Jan. 22, 1963 E. L. KULICK 3,074,371

MOORING DEVICE

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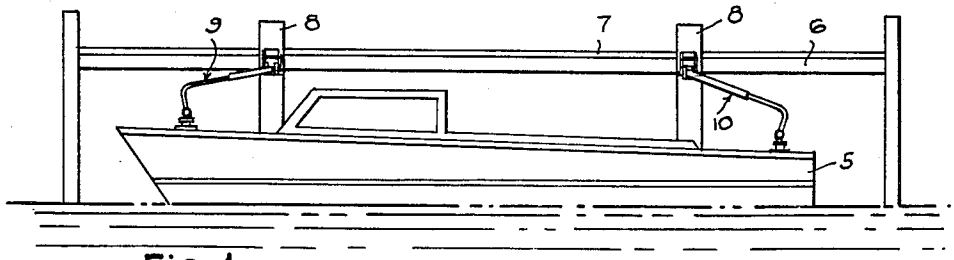


FIG. 1.

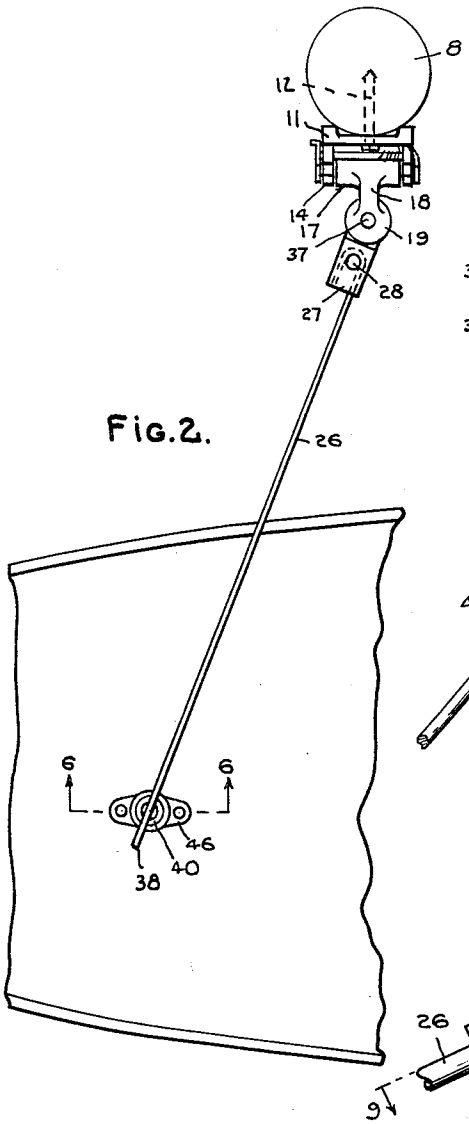


FIG. 2.

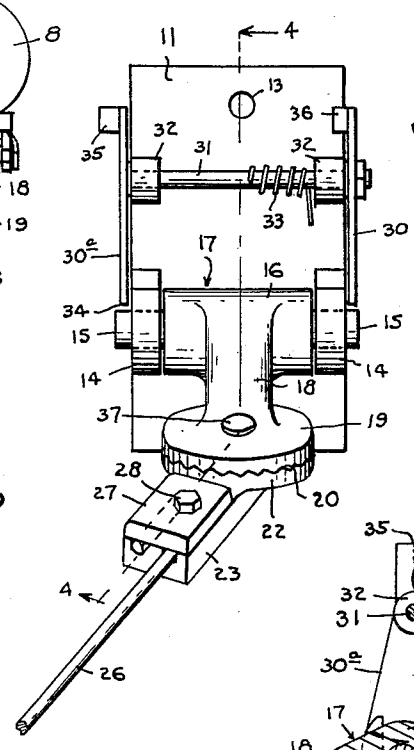


FIG. 3.

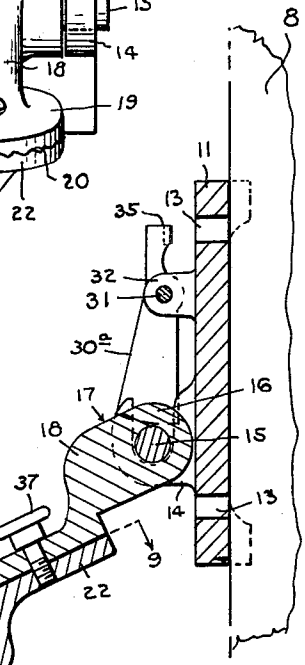


FIG. 4.

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MOORING DEVICE

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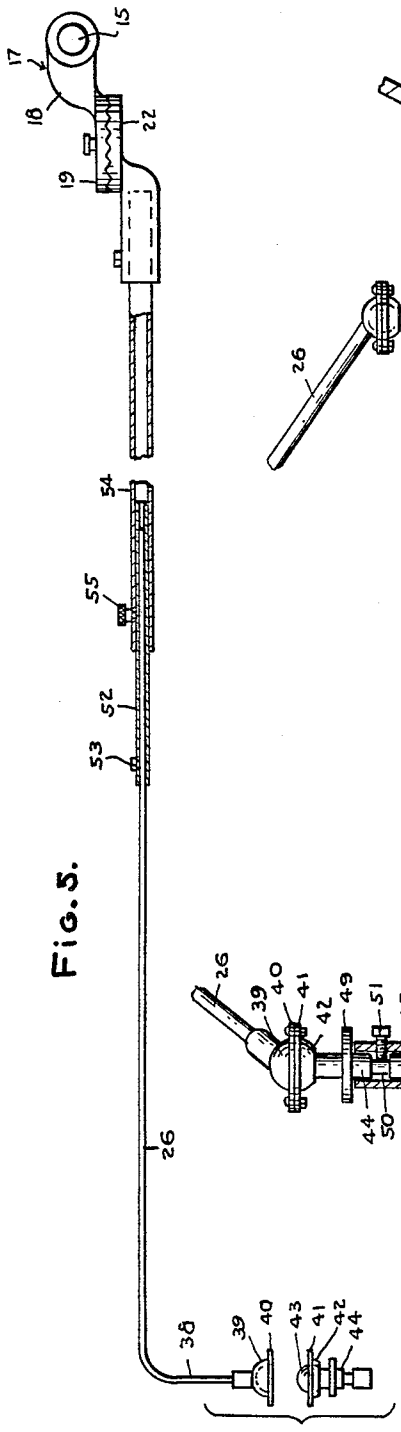


Fig. 5.

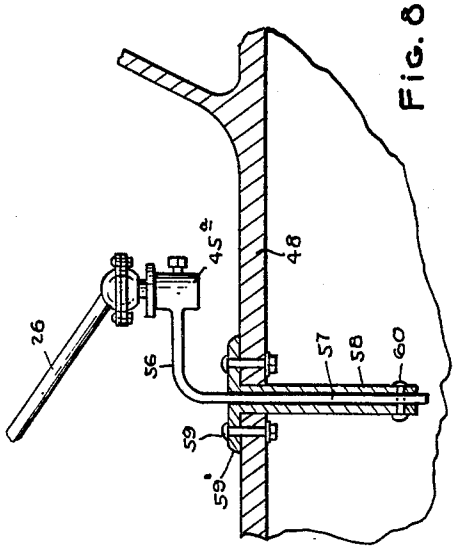


Fig. 8

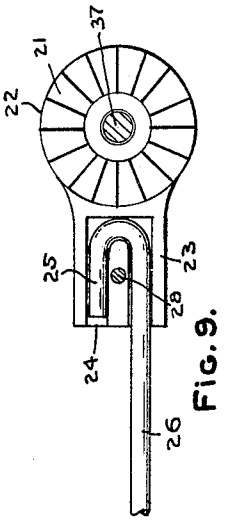


Fig. 9.

Fig. 6.

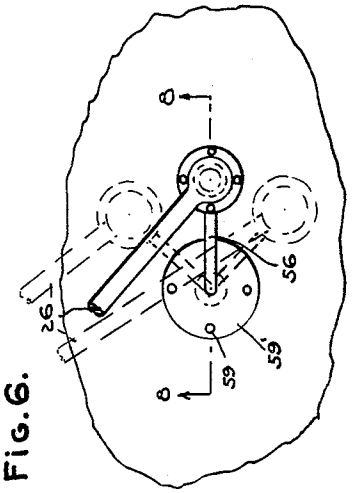


Fig. 7

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MOORING DEVICE

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6 Claims. (Cl. 114—230)

This invention relates to mooring devices, and more particularly to a mooring device for connecting a boat or similar structure to a permanent landing stage or dock and in a manner that permits of the boat rising and falling with the tide and to have other movements relatively to the dock to which it is moored. A device of this general nature is disclosed in my Patent No. 2,938,492, dated May 31, 1960, and over which the present invention is an improvement.

It is an object of the invention to provide a mooring device of this kind which will be of relatively simple construction; which will securely moor the boat and maintain the same against possible damage and which will permit of ready coupling of the boat to the dock as well as permitting its quick detachment therefrom.

More particularly, the invention contemplates the provision of a device in which a rod or other elongated element extends between the dock and the boat, with the end of the rod that is located at the dock being connected to a coupling bracket thereat by a horizontal pivot and with such end held in a manner to resist any rotative movement of the rod about its longitudinal axis while permitting it to have a torsional movement or twisting action under the movements of the boat. The invention contemplates the connection of the opposite end of the rod to the boat by means of a pin that is rotative around a a vertical axis, and with such pin connected to the second end of the rod by a universal coupling, such as a ball-and socket joint.

With these and other objects to be hereinafter set forth in view, I have devised the arrangement of parts to be described, and more particularly pointed out in the claims appended hereto.

In the accompanying drawings, wherein an illustrative embodiment of the invention is disclosed,

FIG. 1 is a side elevational view of a boat located adjacent to a dock and moored thereto by means of the improved mooring devices;

FIG. 2 is an enlarged top plan view of one of the mooring devices;

FIG. 3 is a further enlarged front elevational view of the mounting bracket and parts associated therewith;

FIG. 4 is a sectional view, taken substantially on the line 4—4 of FIG. 3, looking in the direction of the arrows;

FIG. 5 is an elevational view at another scale of a telescopic type of brace arm or rod and the parts associated with it;

FIG. 6 is an enlarged sectional view, taken substantially on the line 6—6 of FIG. 2, looking in the direction of the arrows;

FIG. 7 is a top plan view on a scale similar to FIG. 6 of a modified means for coupling the brace arm or rod to the boat;

FIG. 8 is a sectional view, taken substantially on the line 8—8 of FIG. 7, looking in the direction of the arrows, and

FIG. 9 shows the manner in which one end of the brace arm or rod is connected to the attaching piece.

Referring specifically to the drawings, the numeral 5 designates a boat or other marine craft, and 6 designates a fixed dock, normally constituting a landing stage for boat structures. The dock includes a floor section 7 and spaced-apart piling 8.

The boat or other marine craft is adapted to be moored

to the dock by two or more of the improved mooring devices, respectively indicated at 9 and 10 in FIG. 1, and since both of these devices are similar in construction, a description of one of them will suffice for both.

Each of the mooring devices includes an attaching or mounting bracket in the form of a plate 11 secured at a suitable position on one of the piles 8 by means of screws 12 or other equivalent fastening elements, the plate or bracket being provided with suitably positioned holes 13 (FIG. 3) through which the screws may be passed to enter the pile 8.

Provided on the front face of the plate 11 and adjacent to its opposite side edges are spaced hook-shaped lugs 14, which lugs are open at the top and receive pins 15, or the opposite ends of a single pin, projecting from the ends of a hub 16 of a casting 17 constituting a coupling member. Such casting or coupling member includes the above-mentioned hub 16 from which an arm 18 radially projects, said arm being provided at its end with a disk 19 having a serrated or toothed face 20 for engagement with a similar serrated or toothed face 21 (FIG. 9) provided on a disk 22 forming part of an attaching piece. Extending from the disk 22 is a radial arm 23 provided in one of its faces with a U-shaped groove 24 for the reception of the hooked end 25 formed on the end of a brace rod 26. The hooked end 25 of the brace rod 26 is maintained in the groove 24 by means of a closure plate 27 which extends over the groove and the hooked end 25 of the brace rod, and is attached to the arm 23 by means of a screw 28. This arrangement is such as to attach the rod 26 to parts 19 and 22 in such a manner as to prevent rotative movement of the rod about its longitudinal axis while permitting the rod to have a torsional or twisting movement.

Means are provided for retaining the pin or pins 15 within the hook-shaped lugs 14, such means consisting of a pair of locking levers or fingers 30 and 30*a* secured on a cross rod 31 rotatively mounted in a pair of spaced ears 32 formed on and extending forwardly from the front face of the mounting bracket or plate 11. A torsional spring 33 encircles the rod 31 and serves to bias the fingers 30 and 30*a* to the positions shown in FIGS. 3 and 4 wherein the lower ends 34 of the fingers overlie the pin or pins 15 and maintain the pin or pins from rising movement out of the hook-shaped lugs 14. One of the fingers, or that shown at 30*a*, is provided at one end with a finger piece 35 which, when manually depressed, will cause the fingers 30 and 30*a* to have their ends 34 moved clear of the hook-shaped lugs 14, permitting the casting 17 and the elements connected with it, to be detached from the bracket or plate 11. A lug 36, formed on one end of the finger 30, acts as a stop to limit the pivotal movement of the fingers.

The serrated engagement between the disks 19 and 22 is such as to permit the rod 26 to be angularly positioned as may be required between the pile 8 and the boat, the two disks being maintained in any adjusted relationship by means of a screw 37.

Adjacent to the end opposite to that on which the hook 25 is provided, the rod 26 is bent laterally as shown at 38, the end of such laterally-bent part being provided with a hollow half-ball 39 having a radially extending flange 40 for attachment to a similar radial flange 41 provided on the second section of the ball, as shown at 42. The two connected ball halves receive the ball 43 formed or otherwise mounted at the end of a spindle or pin 44 fitted within a boss 45, constituting a socket for the spindle or pin and in which the spindle or pin is rotative on a vertical axis. The boss 45 has a radial flange 46 by which it is fastened to the deck or other suitable part 48 of the boat by means of bolts 47 or other equivalent fastening elements. The pin or spindle 44 is provided with a radial

flange 49 limiting the extent of its insertion in the boss 45 and in the portion of the pin which extends down into the boss, there is provided an annular groove 50 into which the end of a screw 51, threaded through the side wall of the boss 45, enters. This arrangement is such as to allow the pin 44 to rotate relatively to the boss 45, and the ball-and-socket connection between the rod 26 and the pin 44 provides for a universal connection between said rod and the pin.

When the boat is moored to a dock by these units, and substantially as shown in FIG. 1, any up and down movement of the boat will be readily permitted by means of the pivotal connections at 15 and at the universal joint. Any longitudinal or forward or backward movement of the boat will tend to impart a twisting or torsional action to the rod 26 which will resiliently resist such movement.

While it has been herein suggested that the rod 26 shall be of one-piece construction from its hooked end to its opposite end, the rod may, if desired, be of telescopic construction, substantially as shown in FIG. 5. Therein, the rod 26 is slidably adjustable in a tube 52 and maintained in any required position of extension therein by means of a set screw 53. The tube 52 is, in turn, slidably adjustable in an outer tube 54 within which it is maintained in any desired position of insertion by means of the set screw 55. The end of the tube 54 may be provided with a hooked end similar to that shown at 25 on the rod 26, or such end may be otherwise anchored in the arm 23.

In the embodiment of the invention shown in FIGS. 7 and 8, a boss 45*a* is provided at one end of the horizontal portion of a bent rod 56, said rod having a lengthy, vertically-disposed part 57 extending through a sleeve 58 passing downwardly through the deck 48 and secured thereto by bolts 59 passing through a radial flange 59' provided at the upper end of the sleeve 58. A rivet 60 or similar fastening element extends through the sleeve 58 and through the part 57 of the rod 56.

The boss 45*a* receives the pin or spindle 44 in the same way as the boss 45. The rod 56, being anchored in the sleeve 58 by the rivet 60, is flexible to an extent of permitting it to torsionally twist or flex under boat movements, as shown in the several dotted line positions seen in FIG. 7.

The construction of the mooring device is such that by loosening or removing the screw 51, the outer end of the device can be uncoupled from the boat by then lifting the pin 44 out of the boss 45 or the boss 45*a*. When it is desired to uncouple the opposite end of the device from the dock, this can be quickly done by pressure imposed on finger piece 35 to move the fingers 30 and 30*a* to a position to enable pins 15 to be lifted out of the hook-shaped lugs 14.

The device offers a very desirable connecting means for the mooring of boats, and one that will permit all normal motions of the boat, both as to wave conditions and rise and fall of the tide, and it maintains the boat in a predetermined spaced relation with respect to the dock at all times and prevents the possibility of the boat being damaged by striking against the side of the dock.

The parts of the device are simple in construction; are strong, durable and most effective for the purpose set forth.

Having thus described a single embodiment of the invention, it is obvious that the same is not to be restricted thereto but is broad enough to cover all structures coming within the scope of the annexed claims.

What I claim is:

1. A mooring device for boats comprising, a mounting bracket attached to a dock-pile, a two-part coupling device pivotally mounted in the bracket for vertical swinging movement, the parts of the coupling device being capable of angular adjustment relatively to one another, one of said parts having means for clampingly engaging one end of a rod to resist movement on the rod, a boss mounted on a boat, a pin rotative within the boss, a ball-and-socket connection between the pin and the second end of the rod, one part of the coupling device including a serrated disk, the second part of the coupling device including a serrated disk, means for maintaining the two disks in adjusted facial relation, said second part including a grooved member, the end of the rod fitting in the groove in said member and being maintained therein by the clamping means, the boss being vertically disposed, the pin having an annular groove, and a screw passing through the boss and entering said groove to permit rotative movement of the pin while maintaining its against axial displacement.

2. A mounting device for boats comprising, a bracket for attachment to a dock pile, said bracket being provided with a pair of lugs, a coupling member having a pivot pin received in the lugs, means on the bracket for maintaining said pivot pin in the lugs, the coupling member including an arm terminating in a serrated disk, an attaching piece having a serrated disk adjustably engaged with the disk on the coupling member, a rod having a hooked end, the attaching piece having means for clampingly engaging said hooked end and restraining the rod against rotative movement while permitting torsional twist of the same, a boss provided on a boat, a pin rotatively mounted in the boss, means for restraining the pin against axial movement out of the boss, and a universal joint connection between the second end of the rod and the pin.

3. A mooring device consisting of a bracket for attachment to a dock pile, a sleeve attached to a boat, a torsion rod entering into the sleeve, means securing said rod in the sleeve in a manner to resist rotative movement of the rod while permitting torsional movement of the rod, said torsion rod including a lateral portion, a brace rod having one end attached to the bracket, and a universal joint connection between the other end of said brace rod and the lateral portion of the torsion rod.

4. A mooring device for boats comprising, a bracket for attachment to a dock pile, said bracket being in the form of a plate provided with a pair of spaced, hook-shaped lugs, a coupling member having a hub from which pivot pins project, said pivot pins being received in said lugs, pivoted fingers on the bracket for maintaining said pivot pins in the lugs, the coupling member including an arm terminating in a serrated disk, an attaching piece having a serrated disk adjustably engaged with the serrated disk on the coupling member, a rod having a hooked end, the attaching piece having a grooved arm and means for clampingly engaging said hooked end and maintaining it in the grooved arm and restraining the rod against rotative movement while permitting torsional movement of the same, a boss provided on a boat, a pin rotatively mounted on a vertical axis in the boss, means for restraining the pin against axial movement out of the boss, and a universal joint connection between the second end of the rod and the pin, said joint being of the ball-and-socket type.

5. A mooring device for boats comprising a mounting bracket for attachment to a dock pile, a flexible rod having one end releasably coupled to the said bracket by a horizontally arranged pivot, said bracket including manually-operable latch means for disengaging said rod from said bracket, a member secured to the boat and having a rotative movement around a vertical pivot, the second end of the rod being connected to said member by a ball and socket connection, the end of the rod that is coupled to the bracket being so attached as to resist rotative movement of the rod about a longitudinal axis but to permit a torsional twist of said rod, the member secured to the boat consisting of a grooved end, a boss mounted on the boat, a pin entering therein, and a screw for holding the pin against withdrawal out of the boss while permitting rotation within the same.

6. A mooring device for boats comprising a mounting

bracket attached to a dock pile, a separable coupling including manually-operable latch means, said coupling including a member detachably supported in said coupling only for horizontal pivotal movement and releasable by said manually-operable latch means, said coupling including a second member adjustably secured to said first mentioned member in angular relation to said first member, an elongated rod secured to said second member and extending therefrom, a boss mounted on a boat, a pin rotatively supported in said boss, and a ball-and-socket connection between said pin and the other end of said rod.

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