and forwardly diverging arm attached to said body member intermediate its ends, and a towing cable attached to the outer end of said arm.

10. A floating buoy retrieving hook comprising a buoyant elongated body member having a forward end and a stern end, an arm rigidly attached to said body member intermediate the ends of and astern of the center of gravity of said body member, and extending forwardly and laterally therefrom, means on the outboard end of said arm for attaching a towline thereto, horizontal stabilizing means on said body member adjusted to cause said floating buoy retrieving hook to submerge a predetermined distance when moved forwardly in water, vertical stabilizing means on said body member adjusted to cause said floating buoy retrieving hook to move laterally away from a boat towing said floating buoy retrieving hook by means of said towline, and means on said body member astern of the point of attachment of said arm for attaching a release line.

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