United States Patent

[11] 3,590,767

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[21] Appl. No. **833,083**
[22] Filed **June 13, 1969**
[45] Patented **July 6, 1971**

[54] **MOORING CABLE PICKUP DEVICE**
9 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **114/230**
[51] **Int. Cl.** **B63b 21/00**
[50] **Field of Search** 114/206, 230, 221, 221.1, 235

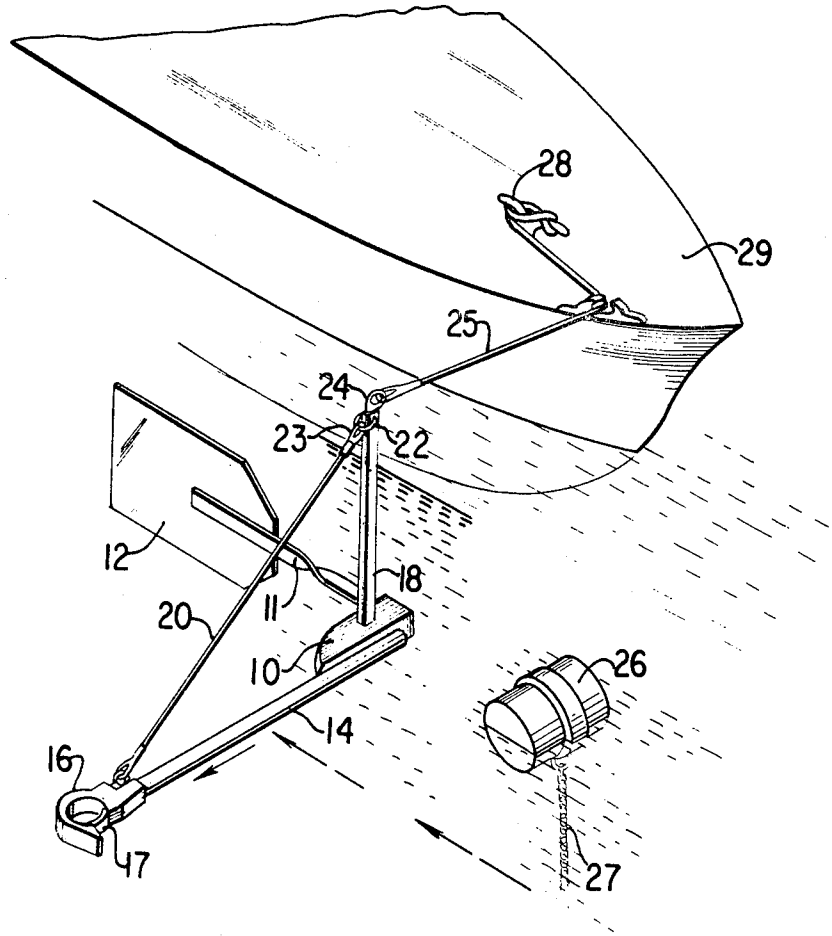
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ABSTRACT: A device is provided whereby a mooring cable may be picked up from a boat approaching a mooring. The device comprises a hook-presenting horizontally disposed hook arm; a horizontally disposed vane-carrying arm having a vertical vane secured to the remote end thereof, each arm being secured to a body member; and said device also comprises a vertically disposed suspending arm to the lower end of which the body member is attached and to the upper end of which a tie member is attached that extends to adjacent the extremity of the hook arm. Means is provided for attaching a towline to the upper end of the suspending arm.

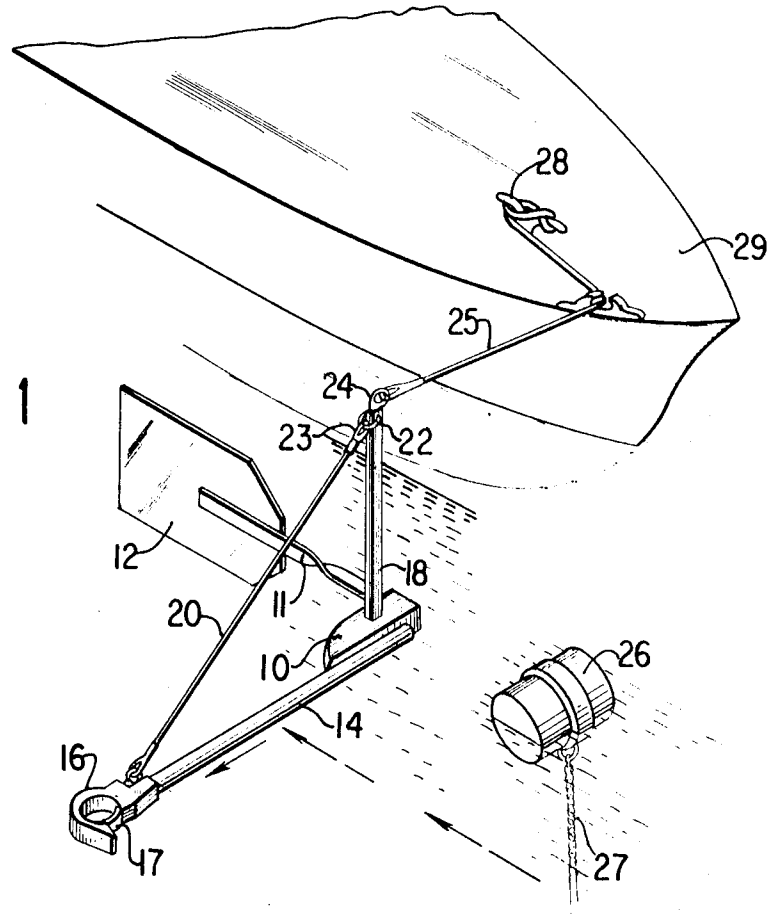


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SHEET 1 OF 2

FIG. 1



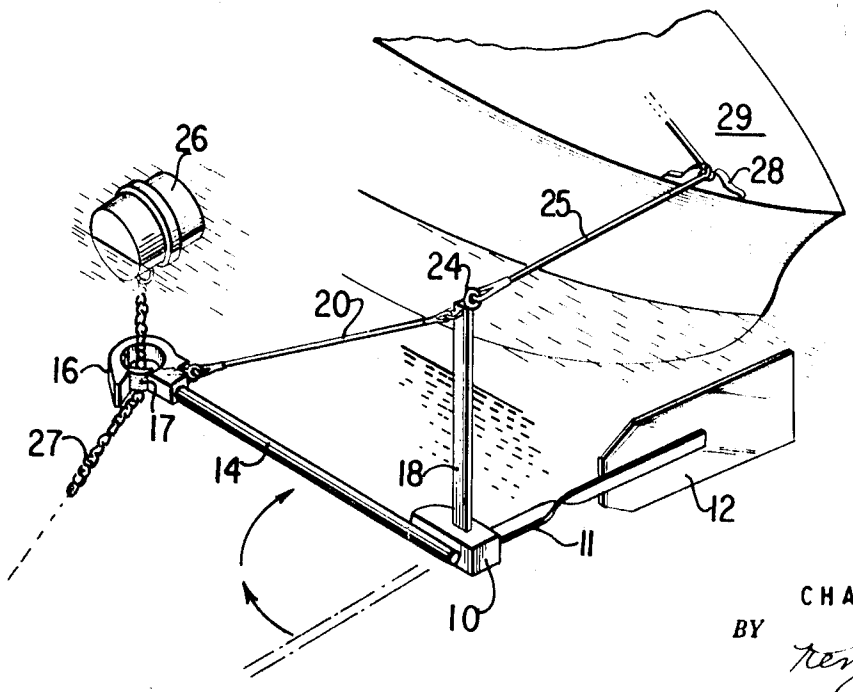


FIG. 2

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FIG. 3

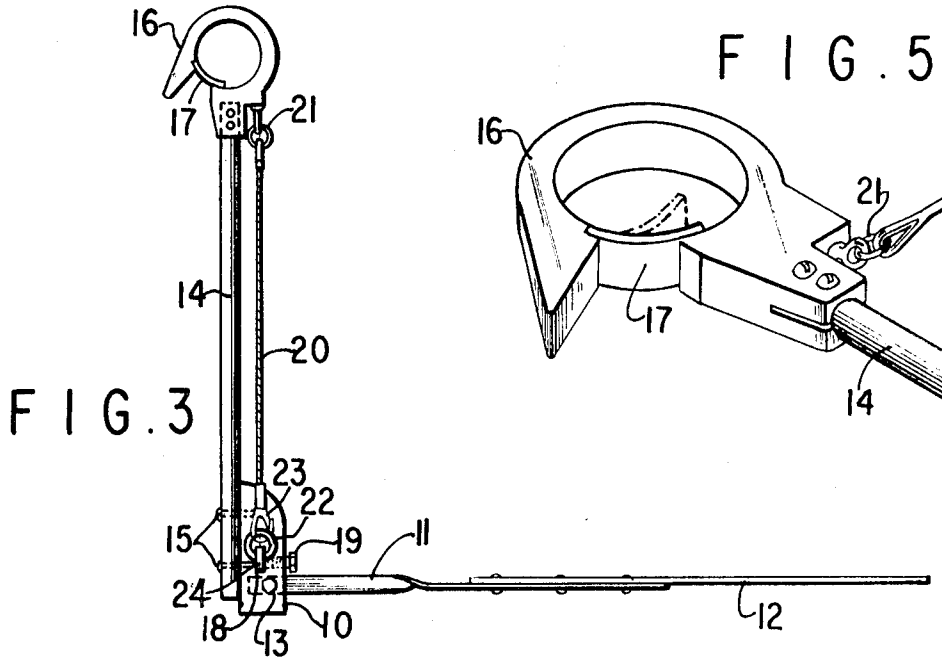


FIG. 5

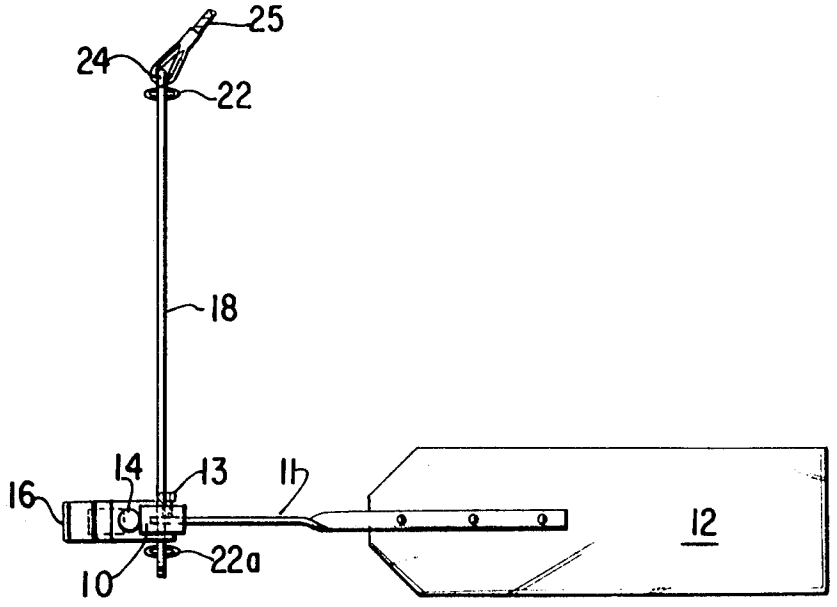


FIG. 4

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MOORING CABLE PICKUP DEVICE

This invention relates to a device for the purpose of picking up the mooring cable of a marine mooring. This invention relates more particularly to a device which is adapted to be carried by a vessel and placed in the water as the vessel approaches a marine mooring whereby the cable of the mooring may be effectively and automatically picked up.

An object of the device of this invention is to facilitate the common operation of picking up a mooring from a vessel which is to be secured to the mooring. This operation is usually performed by a crew member utilizing a boat hook which he hooks onto the cable that depends from the floating buoy of the mooring. After the crew member has been successful in hooking onto the mooring cable the buoy and the mooring cable are pulled onto the vessel so that the cable may be securely attached. The nature of the operation and the instrumentality used for grasping the mooring cable varies depending on the nature and size of the vessel and of the mooring. Moreover, for small craft the operation may be accomplished manually by a crew member, who leans over the side of the vessel when it is sufficiently close to the buoy so that he may lay hold of the mooring buoy. In any case, the operation of picking up a mooring is one which requires the services of a crew member when the vessel is stopped adjacent the mooring or as the vessel passes near the mooring. It is very difficult and, in many cases impossible, for the operator of a vessel which is to be moored at a mooring to control the vessel and himself pick up the mooring.

A principal object of this invention is to provide means whereby a mooring cable may be automatically picked up as a vessel from which it is being towed approaches a mooring at which it is to be secured. The device may be used to advantage in connection with vessels both large and small and the device is such as to enable a mooring cable to be picked up without the special services of a crew man, thus permitting the crew man to attend to other duties or enabling an operator of the vessel, in the absence of an available crew man, to successfully pickup a mooring cable and attach his vessel to the mooring.

A more particular object of this invention is the provision of a device which may be conveniently carried by the vessel to be moored and which, when the vicinity of a mooring is approached, may be placed in the water on either side of the vessel and towed from the vessel, usually from the bow, the device being adapted to receive and hold the mooring cable that depends beneath the floating buoy of a conventional mooring. After the mooring cable has been received by the device so as to be held thereby the device together with the mooring buoy and its depending cable may be hauled aboard the vessel for attachment of the mooring cable directly to the vessel. Alternatively, the device may be left in the water attached to the mooring, the device in turn being secured to the vessel by a towline, and in such case the device together with the towline therefor in effect constitutes an extension of the mooring cable for maintaining the vessel secured to the mooring.

Features of this invention relate to the provision of a body member and vane means carried by the body member adapted to guide the body member upon towing the body member and in combination therewith a laterally extending hook arm having a forwardly facing hook adjacent its remote end adapted to receive a mooring cable. The vane means and the hook arm cooperate with each other as the mooring is approached and in facilitating the reception of the mooring cable by the cable receiving hook.

Further features of this invention relate to means for suspending the device from a towline and to the relation of the means for securing the towline to the other component parts of the device.

Further features of this invention relate to means whereby the device may be used on either the starboard or the port side of a vessel and to means employed for obtaining optimum performance of the device and for retention of the mooring cable after it has been received by the hook member of the device.

Further objects, features and advantages of this invention will be apparent from the following description of a preferred embodiment of this invention which has been shown for purposes of exemplification in the accompanying drawings, wherein:

FIG. 1 is a perspective view of the device showing it in use while being towed by a vessel during approach to a mooring;

FIG. 2 is similar to FIG. 1 showing the changed position of the parts after the device has been moved into initial contact with the mooring cable;

FIG. 3 is a plan view of the device on a somewhat larger scale;

FIG. 4 is a side elevation of the device; and

FIG. 5 is a detail perspective view on a still larger scale showing the structure of the hook employed at the end of the hook arm.

The mooring cable pickup device of this invention, as shown in the accompanying drawings, comprises the body member **10**. The body member **10** may conveniently be in the form of a casting of some suitable metal such as iron or brass. For guiding the body member **10** when the device is being towed through the water a horizontally disposed vane arm **11** extends rearwardly from the body member **10** and the vertically disposed vane **12** is secured thereto adjacent the remote end thereof. For convenience in assembly and disassembly, the vane arm **11** may be fixedly secured to the body member **10** by reception in a recess wherein the arm **11** may be clamped by means of a clamping bolt **13**.

The hook arm **14** is horizontally disposed and extends laterally from the body member **10**. The hook arm may be secured to the body member **10** as by means of bolts **15**. At the remote end of the hook arm **14** there is provided a forwardly facing hook **16** which is adapted to receive a mooring cable therein. In order that the mooring cable may be retained after it has been received by the hook **16** a yieldable closing latch **17** preferably is provided. This latch may be resiliently urged backwardly, as for example to the position shown in dotted lines by pressure of the mooring cable thereagainst for receiving the mooring cable, whereupon after entry of the cable into the hook the latch **17** assumes the position shown in solid lines for retaining the mooring cable within the hook.

Vertically upstanding from the body member **10** there is the suspending arm **18** which is secured adjacent its lower end to the body member **10**. In the embodiment shown the suspending arm **18** extends through the body member **10** in slidable relation thereto and may be fixedly clamped in any given position by the clamping bolt **19**.

A tie member **20** is secured at one end adjacent the hook end of the hook arm **14** as by means of the ring **21** that is secured to the base of the hook **16**, as best shown in FIG. **3**. The other end of the tie member **20** is secured to the suspending arm **18** adjacent the upper end thereof, as by means of the ring **22** attached to the suspending arm **18** adjacent the upper end thereof. The ring **22** is adapted to receive the latch **23** which is integral with the tie member **20** so that the tie member **20** may be readily connected and disconnected with respect to the suspending arm **18**.

Adjacent the upper end of the suspending arm **18** suitable means such as the eye **24** is provided for the attachment of a towline **25**.

In the foregoing description the parts have been indicated in the position shown in the drawings, namely, in the position assumed by the parts in actual use when the device is suspended in the water by a towline from a vessel **29** that is approaching a mooring, as indicated in FIG. **1**. Moreover, the reference to the vane arm **11** extending rearwardly and the reference to the hook facing forwardly, have reference to the directional movement of the device upon being towed by a towline and guided by the vane **12** as the device approaches the mooring.

The manner of use of the device shown in the drawings and hereinabove described is apparent and has been illustrated in FIGS. **1** and **2**. In these figures a mooring buoy **26** is shown having its mooring cable **27** depending therefrom. While the term "cable" is used, it is to be understood that this term is ap-

plicable generally, whether the mooring cable is in the form of a rope or chain, or is composed of flexible metal strands or of some other material. The cable extends down to an anchor or some other holding device (not shown) resting on the bottom of a body of water and adapted to hold the particular vessel to be moored after the vessel has been secured to the mooring cable. Generally a substantial amount of slack is provided so as to facilitate lifting the mooring buoy onto a vessel and securing the mooring cable directly to the vessel. In some moorings the mooring cable immediately adjacent the buoy is lighter in weight and serves the function of holding the buoy in place and providing means for hauling in a heavier portion of the cable which is actually used for tying up the vessel to the mooring after the mooring cable has been picked up.

During approach to the mooring, the device assumes the position shown in FIG. 1. The body member **10** constitutes the portion of greatest mass of the device as a whole, with the result that when the body member **10** is suspended by a towline attached to the upper end of the suspending arm **18** the device assumes the position shown by the action of gravity. When the body member **10** is thus suspended, the vane arm **11** and the hook arm **14** assume a substantially horizontal position. While the device is moving through the water in approaching the mooring there is a certain amount of drag of the water on the hook arm **14**. However, the vertical expanse of the vane **12** is such as to counteract this drag and hold the vane arm in a laterally extended position as the device approaches the mooring. To the extent that the hook arm is urged rearwardly by the dragging action of the water thereagainst, the rearmost end of the vane **12** is caused to move slightly toward the vessel, the body portion **10** being the axis of the rotational movement thus induced by the dragging action of the water on the hook arm **14**. This slight movement of the vane **12** from true forward movement for guiding the body portion in the desired direction is of advantage in that it tends to move the device outwardly from the hull of the vessel and minimizes the possibility of the device knocking against the vessel hull while it is being towed.

In FIG. **2** the position of the parts is shown after the hook arm has been moved into contact with the mooring cable **27**. The initial contact of the mooring cable with the hook arm supplements the dragging action of the water on the hook arm in causing the arms **11** and **14** to pivot about the body member **10** as an axis, thus throwing the vane **12** so as to lie largely or entirely athwart the movement of the device through the water, as shown in FIG. **2**. When the parts are in this position, the motion of the water against the vane **12** tends to resist the pressure of the mooring cable against the hook arm **14** and the mooring cable slides along it until the mooring cable becomes received by the hook **16**.

After the mooring cable has become received by the hook **16**, as shown in FIG. **2**, then further progress of the vessel relative to the mooring cable **27** causes the towline **25** and the tie member **20** to become in substantial alignment so that the vessel is held through the towline **25** and the tie member **20** which in effect becomes secured to the cable **27** by the hook **16**. The vessel is now restrained and comes to a stop. While the towline **25** and the tie member **20** are thus under tension the tendency is to move the vane **12** somewhat downwardly from the position as shown in FIG. **2** and out of the way. This effect can be augmented by causing the towline **25** to be affixed to the upper end of the arm **18** at a point somewhat more remote from the body member **10** than the point where the tie line is affixed to the upper end of the arm **18**. However, this is not essential and, if desired, the tie member **20** may be a continuation of the towline which may be held at the upper end of the arm **18** as by suitable means such as the eye **24**. It is preferable, however, to have the tie member **20** fixed to the upper end of the arm **18**. Since the tie member **20** functions under tension, it may be either in the form of a rigid rod or a flexible cable.

After the cable of the mooring has been picked up automatically by the device in the manner above described, the device together with the buoy **26** of the mooring may, if desired, be hauled aboard the vessel so that the mooring cable may be tied directly to the vessel, e.g. to the securing means **28** shown in FIG. **1**. Alternatively, the mooring cable pickup device after it has picked up the mooring cable **27** may merely be left in the water and the vessel in such case will be moored through the towline **25**, the tie member **20** and the hook **16** to the mooring cable **27**. When the device is thus used both the towline employed and the parts comprised in the pickup device which carry the load imposed on the mooring should be constructed so as to have strength comparable to that of the mooring cable **27**. When the mooring device is left in the water and becomes in effect part of the mooring, the latch **17** of the hook **16** should be made sufficiently sturdy to effectively retain the mooring cable, and the means used for securing the buoy **26** to the mooring cable **27** should be sufficiently sturdy and strong to withstand strains imposed thereon when the device is thus used as part of a permanent mooring. More generally, the size of the device and the size and strength of the component parts thereof are subject to wide variation, depending on the nature of the vessel to be moored, the nature of the mooring and the manner in which the device is to be used.

In the accompanying drawings the mooring pickup device of this invention has been illustrated in use on the starboard side of a vessel. In the embodiment shown, one means is provided whereby the hook arm **14** may be extended in the opposite direction in its relation to the vane arm **11** so that the device also may be used on the port side of a vessel. As mentioned above, the suspending arm **18** passes through the body member **10** in longitudinally slidable relation thereto and may be clamped in place in any selected position by the clamping bolt **19**. By releasing the clamping bolt **19** and sliding the suspending arm **18** relative to the body member **10** until the ring **22** is immediately adjacent the body member **10** and then reclamping the suspending arm **18** in this adjusted position, the device when inverted becomes adapted for use on the port side of a vessel. For such use, the latch **23** at the end of the tie member **20** is released from the ring **22** and is secured instead to the ring **22***a*, and for use the device is suspended from a towline secured at the end of the suspending arm **18** alongside the ring **22***a*, as by an eye corresponding to the eye **24**.

While one means has been shown for changing the relative positions of the arms so that the device may be used either on the starboard side or the port side of the vessel, other means may be employed. Thus the suspending arm instead of being slidable longitudinally through an aperture in the body member **10** may be pivotally secured to the body member **10** so that it may be swung between positions 180° apart on either side of the body member **10**. Alternatively, of course, the hook arm may be released from the body member **10** and reattached so as to extend from the opposite side.

In the embodiment shown the vane arm, the hook arm and the suspending arm have been shown in preferred relative positions with reference to the body member **10**. However, considerable departures from these arm positions shown are permitted. Thus the suspending arm **18** instead of being disposed at about 90° with respect to the vane arm **11** may be inclined somewhat forwardly and, in fact, when the device is likely to be towed at a substantial speed through the water such forward inclination of the suspending arm **18** is desirable in order to compensate for the tendency of the water to swing the vane **12** somewhat upwardly. However, the utility of the device is not excessively impaired if the arm **18** departs by as much as 45° from its optimum orientation with reference to the other arms. The foregoing applies likewise to the position of the hook arm **14** with reference to the vane arm **11**, for the angle between these arms may vary widely while still providing sufficient lateral extension of the hook arm **14** to permit it to come athwart a mooring cable when the body member is being towed by a towline while guided by the vane which trails behind the body member.

In addition to the foregoing, there are other modifications which may be made without departing from the scope of this invention. Thus the principal features of this invention reside in the provision of a body member adapted to be towed and a trailing vane, these elements being in combination with a hook arm extending laterally from the body member transversely to the plane of the vane, the hook arm having a hook at the remote end thereof adapted to receive a mooring cable therein.

With regard to the means for securing a towline to the device, the factor of major significance is that such means be disposed above the center of gravity of the device so that when the device is suspended from a towline, as in towing it through the water, it will assume a position wherein the vane arm and the hook arm have generally horizontal disposition for performing the functions hereinabove described, the vane means extending rearwardly from the body portion having disposition in a vertical plane or at least approximately in a vertical plane. For maintaining the desired disposition of the arms, the suspension of a weight below the body member so as to keep the center of gravity below the securing means may be resorted to, and in such case the securing means for the towline could be at or adjacent the body member itself instead of placing the body member at the lower end of a suspending arm.

The disposition of the hook arm in a horizontal position or in some other position may be varied, depending upon the disposition of the cable to be picked up by the device. Thus while this invention has been described with particular reference to picking up a mooring cable, the device of this invention may be put to other purposes. For example, the device may be used to pick up a towline extending from a vessel. If the towline is disposed predominantly horizontally rather than vertically, then the component elements of the pickup device of this invention may be arranged so that when the device is suspended from a towline and towed through the water the hook arm will be approximately normally disposed with respect to the line to be picked up by it. In such case the hook arm may depend from the body portion of the device upon towing the device through the water under the influence of the trailing vane means so as to extend laterally downwardly to to as great an extent, or possibly even a greater extent, as compared with its horizontal disposition.

I claim:

1. A mooring cable pickup device which comprises a body member, a horizontally disposed hook arm secured adjacent one end thereof to said body member and extending laterally therefrom, a horizontally disposed vane arm secured to said body member adjacent one end thereof and extending rearwardly therefrom, a substantially vertically disposed vane secured to said vane arm, a hook adapted to receive a mooring cable therein secured to said hook arm adjacent the remote end of said hook arm from said body member with the mouth thereof facing forwardly, a vertically disposed suspending arm secured adjacent the lower end thereof to said body member, a tie member attached to said hook arm adjacent the hook end thereof and extending to and held by said suspending arm adjacent the upper end thereof, and means adjacent the upper end of said suspending arm for attaching a towline thereto.

2. A mooring cable pickup device according to claim 1 which comprises means for changing the relative positions of said arms with respect to said body member from position with said hook arm laterally extending from one side of said body member to position laterally extending from the other side of said body member when said body member is suspended from said suspending arm.

3. A mooring cable pickup device according to claim 1 which comprises means for changing the position of said suspending arm from vertical extension above said body member to vertical extension below said body member.

4. A mooring cable pickup device according to claim 1 which comprises a latch adapted to retain a mooring cable in said hook after entry of said cable into said hook.

5. A mooring pickup device according to claim 1 wherein said tie member is fixedly held by said suspending arm adjacent the upper end thereof.

6. A mooring pickup device according to claim 1 wherein said tie member is fixedly held by said suspending arm in proximate spaced relation to said means for attaching a towline, said means for attaching a towline being the more remote from said body member.

7. A mooring cable pickup device comprising a body member, a vane arm secured to said body member and extending rearwardly therefrom, a substantially vertically disposed vane secured to the end of said vane arm that is remote from said body member adapted to guide said body member upon towing said body member through the water, a hook arm extending laterally from said body member transversely to the plane of said vane having in substantially spaced relation with respect to said body member a forwardly facing hook adjacent the remote end thereof adapted to receive a mooring cable therein, and means for attaching a towline for towing said body member forwardly through the water with said vane trailing therebehind in said substantially vertically disposed position and with said hook arm extending laterally therefrom in position for a mooring cable to be intercepted thereby at a position intermediate between said body member and said hook for movement therealong away from said body portion and reception by said hook.

8. A mooring cable pickup device comprising a body member, a horizontally disposed vane arm extending rearwardly from said body member, a vertically disposed vane secured to said vane arm adapted to guide said body member through the water upon being towed through the water, a horizontally disposed laterally extending hook arm secured adjacent one end thereof to said body member and having a forwardly facing hook adjacent the other end thereof adapted to receive a mooring cable therein, and means for securing a towline to said device, said means for securing a towline to said device, said means for securing a towline to said device being disposed above the center of gravity of the device for general horizontal disposition of said vane arm and of said hook arm when said device is suspended by a towline secured to said securing means.

9. A mooring cable pickup device according to claim 8 which comprises securing means for also securing said towline to the opposite side of said center of gravity whereby upon inverting the device and suspending it from a towline secured to said last-mentioned securing means the effective extension of said hook arm may be switched from one side to the other of said body member.