April 21, 1931. H. P. ELLIOTT 1,801,729

MOORING BUOY

Filed June 13, 1930

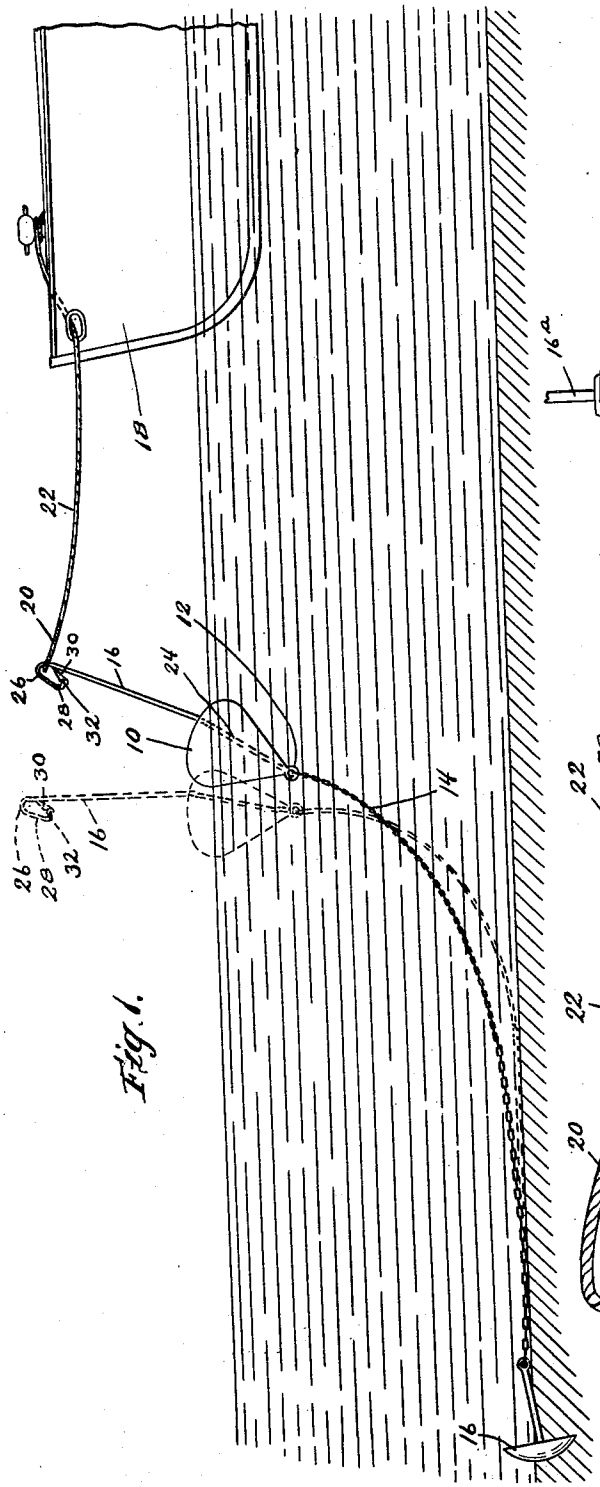

Fig. 1.

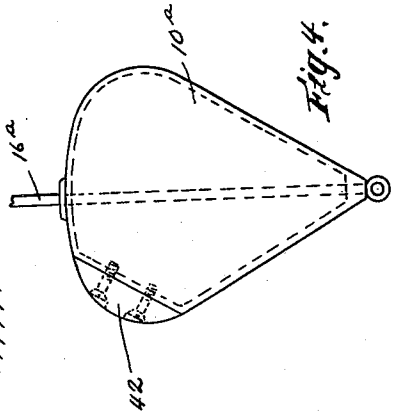

Fig. 4.

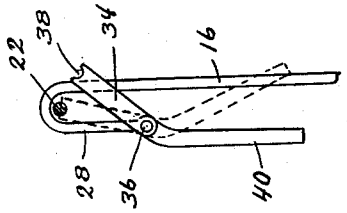

Fig. 3.

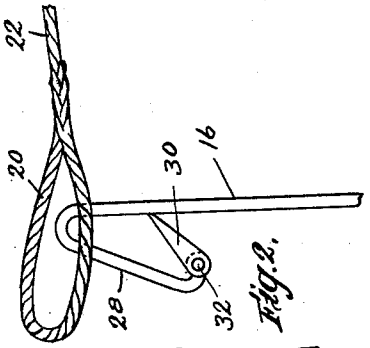

Fig. 2.

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Patented Apr. 21, 1931 1,801,729

UNITED STATES PATENT OFFICE

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MOORING BUOY

Application filed June 13, 1930. Serial No. 460,886.

This invention relates to mooring buoys for boats.

The usual mooring buoy or float has a ring to which the mooring cable or rope is attached. With this arrangement it is difficult to "pick up" the buoy or to attach the mooring rope to the buoy due to the tossing of the boat and the buoy and also to the fact that the boat may have considerable momentum at the time. It is difficult to judge distance so accurately that the power can be cut off at such a time that the forward movement of the boat will be dissipated at the time it is alongside the buoy, especially in a wind. It is dangerous to pick up the buoy when the boat is moving even slowly as a heavy boat has much momentum and can not be stopped by holding onto the buoy by the hand. Furthermore, in a choppy sea, it is difficult to hold the boat and the buoy together for a sufficient period of time to connect the mooring rope with the ring or other attaching devices of the buoy.

An object of the present invention is to provide a buoy with an improved form of mooring means that is so arranged that the mooring rope can be attached thereto easily and quickly and will lock the rope positively to the buoy against subsequent unintentional detachment.

A further object of the invention is the provision of a mooring buoy having an upstanding mooring post that has a mooring snap-hook at the top, the post and the buoy being so constructed and arranged that when the bight of the mooring rope is dropped over the post, the drag on the rope will automatically cause it to pass up the post and into the engagement of the hook.

Another object is generally to improve the construction of mooring buoys for boats.

Fig. 1 is a view illustrating the invention in a more or less diagrammatic manner.

Fig. 2 is an enlarged detail of the snap-hook at the top of the mooring post.

Fig. 3 illustrates a modified form of hook.

Fig. 4 illustrates a modified construction of the buoy.

As shown in Fig. 1, the buoy 10 is of top-shape and is large at the top and tapers in a conical manner to the bottom where it is provided with an attaching eye 12 that is connected with an anchor chain 14 connected to an anchor 16. The buoy preferably is made of sheet metal and is hollow and water tight.

In accordance with this invention, the buoy is provided with an upright mooring post 16 which is in the form of a metal rod sufficiently strong to withstand the pull of the boat 18 that is adapted to be connected thereto. Preferably the height of the post above the water line is somewhat greater than the height of the boat so that a man on the deck of the boat can readily slip the bight 20 of the mooring rope 22 over the top of the post. The mooring post is located at one side of the center of buoyancy of the buoy which, in the form of buoy illustrated in Fig. 1, is coincident with the vertical axis of the buoy. The post preferably has an angularly related extension 24 that extends downwardly within the buoy and is connected mechanically to the eye 12 so that the pull of the boat on the post is transmitted directly to the chain 14. With some types of buoys, however, the side wall is sufficiently strong to permit the post to be attached directly to the top thereof so that the extension 24 can be eliminated. It is considered unnecessary, however, to illustrate this modification. The upper end of the post 16 has a hook portion 26 formed by the downwardly reflexed end portion 28 of the post so that a space is provided between the body of the post and said reflexed portion in which the rope can be received. The lower end of the reflexed portion 28 is provided with a latch 30, one end of which is pivoted at 32 to the reflexed portion and the other end of which is held by gravity against the body of the post and thereby closes the entrance at the bottom of the hook. With this arrangement, when the bight of the rope is dropped over the top of the mooring post and is then passed upwardly in engagement with the post, the rope passes under the latch and raises it and enters the hook. The latch then drops down under the rope and against the body of the post by gravity and thereby retains the rope within the hook. The rope can be released from the hook by

manually raising the latch so that the rope can be slipped downwardly out of the hook and thereafter upwardly over the hook and off the post.

The hook is so located that it faces towards the center of buoyancy of the buoy or is located between the center of buoyancy and the body of the hook. Thus, in Fig. 1, the hook faces towards the vertical axis or geometrical center of the buoy.

With this construction, when the boat comes up to the buoy the bight of the rope is dropped down over the mooring post. The drag on the rope, due either to the momentum of the boat or to the action of wind on the boat, pulls on the post and tilts the buoy and the post in the manner shown in full lines, Fig. 1. If the post does not happen to be between the boat and the center of buoyancy of the buoy, the drag on the rope causes the buoy to rotate in the water by reason of the eccentric location of the post until the post is between the boat and the center of the buoy. This action thus always brings the hook facing away from the boat. The drag on the rope also causes the bight of the rope to ride up on the post and to raise the latch and enter the hook above the latch, which latch falls back into place and thereby automatically locks the rope to the post without further attention on the part of an operative. Thus it is merely necessary to drop the bight of the rope over the post to effect the automatic locking of the rope to the buoy.

With the type of latch hook above described, it is possible that the tossing of the boat and the buoy may swing the rope into such a position that a part thereof comes under the latch and raises it and thereby releases the rope from the hook. The latch of Fig. 3 can not be so operated. In this modification the latch consists of a pair of plates 34 which lie on opposite sides of the hook and are pivoted at 36 to the lower end of the reflexed portion 28. The upper ends of said plates are provided with notches 38 in which the rope is engaged so that the pull of the rope on the plates causes the rope to be jammed between the ends of the plates and the bottom of the hook. The latch plates are also provided with angularly related depending sections 40 which in the closed position of the latch shown by dotted lines overlies the opening of the hook and the opposite sides of the body portion of the post. With this arrangement while the rope may be tossed into a position under the latch it engages the inclined sections 40 and by this is guided away from the hook.

In the construction shown in Fig. 1, the buoy is symmetrical so that the center of buoyancy coincides with the geometrical vertical axis thereof. In the construction illustrated in Fig. 4, the buoy 10*a* is provided with a weight 42 on one side thereof so that the side bearing the weight is the heaviest part of the buoy. The center of buoyancy of the buoy thus lies on that side of the geometrical center of the buoy that is opposite the weight. In this modification, the mooring post 16*a* is located in the geometrical center of the buoy and thus is eccentrically located with respect to the center of buoyancy as is the case in Fig. 1. In this modification, the hook, not shown, at the end of the buoy, faces away from the weight and toward the center of buoyancy of the buoy. The operation of this modification is the same as has been previously described in connection with Fig. 1. The drag of the mooring rope causes the buoy to tilt and to rotate until the weight is lowermost, in which position the hook is on the side of the post that is away from the boat so that the bight of the rope automatically slides up the post and enters and is latched within the hook.

I claim:—

1. In a mooring buoy, a mooring member adapted to be engaged by a mooring rope and having a connection adapted to engage and hold the rope, and means responsive to the drag of the rope on said member to displace the rope thereon in a direction to effect its engagement with said connection.

2. In a mooring buoy, a mooring member adapted to be engaged by the bight of a mooring rope and having a connection adapted to engage the bight of the rope, and means responsive to the pull of the rope on said member to effect the displacement of the bight on said member in the direction and into the automatic engagement of said connection.

3. In a mooring buoy, a mooring member having a hook adapted to be engaged by a mooring rope, and means responsive to the drag of the rope on said member to effect the movement of said rope along said member toward and into the engagement of said hook.

4. In a mooring buoy, a mooring member having a hook adapted to be engaged by a mooring rope, a latch which closes the exit from said hook, and means responsive to the drag of the rope on said mooring member to effect the displacement of the rope on said member toward said hook and also the displacement of said latch and the entrance of the rope into said hook.

5. In a mooring buoy, a mooring member carried thereby which is eccentrically located with respect to the center of buoyancy of said buoy, said mooring member having a hook that is adapted to be engaged by a mooring rope and which faces toward the center of buoyancy of the buoy, and means responsive to the drag of the rope on the buoy to cause the rope to slide along said member and enter the hook.

6. A mooring buoy that has an upstanding mooring post provided at its upper end with a rope engaging hook, and a latch which re-

leasably closes the entrance to said hook, the buoy having means that causes the hook always to face away from the pull on the post.

7. A mooring buoy having an upstanding mooring post that is eccentrically located with respect to the center of buoyancy of said buoy and is provided at its upper end with a rope engaging hook that has an opening directed toward the buoy and a latch which releasably closes said opening.

8. A mooring buoy that is capable of rotating and tilting when floating, and a mooring post that is carried by and upstanding above said buoy and is located eccentrically with respect to the center of buoyancy thereof, said post having a hook at its upper end that is adapted to engage a mooring rope and has an entrance which faces the buoy, and means which releasably closes said entrance and which is operated to uncover said entrance by the movement of a mooring rope upwardly on said post.

9. A mooring buoy which is capable of tilting when floating, having an upstanding mooring post that is provided at its upper end with a rope-engaging hook that has an entrance that faces the buoy, said hook being at one side of and facing toward the center of buoyancy of the buoy, and means which releasably closes said opening and which retains a mooring rope in the hook.

10. A mooring buoy which is capable of rotating and tilting when floating, said buoy having an upstanding mooring post that is eccentrically located with respect to the center of buoyancy of the buoy and that has a hook at its upper end which faces toward the center of buoyancy and which has a rope entrance that faces toward the buoy.

11. A mooring buoy which is capable of rotating and tilting when floating, said buoy having an upstanding mooring post that is eccentrically located with respect to the center of buoyancy of the buoy and that has a hook at its upper end which faces toward the center of buoyancy and which has a rope entrance that faces toward the buoy, and means which releasably closes said entrance and which is moved away from said entrance by a mooring rope which moves upwardly in engagement with said post.

12. A mooring buoy which is capable of rotating and tilting when floating, said buoy having an upstanding mooring post that is located at one side of the center of buoyancy of the buoy and is adapted to be engaged by the bight of a mooring rope and which tilts the buoy by the drag of the rope and also rotates the buoy until the post is between the center of buoyancy of the buoy and the direction of pull on the rope and also is inclined from the vertical toward the direction of pull of the rope so that the rope is caused to slide on the post toward the upper end thereof, said post having a hook at its upper end which faces toward the center of buoyancy of the buoy and which has an opening that faces the buoy so that the sliding rope is constrained to pass through said entrance into the hook, and means which releasably closes said opening and which is moved away from said opening by the moving rope in passing into said hook and which thereafter moves into closing position under said rope to retain it in said hook.

13. A mooring buoy having an upstanding mooring post that is eccentric with respect to the center of buoyancy of the buoy and which has a rope engaging hook at its upper end that faces the center of buoyancy of the buoy and has an entrance that faces the buoy, and latching means that overlies said entrance and is adapted to engage the rope and hold it in said hook, said latching means having a depending extension which overlies the body of said post beneath said opening when the latch is in engagement with the rope, whereby to prevent said rope from releasing said latch.

14. A mooring buoy having an upstanding mooring post that is eccentric with respect to the center of buoyancy of the buoy and which has a rope engaging hook at its upper end that faces the center of buoyancy of the buoy and has an entrance that faces the buoy, and latching means that overlies said entrance and is adapted to engage the rope and hold it in the bottom of said hook.

In testimony whereof, I have signed my name to this specification.

HARMON P. ELLIOTT.