July 5, 1960 H. W. ANDERSEN 2,943,590

BOAT MOORING

Filed March 25, 1958

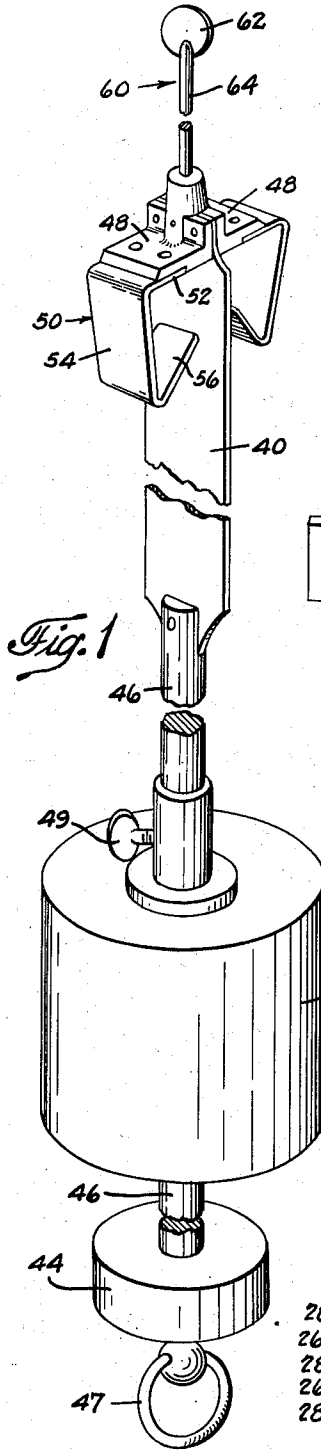


Fig. 1

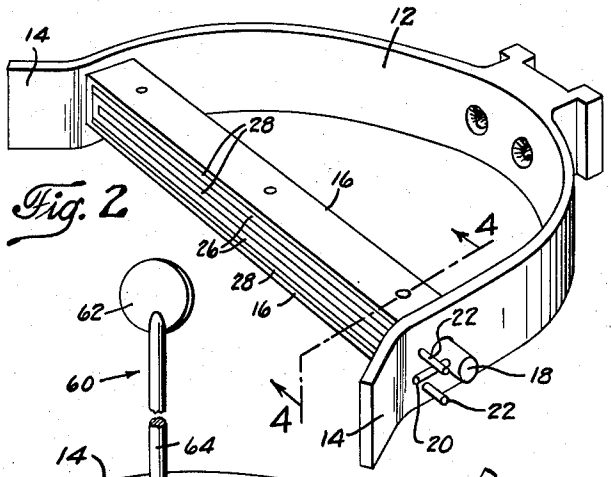


Fig. 2

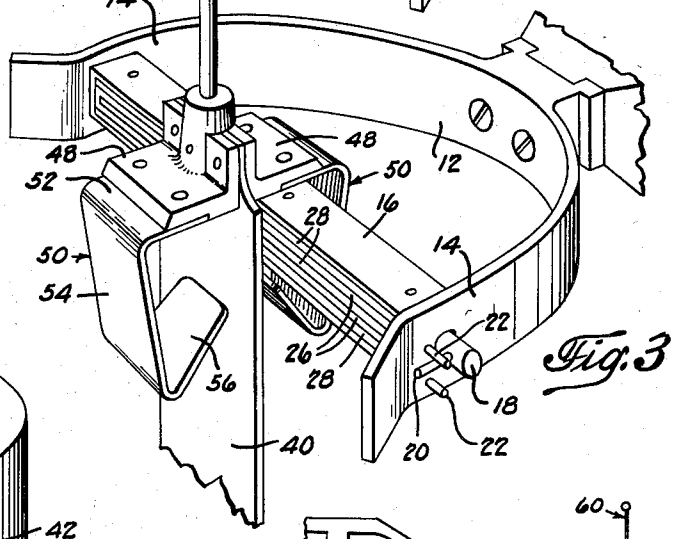


Fig. 3

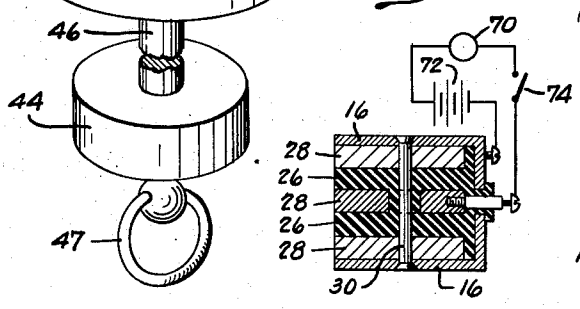


Fig. 4

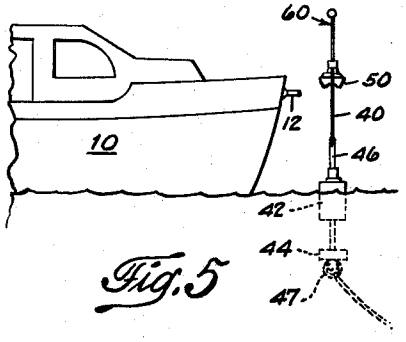


Fig. 5

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BOAT MOORING

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The present invention relates to a novel and improved boat mooring.

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.

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.

The mooring of small and medium size power boats, where only one or two people may be on board, is a recurring and difficult problem and it is often necessary to make several atttempts to pick up the mooring buoy, with the consequent danger, delay and annoyance attendant upon failure to effect such mooring. Even when two adults are on board with one navigating and the other attempting to catch the mooring line, great difficulty is often experienced, especially in bad weather or in a crowded mooring space.

The present invention has for its object the provision of a novel and improved mooring device which is especially adapted to simplify the mooring of a motor or sail boat with a minimum of effort and skill and usually with only one person operating the boat. A further object is the provision of an improved mooring device which will, in most cases, automatically cause engagement of the component parts of the mooring, regardless of weather, pitching or rolling of the boat, and which requires no special manipulation of the mooring as the boat is driven towards and into engagement with the mooring. The invention further provides a mooring which is automatically engaged by movement of the boat relative to the mooring and which is easily disengaged when desired.

In general, the mooring device of the present invention comprises interengaging members, one of which is an anchored floating member and the other of which is a member carried by the boat to be moored. The anchored floating member comprises a flexibly anchored float from which upwardly extends a relatively long flexible member, which is preferably a flat strip of magnetic material, such as spring steel, and is provided at its upper end with a spring hasp and a signal indicator to indicate the position of the strip with reference to the course of the boat.

The boat-carried member comprises a pair of divergent members or horns which are made fast to the bow of the boat and which tend to guide the anchored flexible member into engagement with a member positioned between the horns, so that the boat-carried member may be engaged and held by the float-carried hasp. To facilitate engagement of the anchored hasp with the boat-

carried bar member, the bar member is preferably formed as a permanent or electromagnet and the flexible, anchored member is formed by flat, magnetic material and is flexibly anchored so that it may be easily rotated in the water to provide full engagement of the magnetic bar with a flat side of the flexible members, thereby insuring entry of the bar into the hasp carried by the flexible strap. Although the bar carried by the bow of the boat may be formed of magnetic material and the floating member formed as a permanent magnet, it is preferable to have the magnet mounted on the boat as the horizontal bar.

The float-carried hasp is resiliently urged to closed position but may be easily released manually for disengaging the boat from its mooring.

Thus, as the boat is steered towards the mooring, a relatively wide bar, preferably a magnetic bar, is brought against a buoyantly supported, upright flat strip, preferably magnetic, at the upper end of which is provided a resilient hasp adapted to allow the entry and engagement of the boat-carried bar into the hasp. This strip is rotated as required by the sustained pressure of the bar against the strip, and the strip being resilient is bent and deflected from its vertical, floated position, so that accurate vertical alinement of the bar and hasp is not required, and pitching of the boat does not substantially interfere with mooring. Being magnetic, the bar and flat strip tend to remain in engagement as the boat rolls, and remain in engagement until the boat is manually disengaged from its mooring.

At the upper end of the mooring, it is preferably provided with a directional flag or signal so that the person at the wheel may determine his course with respect to the flat sides of the mooring.

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 fragmentary perspective view of an illustrative and preferred embodiment of one member of the present invention;

Figure 2 is a similar view of the other and cooperating member of the preferred embodiment;

Figure 3 is a fragmentary view showing the bar and hasp members in engaged or mooring position;

Figure 4 is a schematic sectional view taken on the line 4—4 of Figure 2; and

Figure 5 is a fragmentary general view showing the parts of the invention in their normal operating relation as a boat is about to be moored.

Referring now in detail to the illustrative and preferred embodiment of the invention as shown in the drawings, the boat **10** to be moored carries a bar member near its bow which is adapted to engage and be releasably secured by as hasp member near the upper end of a floating upright moored member, the bar and hasp being so constructed and mounted that the bar is automatically engaged by the hasp as the boat is driven into contact with the upright supporting the hasp.

As embodied, the bar member comprises a magnetic member, preferably a permanent magnet member which is supported within a strong metallic framework and is firmly attached to the bow of the boat to be moored. On the bow of the boat **10** is mounted a U-shaped member **12** having divergent sides **14** between which is pivotally mounted a channeled bar **16** formed at its ends with pivots **18** which are mounted in suitable apertures in the side members **14** and is restrained against excessive pivotal movement by pin **20** which is limited by one or the other of stops **22**.

Channel bar 16 is formed with a plurality of spaced apart, elongated magnets 26 which are preferably formed of a ceramic magnetic material, which is not subject to substantial corrosion. Between the ceramic permanent magnet members 26 are longitudinally extending steel or other ferromagnetic members 28, and the ceramic members 26 and the intermediate members 28 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.

The bars 26 and 28 are firmly held assembled by non-magnetic rivets 30 which hold them within the interior of the non-magnetic channel bar 16.

The cooperating, floating, engageable member to cooperate with the magnetic member of Figures 1 and 4 comprises a steel or other flexible magnetic strap 40 which extends more or less vertically and is adapted to be engaged by the faces of magnets 28 and by the counter poles 28. Once engaged the magnets 26 first tend to rotate the strap 40 into full flat engagement and also tend to pull the strap into engagement with the faces of members 28, thereby more securely engaging and holding the strap 40.

Strap 40 is preferably formed of a flat, flexible strip of ferrous metal, such as iron or steel having good magnetic properties, and a considerable degree of resilience.

Strap 40 is normally held in a substantially vertical position above the surface of the water, by means of a buoyant float 42 which is provided on its underside with a balancing weight 44 of sufficient mass to maintain the strap 40 substantially upright at all times.

Float 42 comprises a hollow or light weight body having substantial buoyancy in water, and is provided with a counterweight 44 which is held to the float 42 by a tie rod 46 of the desired length. Below the counterweight 44 and attached to rod 46 is a ring 47 by which the float 42 may be anchored to any suitable anchor so that it maintains a fixed location.

The buoyancy of float 42, the mass of counterweight 44, the distance between mass 44 and 42 and their relative buoyancies are so adjusted that the strap 40 supported by the float 42 remains substantially upright and, if deflected from an upright position by weather, quickly returns to a substantially upright position.

On the upper end of rod 46, there is provided a telescopic connection with the magnetic strap 40, and may be vertically adjusted to suit varying heights of bow, weather and other factors. The desired adjustment may be fixed by set-screw 49.

At the upper end of strap 40 is provided latch means adapted to engage and hold a transverse, longitudinally sliding bar, such as the magnetic bar mounted on the bow of the boat to be moored.

These latch means may be of any desired form providing an easily entered throat which is resiliently closed after entry of the bar and which holds the bar against disengagement until it is intentionally, manually released from the mooring.

The latch means, at the upper end of the strap 40 is formed by a strong angle member 48 riveted to the end of the strap 40 and supporting a resilient member 50 which is bent to form with the strap 40 a narrowing throat or passage leading into the latching area. As embodied, there is provided a laterally extending strap 52, which extends downwardly at 54 and is then sharply and upwardly bent at 56 to form a tongue at an acute angle with the strap 40 so that it may be easily entered by a bar which is magnetically held to the strap 40, and yet lies against the strap 40 to prevent release of the engaged bow therefrom.

Superimposed on the strap 40 is a target member 60 which preferably comprises a thin disc 62 mounted on a rod 64 projecting upwardly from the strap 40, with the flat surfaces of the disc 62 parallel to the sides of the strap 40, so that the operator of the boat may know his heading on the strap, and may, thereby, be more certain to make full engagement with the mooring.

Figure 4 shows an optional addition to the form shown in Figures 1 to 3, and in which means are provided for providing a visual signal to the pilot when a full engagement has been made with the mooring strap 40. As embodied, the magnet bars 28 are formed of a magnetic metal, such as steel, the bars 26 are of a non-conductive, magnetic material, such as a ceramic magnet, and the whole assembly is encased within a non-magnetic, metallic frame member, such as a brass channel.

As the bar 16 contacts with the strap 40, it tends to rotate the strap 40 into full contact between the strap 40 and the magnetic bars 26 and 28. When full contact has been established so that one of the bars 28 and a portion of the channel 16 are in contact with the metal strap 40, a circuit is completed which causes light, or other signal 70 to be energized by a power source 72 provided switch 74 is closed. The power source 72 and switch 74 may be conveniently located on the boat so as to be under control of the pilot. Light 70 may be mounted at any convenient point on the boat where it is visible to the pilot as he manoeuvres to moor the boat.

When the boat is to be released from its mooring, the operator merely grasps the upper end of the mooring strap 40, slackens the hold of the bar 16 with the hasp 54, and deflects the hasp 54 so that the bent portion 56 is separated from the strap 40 sufficiently to allow release of the magnetic bar.

As the boat is moored, especially in rough water, it is only necessary for the boat to be headed on the mooring, especially on a heading normal to the flat surface of the strap 40 as indicated by the target 62.

In case the heading is not exactly normal to the strap 40, and given relative slow speed, the magnetic force of the bar 16 exerted on the strap 40 and the rotational force exerted on one edge or the other of strap 40, will cause strap 40 to rotate sufficiently into a position where the bar 16 will enter and be held by the hasp structure 54, the forward motion of the boat tilting the strap 40.

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. A boat mooring comprising a rod of magnetic material to be buoyantly supported generally upright in the water, and having a hasp near its upper end, a horizontal magnet bar adapted to be carried by a boat to be moored and adapted to slide along said rod and into locking engagement with said hasp, whereby the boat is moored by engagement of the bar with said hasp.

2. A boat mooring comprising a flat, rotatable strap supported above a buoyant member, a hasp having a resilient entry slot on an upper part of said strap and a horizontal bar adapted to be carried by a boat at a lower level than said hasp, whereby the bar may engage said strap, tilt the buoyantly supported strap and enter the hasp slot, to be engaged and held by said hasp.

3. A boat mooring comprising a flat strap supported above an anchored, buoyant member, a hasp on an upper portion of said strap having an easily entered slot to receive a mooring bar, a horizontal bar carried by a boat to be moored and adapted to contact with said strap below said hasp, whereby pressure of the boat on the strap inclines the strap and allows the boat carried bar to enter and be engaged by the hasp.

4. A mooring as claimed in claim 3 in which the mooring bar includes a magnet, and the strap is of magnetic material.

5. A mooring as claimed in claim 3 in which the mooring bar includes a pair of contacts to energize a signal,

said contacts being closed by engagement of said contacts with said strap.

6. A mooring as claimed in claim 3 in which the mooring bar comprises a plurality of permanent magnet members, spaced apart and supported within a supporting channel mounted on the bow of the boat to be moored.

7. A mooring comprising a bar means of magnetic material fast to the bow of a boat to be moored, a buoyant, anchored member, an upwardly extending flat strip means of magnetic material supported on the buoyant means, one of the members of magnetic material being magnetized, said strip being adapted to be engaged by the bar and magnetically adhere thereto and a member carried by said strip to engage and hold said bar and mounted above the level of said bar as the boat-carried bar and strip are supported in the water.

8. A mooring as claimed in claim 7 wherein said member carried by the strip has an engaging tongue post with which the bar may slide into engaged position.

9. A mooring as claimed in claim 7 in which a flat target member surmounts the flat strip.

10. A mooring as claimed in claim 7 in which the magnetic bar is mounted for pivotal movement about a horizontal axis to facilitate engagement of its face with the flat strip.

11. A mooring as claimed in claim 7 in which the magnetized member is a permanent magnet.

12. A boat mooring comprising an upwardly extending, buoyantly supported member, means secured to a boat so that it will engage said member at a predetermined location in response to the boat being brought up thereto, and latch means operative to prevent said first mentioned means moving relative to said member toward the upper end thereof beyond a given location above said predetermined location.

13. A boat mooring comprising a buoyantly supported upstanding means, means adapted to be supported on a boat to engage the upstanding means in response to bringing the boat up to the mooring, these means having interacting portions preventing relative movement of the boat supported means outwardly of the upstanding means beyond a given location, with one of the engaging means being a magnet and the other being a magnetic material whereby they are urged into engagement by a magnetic force.

References Cited in the file of this patent

UNITED STATES PATENTS

1,801,729	Elliot	Apr. 21, 1931
1,921,500	Blake	Aug. 8, 1933