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BOAT MOORING

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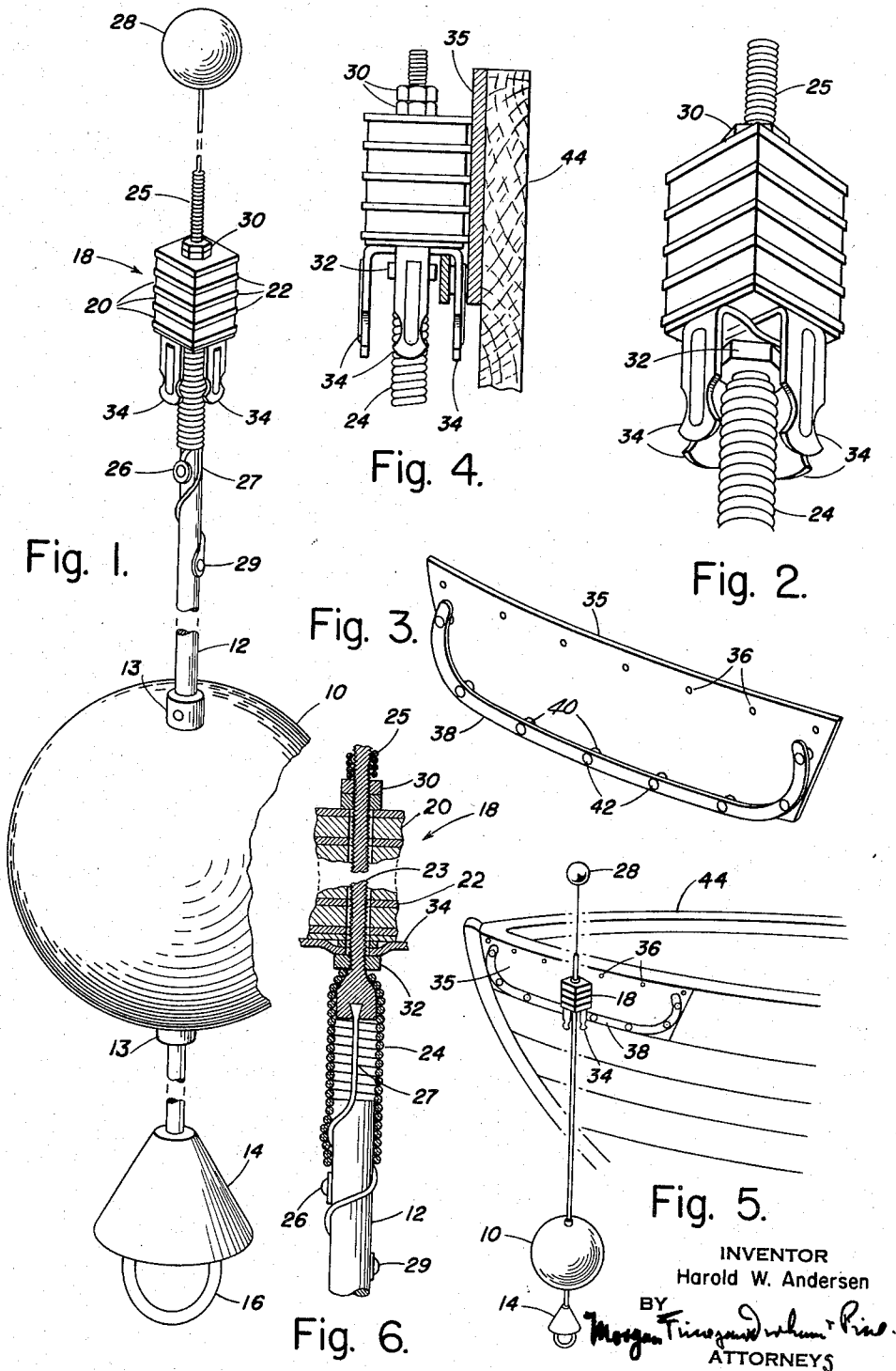


Fig. 5.

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BOAT MOORING

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This invention relates generally to boat moorings and has particular relation to an improved mooring that is automatic in its operation.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

In the mooring of boats, which, in this application, includes motor and sailing boats and sea planes with pontoons, the mooring operation is often a difficult and somewhat dangerous task, particularly in foul weather. This is particularly true if, as is often the case, the mooring of the boat must be accomplished by one person. In such an instance it may be next to impossible to secure the boat to the mooring even though a skilled navigator is at the helm with it often being necessary to make several passes at the mooring and with the helmsman being required to leave the helm and quickly go to the bow of the boat as the mooring buoy is approached in an effort to pick up the buoy and make the mooring line fast. The present invention eliminates this problem and potentially dangerous condition and provides a mooring which makes it a simple operation for one person to moor the boat. This invention is related to my copending application Serial No. 723,702, filed March 25, 1958, now Patent No. 2,943,590, with this invention, in certain environments, being an improvement over the organization shown and described in this copending application.

It is an object of this invention to provide an improved boat mooring device which is automatic in its operation and which makes it a simple and safe operation for one person to moor the boat. A further object is to provide such an automatic mooring device wherein the component parts are permanently fastened to the boat and the mooring buoy respectively with the part that is fastened to the boat conforming to the shape of the boat and being compact and simple so that there are no objectionable projections or protrusions from the boat which would interfere with docking and other navigational operations. A still further object is the provision of such an automatic mooring device which is operative regardless of the direction at which the boat approaches the mooring buoy and which will generally make the boat fast to the mooring notwithstanding that the boat may be pitching or rolling to a substantial extent. Another object is the provision of such an automatic mooring device which while being simple in construction is reliable in its operation with the device allowing the helmsman a substantial latitude in approaching the mooring buoy and with the automatic mooring device being easily disengaged for permanent mooring with the usual mooring line.

In accordance with the present invention there is provided a horizontally elongated plate of magnetic material, such as stainless steel, which is fastened to the side of the boat at the upper portion and adjacent to the bow. This plate is relatively thin and conforms to the con-

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figuration of the side of the boat. Secured to this plate is a locking rail which extends lengthwise along the lower portion of the plate and which is maintained in spaced relation with the plate by means of a plurality of spacers that are distributed along the length of the rail. This rail is to be engaged by locking members that are supported by the buoy which forms a portion of the mooring assembly.

The buoy, as is customary, is connected with a suitable anchor by means of a chain or the like and extending upwardly from the buoy in a generally vertical position is an elongated support member. Near the upper end of this member and flexibly connected therewith is a permanent magnet member which has a plurality of generally vertical sides or faces for engagement with the plate fastened to the side of the boat. The magnet member is at an elevation above the buoy such that as the boat approaches the buoy the magnet member will contact the plate and through the magnetic force created by the permanent magnet one of the flat faces of the permanent magnet will be drawn into engagement or overlying relation with the plate. Also secured to the support member are a plurality of locking lugs or hasps with these lugs being positioned below the permanent magnet member and disposed so that regardless of which face of the permanent magnet member is in overlying relation with the plate one of these lugs will be positioned so that it will pass behind the locking rail as the permanent magnet moves downwardly with respect to the plate in response to the boat attempting to move away from the mooring buoy thereby securely locking the upright support member to the boat and accordingly making the boat fast.

The permanent magnet member is resiliently mounted on the upright support member so that the axial disposition of the permanent magnet member may be varied as required in order for the permanent magnet member to lie in flat engaging relation with the plate secured to the side of the boat.

In mooring with this device, the boat is brought up to the mooring buoy so that the permanent magnet member engages the plate secured to the side of the boat. One of the faces of the permanent magnet member will be attracted into flat overlying relation with the plate and then as the boat attempts to move away from the mooring one of the locking lugs will slip behind the locking rail into locked position. The plate secured to the side of the boat and the locking rail which is secured to the plate are sufficiently long so as to give the helmsman substantial latitude in bringing the boat up to the mooring and still effect an automatic engagement with the mooring.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Of the drawings:

Figure 1 is a perspective view of one portion of the mooring of this invention with this view showing the float and the mechanism or apparatus supported thereby;

Figure 2 is a fragmentary perspective view looking from below and showing the permanent magnet organization and the locking lugs or hasps mounted on the support member extending up from the buoy or float;

Figure 3 is a perspective view of the plate that is secured to the side of the boat and which has the locking rail fastened to it in spaced relation;

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Figure 4 is a fragmentary sectional view showing the locking lugs and the permanent magnet organization in operative position with respect to the locking rail and the plate respectively;

Figure 5 is a fragmentary perspective view showing the elements of the invention in their operative relation with a boat in its moored position, and;

Figure 6 is a fragmentary vertical sectional view principally through the permanent magnet member showing the details of its mounting.

Referring now to the drawings, wherein like reference characters are used throughout to designate like elements, the illustrative and preferred embodiment of the invention includes float 10 which acts as a buoy for a portion of the mooring device of the invention and from which extends fiberglass support rod 12 with the float being preferably made of vinyl plastic and with rod 12 being adjustable with respect to the float through adjustable collars 13 disposed on rod 12 above and below the float and retained in their desired adjusted position by a suitable set screw. In order that the float will be retained in a position where rod 12 is generally vertical there is secured to the lower end of the rod an adjustable weight 14 and also provided at the lower end of the rod is a suitable ring 16 for connection with the usual anchor chain or line which is in turn connected to the anchor.

The mooring of the invention includes a permanent magnet member 18 which is secured to the upper end of rod 12 and which cooperates with parts that are fixed to the boat in order to provide an automatically operating device. The permanent magnet member 18 is preferably formed with a plurality of vertically spaced permanent magnets 20 which are generally square in horizontal or transverse section, as shown, and may be formed of a ceramic magnetic material which is not subject to substantial corrosion. Between the permanent magnets 20 is disposed one of the complementary steel or other ferromagnetic members 22, there also being one of these members 22 above the uppermost and below the lowermost magnet member 20. The ceramic magnets 20 and the intermediate members 22 are so magnetized that the external faces of these members present alternate poles to increase the magnetic attraction for a steel or other magnetic strip. This assemblage 18 is vertically elongated as shown presenting four generally upright elongated external faces or sides.

The entire permanent magnet member or assembly 18 is secured to support rod 12 in a manner that permits the magnet member to flex or bend with respect to the support rod allowing the member to vary its axial position or rather the angular disposition of its axis as required during the mooring operation. For this purpose magnet member 18 is bored to receive threaded stainless steel rod 23 which extends vertically through the magnet member with this rod having received thereon nuts 30 at the upper end of the magnet member and nut 32 at the lower end and with these nuts being effective to clamp or secure the magnet member to this rod. The lower end of rod 23 is in the form of a filister head over which is received the upper end of coil spring 24 which is tapered in complementary relation with the filister head thereby preventing downward movement of the spring relative to rod 23 but permitting relative rotational movement between the two. Spring 24 is snugly received over the upper end of support rod 12, which is spaced somewhat below rod 23, and the spring is secured to the support rod by a suitable fastening such as set screw 26. Upward movement of rod 23 and accordingly magnet member 18 relative to support rod 12 is limited by stainless steel cable 27 which has its upper end made fast to the lower end of rod 23 and its lower end wrapped around the upper end of support rod 12 and secured thereto at 29. This cable prevents spring 24 from being over extended which would cause permanent distortion of the spring. Threaded or screwed on the upper end of

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rod 23 is coil spring 25 which extends upward from magnet member 18 a substantial distance with the wire of the spring finally extending vertically upward and having an indicator ball 28 secured to its upper end for a purpose later described.

Also secured to rod 23 are the locking lugs or hasps 34. As embodied, there are four of these locking lugs and they are formed by positioning two U shaped members in transverse relation to each other with the web or return bend portion of the U shaped members being bored to receive rod 23 and being clamped between nut 32 and the lower end of magnet member 18. As illustratively disclosed each of the locking lugs or hasps is positioned in parallel relation with one face of the magnet member 18.

Secured to the side of the boat at the upper portion of the side and adjacent the bow is a plate of magnetic material such as stainless steel with this plate conforming to the side of the boat and being fastened thereto by fasteners 36. This plate carries a locking rail 38 which extends generally along the lower portion of the plate with the ends of the rail being curved upwardly as shown. This rail 38 is maintained in spaced relation with plate 35, as best shown in Figures 3 and 4, with their being a plurality of spacers 40 employed for this purpose and with the fasteners 42 which are distributed along the length of the locking rail and which secure the rail to plate 35 extending through these spacers. Locking rail 38 is spaced from plate 35 in order that one of the locking lugs 34 may be slipped behind this rail in locking position when one of the faces of permanent magnet member 18 is in engagement with the plate.

Magnet member 18 and plate 35 are vertically disposed relative to each other so that as the boat, identified as 44, approaches buoy 10 one of the faces of magnet member 18 will be brought into contact with the plate at a location such that the locking lug 34 extending below this surface or side will be initially located somewhat above locking rail 38. With the elements in this position, as the boat then tends to drift or move away from buoy 10 magnet member 18 will slide downward with respect to plate 35 and locking lug 34 will pass between rail 38 and plate 35 or in other words locking rail 38 will be received in the locking lug 34 in a locked position with the boat then being made fast, with Figure 4 showing the elements in this position.

With this invention it makes no difference at what angle the boat approaches the mooring since although magnet member 18 may first contact plate 35 by a corner of the magnet member engaging the plate rather than one of the flat faces of the magnet member contacting the plate, the magnetic force of the permanent magnet member will quickly cause one of the flat faces of this member to engage the plate in overlying relation therewith. This is readily accomplished since the floating buoy 10 permits magnet member 18 to freely rotate with and about the axis of rod 12 while the resilient connection of the magnet member through coil spring 24 permits the magnet member to adjust its vertical or axial position as required for one of its faces to flatly engage the plate 35.

Plate 35 is made sufficiently long so as to allow the helmsman reasonable latitude in bringing the plate into engagement with the magnet. It is only necessary for the helmsman to have magnet member 18 contact plate 35 between the upwardly turned ends of locking rail 38. Having accomplished this the mooring device will automatically become locked and it will be seen that the upturned ends of rail 38 prevent magnet member 18 from moving longitudinally of plate 35 past these ends thereby preventing a possible failure of operation of the device for this reason. During the mooring operation the helmsman eases the boat toward the buoy with the indicator ball 28, which may be a plastic colored ball and which extends well above magnet member 18 so that it will be clearly visible to the helmsman during the mooring

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operation, keeping the helmsman informed as to the position of magnet member 18 so that he may be relatively sure of contacting the magnet member with plate 35 at the side of the boat. By movement of indicator ball 28 it will also be evident to the helmsman when the magnet member has been contacted. As that time forward motion of the boat may either be continued or may be stopped with the engines being reversed to relatively slowly back the boat away from the buoy. In either case magnet member 18 together with lugs 34 will be moved generally downwardly with the magnet sliding along plate 35 while being magnetically retained in engagement with the plate and with lug 34 that is adjacent the face of the magnet member engaging the plate being moved into locking engagement with the locking rail 38. Thereafter the conventional permanent mooring line may be secured when convenient and the automatic mooring device easily released by manually disengaging the locking lug from the locking rail.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What is claimed is:

1. An automatic boat mooring device comprising a plate of magnetic material adapted to form part of and conform generally to the side of a boat, an anchored float supported generally upright member, a magnet member secured to said upright member at an elevation so as to engage said plate, and releasable locking means associated with the plate of magnetic material and the upright member and effective to prevent the boat moving away from said upright member when the magnet member is in engagement with the plate.

2. The organization of claim 1 wherein the locking means includes an elongated member adjacent the plate of magnetic material and which is adapted to be secured to the side of the boat in closely spaced relation therewith and extending longitudinally thereof and a downwardly extending lug carried by said upright member and adapted to lockingly receive said elongated member.

3. The organization of claim 2 wherein the magnet member is vertically elongated and has a plurality of generally vertically disposed flat sides that may engage the plate with there being a plurality of said lugs one of which is disposed relatively close to the plane of each of said sides for receipt of the elongated member when the particular side is in engagement with the plate.

4. The organization of claim 3 wherein the magnet member is resiliently mounted in order that it may lie flat against the plate.

5. In an organization of the type described the combination of a float adapted to float in a predetermined position, a support rod means extending upwardly therefrom, a magnet member secured to said support rod means, an elongated plate of magnetic material adapted to be secured to the side of a boat adjacent the bow in

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conforming overlying relation therewith for engagement with the magnet member, a pair of locking members one carried by said plate and the other carried by the support rod means and disposed to be moved into locking engagement by generally downward movement of the support rod means relative to the plate when the magnet member is in engagement with the plate.

6. The organization of claim 5 wherein the locking members include a locking rail secured to the plate in spaced relation therewith and extending generally lengthwise thereof, and a downwardly extending member carried by the support rod means and receivable behind said rail.

7. A boat mooring comprising a plate of magnetic material adapted to be secured to the side of a boat, a locking rail secured to said plate in spaced relation therewith and extending longitudinally thereof, an anchored buoyant member, a support extending upwardly therefrom, a magnet member carried by said support at an elevation to engage said plate and mounted so it is resiliently retained in a generally vertical position, said magnet member being vertically elongated and having a generally polygonal transverse section so that the magnet member presents a plurality of generally flat sides, means carried by said support for lockingly engaging said bar when any of the sides of the magnet member engages said plate, said means including a plurality of hasps having downwardly directed openings, each side of the magnet member having one of said hasps disposed relatively close to the plane thereof for receipt of said bar when the particular side is in engagement with said plate.

8. A boat mooring comprising a horizontally elongated plate of magnetic material adapted to be secured to the side of a boat, a locking rail extending longitudinally of the plate and secured to the lower portion of the plate in outwardly spaced relation therewith with the ends thereof being turned generally upward, an anchored buoyant member, a support extending upwardly from said member, a vertically elongated magnet member having a plurality of generally vertically disposed flat sides adapted to engage and magnetically adhere to said plate, said magnet member being mounted on said support by a spring which forms part of the support and permits the axial disposition of the magnet member to vary as required for a side of the magnet to lie flat against the plate, a plurality of downwardly directed lugs carried by the support below the magnet member with there being one lug for each of said flat sides and with the lugs disposed relative to said sides so that for each side, when in engagement with said plate, one of said lugs is positioned to lockingly receive said rail upon downward movement of the magnet member relative to said plate.

References Cited in the file of this patent

UNITED STATES PATENTS

1,801,729	Elliott	Apr. 21, 1931
1,921,500	Blake	Aug. 8, 1933
1,958,535	Elliott	May 15, 1934