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(54) **Device for mooring a vessel**

(57) The invention relates to a device for mooring a vessel. This mooring device comprises a float body (2) which can be connected movably to a mooring post standing in water, and an element (4) connected to the float body (2) for receiving a mooring line. The mooring device can further be provided with an elastically deformable fender (6) connected to the float body, whereby dam-

age to the vessel is prevented. This fender (6) can be arranged in height direction between the float body and the receiving element and can protrude further outside the mooring post than the float body and/or the receiving element. A tube (3) to which the fender and receiving element are attached can extend upward from the annular float body, which can take a hollow form.

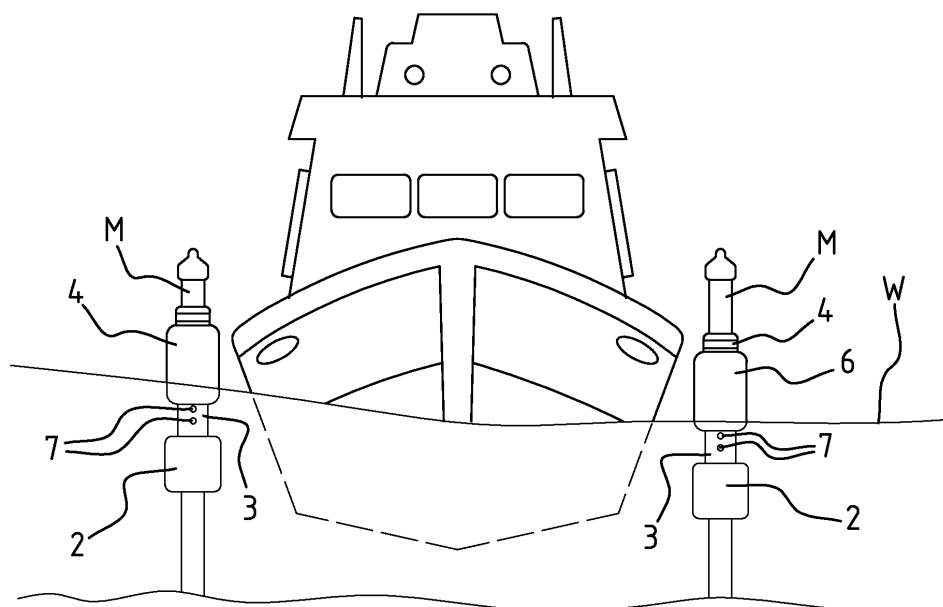


FIG. 4

Description

[0001] The invention relates to a device for mooring a ship. Such devices are known in different variants.

[0002] Mooring posts thus already exist which are provided with a pin or bollard to which a mooring line can be fastened, or an eye or ring through which a mooring line can be passed. Bollards, pins or eyes are also often to be found on or in quay walls.

[0003] A problem of these known devices is that they are often not readily accessible because they are located too high above or, conversely, too close to the water surface.

[0004] Mooring posts are also frequently applied in marinas for the purpose of defining berths in which yachts can be moored. These mooring posts are located at a distance from a landing stage which is slightly larger than the length of the yacht to be moored, and have an intermediate space which is slightly larger than the width of the yacht. Because this intermediate space is usually as small as possible - in order to enable formation of as many rentable berths as possible - it is often difficult to manoeuvre a yacht between the mooring posts without damage. This is particularly the case when mooring must take place in hard side wind or when there is a small crew on board. Although most yachts are equipped with fenders suspended along the hull, these are easily displaced when the vessel collides with a mooring post. Such fenders moreover do not protect the whole periphery of the hull of the yacht.

[0005] The invention now has for its object to provide a device for mooring a vessel which is improved such that the above stated drawbacks do not occur, or at least do so to lesser extent. This is achieved according to the invention with a mooring device comprising at least one float body which can be connected movably to a mooring post standing in water, and at least one element connected to the float body for receiving a mooring line, wherein the at least one float body is at least partially annular and adapted to at least partially enclose the mooring post such that it is slidable along the mooring post. By connecting the receiving element to an annular float body which is slidable in well guided manner along the mooring post the receiving element can be held at a fixed distance above the water surface, even when the water is rising or falling. This is important when a vessel is being moored on tidal waters or when the water is being whipped up during a storm. This prevents the vessel being unable to move together with the water because the mooring lines are pulled too tight, as can occur in the case of stationary mooring devices.

[0006] A structurally simple mooring device which can be manufactured at low cost is obtained when the at least one float body is at least partially filled with air.

[0007] The at least one receiving element is preferably adapted to extend along at least a part of the periphery of the mooring post. The receiving element can thus be reached from different positions, this being of great im-

portance in enabling simple fastening of a mooring line thereto.

[0008] In order to prevent damage to the vessel during use of the device according to the invention this mooring device is preferably provided with at least one fender connected to the float body.

[0009] With a view to guiding, it is also recommended here that the at least one fender is adapted to at least partially enclose the mooring post such that it is slidable along the mooring post.

[0010] So that repeated loads can be absorbed without permanent damage, the at least one fender is preferably elastically deformable. This can be achieved in simple manner when the at least one fender comprises a plastic, in particular a plastic foam.

[0011] The at least one fender is preferably arranged in height direction between the float body and the receiving element. The fender thus hangs roughly at the height where the hull of a vessel will pass, while the receiving element remains easily accessible for fastening of a mooring line.

[0012] When the at least one fender protrudes further outside the mooring post than the float body and/or the receiving element, these components are shielded by the fender and contact thereof with a part of the vessel, whereby damage could occur, is avoided.

[0013] The float body is preferably adapted to hold the at least one fender substantially clear of the water. Fouling of the fender is thus avoided, whereby eventual soiling of the vessel is also avoided.

[0014] When the weight of the device is such that the float body is situated substantially underwater, the device will respond less strongly to wave movements in the water.

[0015] A structurally simple and robust embodiment is obtained when a tube to which the at least one fender and the at least one receiving element are attached extends upward from the float body.

[0016] The float body and the tube are preferably manufactured integrally, whereby the construction of the device is simplified still further.

[0017] In order to prevent water being pumped upward between the tube and the mooring post due to an up and downward movement of the device under the influence of swell, which could result in deterioration of the mooring post, it is recommended that at least one opening, which lies substantially on the water surface during use, is formed in the tube.

[0018] For protection on all sides irrespective of the position of the device relative to the mooring post, it is recommended that a number of fenders are attached adjacently of each other to, and substantially wholly enclose, the tube.

[0019] When the receiving element is annular and likewise substantially wholly encloses the tube, it is readily accessible under all conditions for fastening of a mooring line, irrespective of the position of the device.

[0020] The invention will now be elucidated on the ba-

sis of an embodiment, wherein reference is made to the accompanying drawing, in which:

Fig. 1 is a side view of a mooring post with a device according to a first embodiment of the invention,
Fig. 2 is a top view of the mooring post and device of fig. 1,

Fig. 3 is a top view of a berth defined by two mooring posts and a landing stage and having a yacht therein, and

Fig. 4 is a front view of a vessel between two mooring posts with devices according to a second embodiment of the invention.

[0021] A device 1 for mooring a vessel S comprises an annular float body 2 which is pushed round a mooring post M standing in the water W. Connected to float body 2 is a tube 3 which carries close to its upper side a receiving element 4 to which a mooring line L of vessel S can be fastened. Receiving element 4 is likewise embodied here as a ring and attached via a number of radial spacers 5 to tube 3. In the shown embodiment tube 3 is otherwise formed integrally with float body 2, which here takes the form of a hollow air-filled chamber, the walls of which are manufactured from the same relatively stiff material as tube 3. It is otherwise also possible to envisage float body 2 being manufactured from a plastic foam, in which case it can be attached as a separate component to tube 3. Tube 3 is arranged with some interspacing round mooring post M so that the whole device 1 is freely slidable along mooring post M and can moreover rotate freely therearound. The slidability in combination with the presence of float body 2 enables device 1 to co-displace with the water surface W so that receiving element 4 is held at substantially constant height above the water W.

[0022] Attached to tube 3 between receiving element 4 and float body 2 are a number of fenders 6 which in the shown embodiment wholly enclose tube 3. Fenders 6 have a thickness such that they protrude further outside tube 3 than the float body 2 located thereunder and the receiving element 4 located thereabove. This ensures that fenders 6 shield float body 2 and receiving element 4 under all conditions so that they cannot cause damage to the hull of vessel S.

[0023] Fenders 6 are elastically deformable so that they give way when vessel S comes into contact therewith. The whole device 1 can moreover rotate round mooring post M when vessel S does not make perpendicular contact with the fenders, so that damage to and markings on the hull of the vessel are prevented. In the shown embodiment fenders 6 are embodied as blocks of plastic foam, but can also take the form of hollow air-filled chambers. The walls of the chambers must in that case be manufactured from a resiliently deformable material such as rubber or a plastic.

[0024] The volume of float body 2 is chosen in relation to the weight of the other components of mooring device 1 such that fenders 6 are held some distance above water

surface W under all conditions. Fenders 6 are thus held at the level of the hull of vessel S. Growth of algae and the like on fenders 6 is moreover prevented in this way so that the hull of vessel S is not soiled when it comes into contact with fenders 6.

[0025] Two mooring posts M with mooring devices 1 according to the invention can together form an entrance to a berth in a marina. As it enters the berth the vessel S is then first moved with its bow into the vicinity of one of the mooring posts M, after which a mooring line L can be fastened to receiving element 4 of the associated mooring device 1. Vessel S is then moved further into the berth, wherein a mooring line L is also fastened to mooring device 1 round mooring post M on the other side. Vessel S is finally moved with its bow to a landing stage or quay K, after which two mooring lines L can also be fastened to the front side. During entry the hull of vessel S can come into contact with the protruding fenders 6 of mooring devices 1, which will then give way. Mooring devices 1 can moreover co-rotate in their entirety round mooring posts M with the movement of the passing vessel. Damage is thus prevented.

[0026] In an alternative embodiment of device 1 (fig. 4) the components are dimensioned and have a weight such that float body 2 is held wholly under the water surface W. The device 1 is hereby less responsive to wave movements. Because most vessels S have a downward tapering hull shape, the float body can be given a relatively large form underwater and, if desired, also protrude outside fender 6. As in the first embodiment, fender 6, which in the shown embodiment is annular, is attached to a tube 3 which is in turn fixed to float body 2. Fender 6 is situated here some distance above float body 2 and situated therebetween is a smooth part of tube 3 which responds little sensitivity to wave movements. As in the first embodiment, receiving element 4 is situated on the upper side of fender 6 and extends around tube 3. In the shown embodiment tube 3 is otherwise provided with a number of openings 7 roughly at the level of water surface W. Tube 3 can be vented through these openings 7, whereby a possible pumping action resulting from the up and downward movement of device 1 is countered. It is thus possible to prevent water being suctioned in between tube 3 and mooring post M, which could result in deterioration of mooring post M, for instance through post rot.

[0027] Although the invention has been elucidated above on the basis of two embodiments, it will be apparent that it is not limited thereto but can be varied in many ways within the scope of the claims. The shape and dimensions of the float body, the fenders and the receiving element can thus be adapted, for instance when the mooring post has a square instead of round section. The device can also be applied along an object other than a mooring post. The device could for instance be as it were "unrolled" in order to be arranged along a straight quay wall. Separate provisions would then have to be added here to ensure guiding in height direction. More or fewer

fenders can also be applied, or fenders of different shape. The chosen number of float bodies and receiving elements can also be other than shown here, while the choice of material can also be modified.

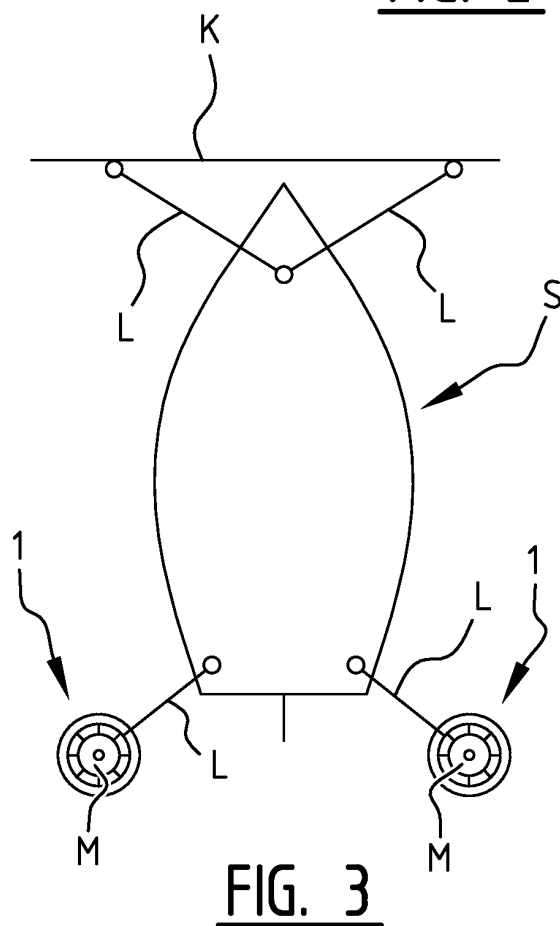
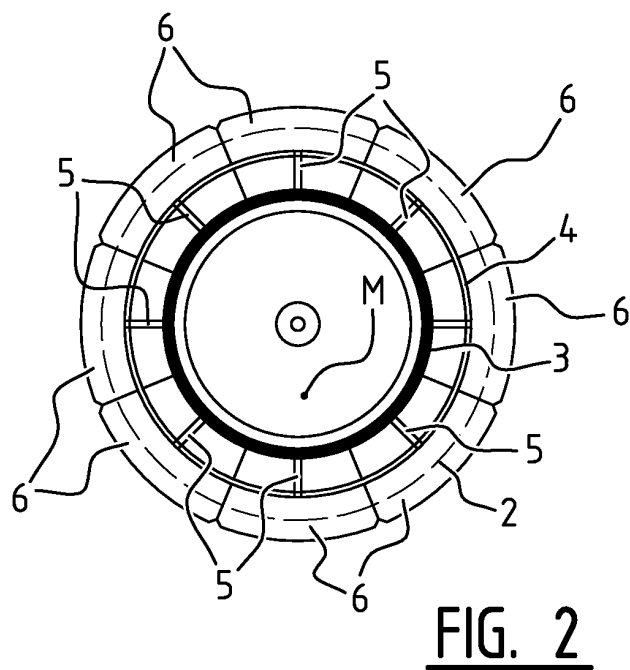
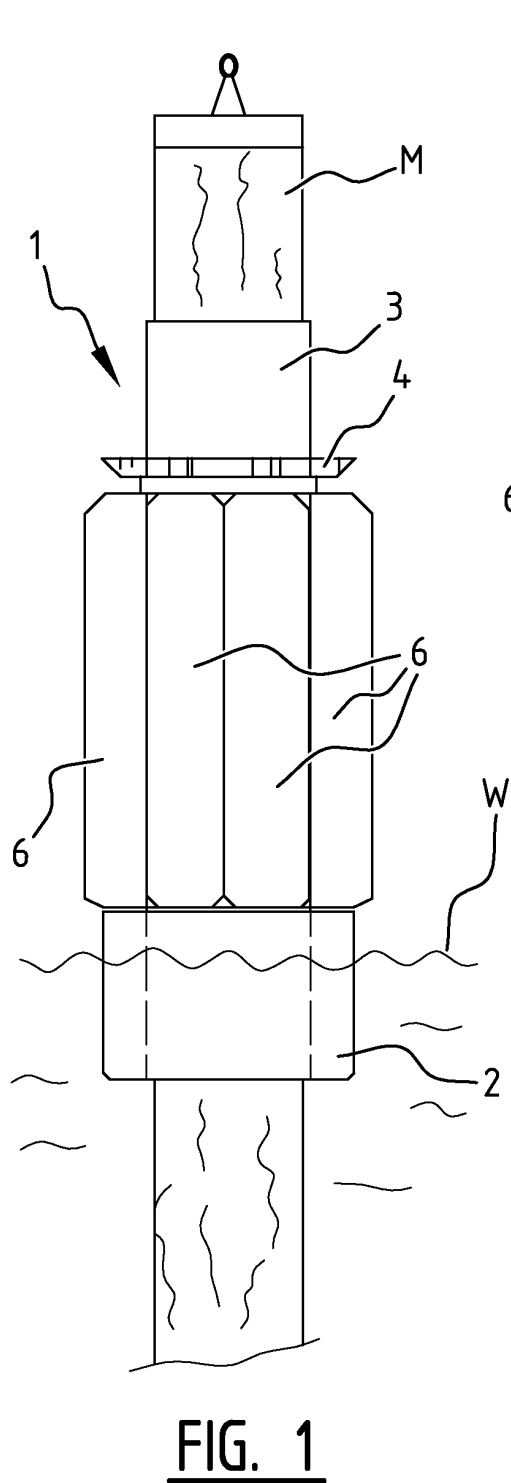
[0028] The scope of the invention is therefore defined solely by the following claims.

Claims

1. Device for mooring a vessel, comprising at least one float body which can be connected movably to a mooring post standing in water, and at least one element connected to the float body for receiving a mooring line, wherein the at least one float body is at least partially annular and adapted to at least partially enclose the mooring post such that it is slidable along the mooring post. 5
2. Device as claimed in claim 1, **characterized in that** the at least one float body is at least partially filled with air. 20
3. Device as claimed in claim 1 or 2, **characterized in that** the at least one receiving element is adapted to extend along at least a part of the periphery of the mooring post. 25
4. Device as claimed in any of the foregoing claims, **characterized by** at least one fender which is connected to the float body and adapted to at least partially enclose the mooring post such that it is slidable along the mooring post. 30
5. Device as claimed in claim 4, **characterized in that** the at least one fender is elastically deformable. 35
6. Device as claimed in claim 4 or 5, **characterized in that** the at least one fender comprises a plastic, in particular a plastic foam. 40
7. Device as claimed in any of the claims 4 to 6, **characterized in that** the at least one fender is arranged in height direction between the float body and the receiving element. 45
8. Device as claimed in any of the claims 4 to 7, **characterized in that** the at least one fender protrudes further outside the mooring post than the float body and/or the receiving element. 50
9. Device as claimed in any of the claims 4 to 8, **characterized in that** the float body is adapted to hold the at least one fender substantially clear of the water. 55
10. Device as claimed in claim 9, **characterized in that** the weight of the device is such that the float body

is situated substantially underwater.

11. Device as claimed in any of the claims 4 to 10, **characterized in that** a tube to which the at least one fender and the at least one receiving element are attached extends upward from the float body. 5
12. Device as claimed in claim 11, **characterized in that** the float body and the tube are manufactured integrally. 10
13. Device as claimed in claim 11 or 12, **characterized in that** at least one opening, which lies substantially on the water surface during use, is formed in the tube. 15
14. Device as claimed in any of the claims 11 to 13, **characterized in that** a number of fenders are attached adjacently of each other to, and substantially wholly enclose, the tube. 20
15. Device as claimed in any of the claims 11 to 14, **characterized in that** the receiving element is annular and substantially wholly encloses the tube. 25



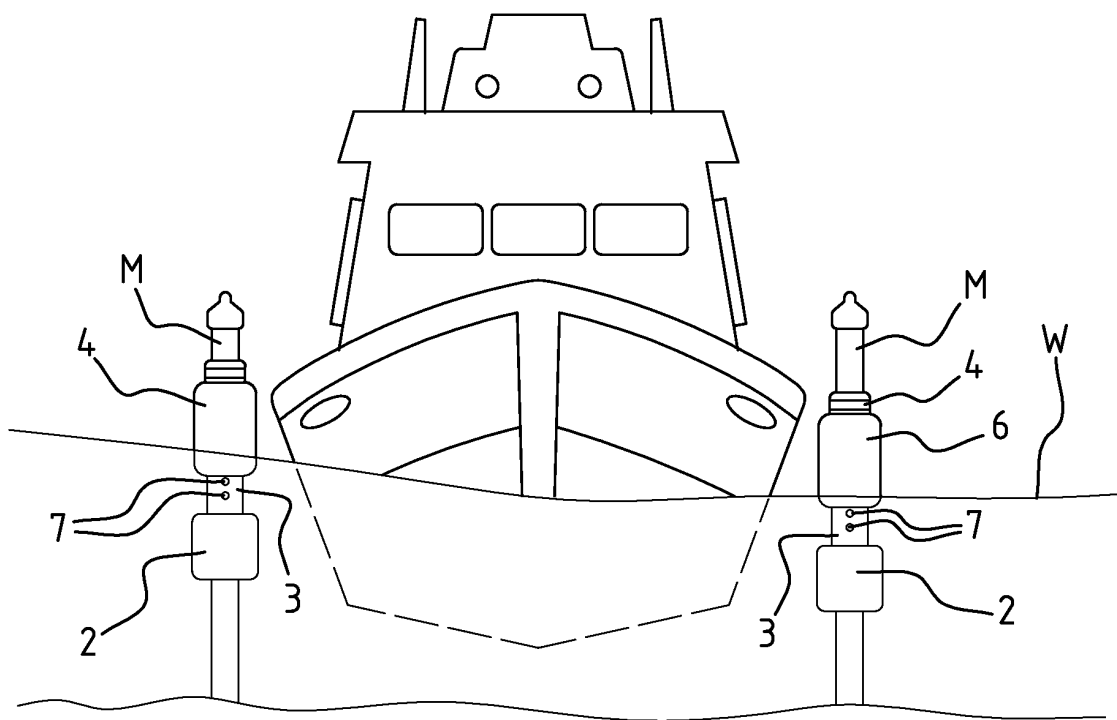


FIG. 4



EUROPEAN SEARCH REPORT

Application Number
EP 11 19 0400

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 357 891 A (SLUYS WESLEY W) 9 November 1982 (1982-11-09) * the whole document *	1-15	INV. E02B3/24
X	GB 2 206 325 A (THOMAS TERANCE GWYNNE) 5 January 1989 (1989-01-05) * the whole document *	1-15	
X	US 5 937 781 A (ISELLA JOHN J [US] ET AL) 17 August 1999 (1999-08-17) * the whole document *	1-15	
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			TECHNICAL FIELDS SEARCHED (IPC)
			E02B B63B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 March 2012	Examiner De Sena Hernandorena
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 19 0400

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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20-03-2012

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GB 2206325	A	05-01-1989	NONE
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US 3486342	A	30-12-1969	NONE

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