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(54) **DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK**

(57) Consists of a telescopic arm (8, 9) which is fixed to a rotating base (2) by means of a second shaft (7) on which the arm can tilt up and down, whereby the second shaft can be used to fix the arm in a selected vertical position. The rotating platform (2) is disposed on a first shaft (5) which can be used to fix the rotating base (2) in position by means of a nut (6). The end of the telescopic arm (9) is provided with means for fixing hooks (16) on which mooring lines (18, 19, 30) can be suspended.

The structure enables the tip of the telescopic arm (9) to be placed in any position selected by the user depending on the dimensions of the vessel (23) such that the mooring lines can be accessed without leaving the vessel.

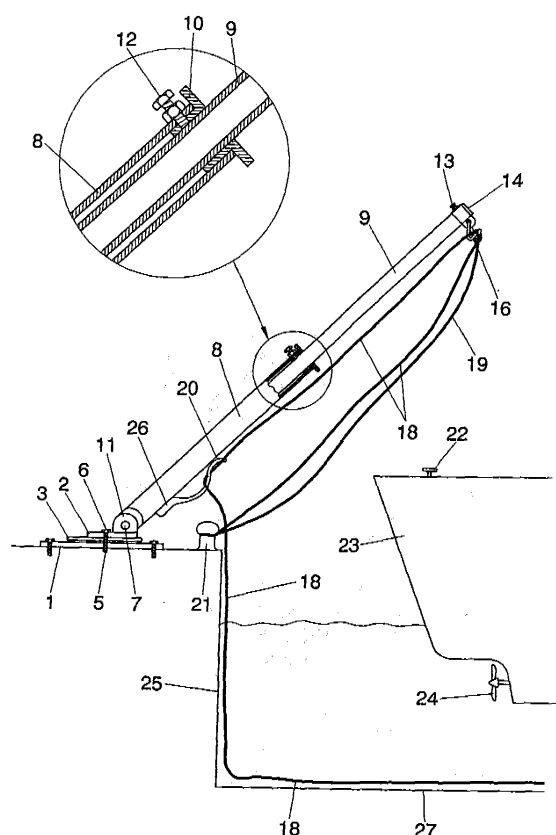


FIG. 1

Description

AIM OF THE INVENTION

[0001] This invention, as expressed in the title of this description, relates to a device provided with a base that rotates around a shaft and on which there is retained an arm provided with means for suspending the mooring line on the dock and the guide rope from the bottom of a vessel, so that when the vessel returns to port the lines are lying in an easy-to-access position to simplify mooring the vessel.

[0002] An object of the invention is to fix the arm to the base by means of an element that enables the arm to tilt up and down and a selected position to be fixed, so that any position of the boat can be selected, both horizontal and vertical, whereby it can be located in any position required by the user of the vessel to facilitate the mooring thereof. Also the arm has a telescopic shape whereby its length can be adjusted to make it even easier for the user to moor the vessel.

[0003] Another object of the invention consists in allowing the means for suspending the lines to always be lying perfectly in the vertical position with respect to the water level so as to provide the user with better access thereto.

[0004] The rotating base can be fixed to a flat surface or to a cylindrical body such as a post.

[0005] Another object of the invention is incorporating in the arm means for keeping the guide rope on the seabed in the port lying against the dock wall so as to prevent it from crossing the path of the vessel propeller.

[0006] Therefore, the invention can be applied to the nautical sector and is intended to enable the ropes or mooring lines conventionally used to moor the vessel to the port dock to be suspended.

BACKGROUND TO THE INVENTION

[0007] At present, when a vessel sets sail the moorings are released from the wharf or dock, so that later said mooring lines are thrown from inside the vessel towards the dock, and in most cases they remain lying in the middle of the dock, in the way of other port users, and also when setting sail again the lines are out of the user's reach, and third party assistance is required or the vessel has to be brought in close so as to access the dock and recover the ropes, which means bringing the vessel close along side so that the user can access the dock and recover the ropes.

[0008] To overcome this drawback, US Patent 5787834 is known in the prior art, which describes a portable device for holding a mooring line, comprising a base from which there extends an arm that tilts outwards from the dock and which comprises at the end thereof a hook from which the mooring lines suspend, so that they remain accessible to the user of the vessel, without the need for third party assistance, and without having to

access the dock.

[0009] This device suffers from the drawback that the position of the hook is fixed and cannot be adapted to the various sizes of existing vessels, whereby it is not useful in all cases.

[0010] This problem has been partially overcome in US Patent 479454 which describes a device provided with a base that can turn around a shaft in which a plurality of holes are made in different directions, in one of which an arm is inserted at the end of which the mooring lines are retained, so that the angular position of the base can be varied, and consequently the position of the arm, but it also suffers from the drawback that the tilt of the arm can only be modified according to a series of certain angles established by the holes in the base, and so the arm cannot adopt any tilt, only those established by the holes.

[0011] Therefore it can be that this device is no use for certain types of vessel according to their size.

DESCRIPTION OF THE INVENTION

[0012] In order to overcome the drawbacks and achieve the above-mentioned aims, the invention has developed a new device, which like the ones cited in the state of the art, has a base rotating on a first shaft the angular position of which can be selected and fixed; also the rotating base includes an arm provided with means for suspending the mooring lines. The invention's main novelty centers on the fact that the arm is attached to the base by means of a second shaft on which the arm tilts up/down so that it can adopt any vertical position according to the dimensions of the vessel, with means being provided for fixing the selected arm tilt position. Also the invention arm is telescopic so that its length can be adjusted, which allows the location of the suspension point of the mooring lines to be adjusted more, providing a more versatile device that can be adapted to suspend the ropes from any vessel by adapting its dimensions, whereby the moorings can lie wherever they may be required so that the user can access them more easily from the vessel without needed third party assistance or having to access the dock.

[0013] The telescopic arm can have parts with a cylindrical section, or otherwise with an oval section, and arranged with certain play so as to allow some parts to rotate with respect to others, so that by means of said rotation the relative position of some parts with respect to the others can be locked/unlocked, and consequently the length of the arm can be adjusted.

[0014] The invention envisages that, in either of the two cases mentioned, in order to fix the telescopic parts, the ends thereof are provided with a bushing, either cylindrical or oval as appropriate, which is snap attached inside each telescopic part, whereby the end of the telescopic parts comprises an adjustment screw which when turned forward causes said parts to press against the bushing which, in turn, presses the inner telescopic part to fix the position of each telescopic part.

[0015] The means for suspending the mooring lines have a particular arrangement consisting of a rotating support providing with means for holding one or more hooks, which always keeps them in a vertical position with respect to the water level.

[0016] Also the rotating support is provided with means for fixing an angular position on the arm, in which position the hook or hooks lie along a bottom longitudinal axis of the arm so as to keep said hooks in a position preferably facing the water level.

[0017] The means for holding the hooks, provided in the rotating support, comprise an extension of said support in which a third shaft is provided in which the hooks are retained and rotate freely. With respect to the means for fixing an angular position of the rotating support on the arm, it is worth indicating that said means consist of a screw arranged perpendicular to the rotating support so that when tightened it presses on the arm thereby fixing its angular position so that the hooks remain located along a bottom longitudinal axis of the arm.

[0018] Another of the novel characteristics included in the invention device is that at the bottom of the arm a retention element has been provided for a guide rope from the seabed in the port, to keep the guide rope close to the dock wall to prevent the rope from becoming cut by the vessel propeller, as it is out of its reach, because the rope runs along the seabed as far as the dock wall, and runs up the wall until it is retained in the bottom part of the arm.

[0019] In one embodiment of the invention, the retention element is made up of a curved, flexible body attached to the arm at the bottom end thereof and open at the top end for inserting/removing the guide rope.

[0020] In another embodiment of the invention, the retention element is made up of two curved, flexible opposite bodies, attached by the bottom end thereof and open at the top end for inserting/removing the guide rope through the opening provided between both bodies.

[0021] The invention envisages that the guide rope be retained by a complementary line having two loops at the ends thereof, whereby one of said loops attaches to the retention element and the other one to the third shaft on which the hooks are retained, so that the guide rope is attached to the bottom loop of the complementary line, making it easier to access the guide rope by removing the complementary line from the retention element.

[0022] With respect to the rotating base, this is arranged on a rotating platform located on a fixed platform.

[0023] The rotating base includes an extension provided with a housing for the bottom end of the arm, so that the second shaft which enables the up/down movement of the arm, consists of a screw that passes through the extension and the bottom end of the arm which, as mentioned, is preferably telescopic, so that by turning a nut, after selecting the vertical position of the arm, it is possible to fix the required position.

[0024] The fixed platform lies on a surface to which it is attached by means of screws or the like.

[0025] Also the invention envisages that the fixed platform can be located on a cylindrical body, for example a post or the like, for which purpose the fixed platform comprises a clamp with a screw for attaching it to the cylindrical body of the dock or to the posts in said dock.

[0026] In order to facilitate the understanding of this description, and forming an integral part thereof, a series of accompanying figures are provided below, which are a non-limiting, illustrative representation of the object of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

Figure 1.- Shows a side view of a possible embodiment of the invention device.

Figure 2.- Shows a side view of another possible embodiment of the invention device.

Figure 3.- Shows a diagrammatical sectioned view of the arrangement of the rotating base of the invention device.

Figures 4 and 5.- Show a diagrammatical sectioned view of the oval shape of the telescopic arm of the invention, showing the attachment and release position of the two telescopic parts for fixing the length of the arm.

Figure 6.- Shows a detailed view of the attachment of the hooks to the end of the arm.

Figure 7.- Shows a side view of another possible embodiment of the rotating base of the invention for its attachment to a cylindrical body.

Figure 8.- Shows a plan view of the Figure 7.

Figure 9.- Shows a detail of another possible embodiment of the guide rope attachment element, which represents an alternative embodiment to the one shown in Figures 1 and 2.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0028] A description of the invention is provided below, based on the above-mentioned drawings.

[0029] The invention device comprises a fixed platform 1 which, by means of screws 4, is attached to the floor of the dock, and on which a rotating base 2 is provided by placing a rotating platform 3 between them, whereby they lie on a first shaft 5 consisting of a threaded rod with an adjustment nut 6, which when activated enables a selected angular position of the rotating base 2 and rotating platform 3 to be locked/unlocked.

[0030] Rotating base 2 has an extension 11 that includes a housing inside which there is retained, by means of a second shaft 7, the bottom end of an arm 8, which in the embodiment consists of a telescopic arm made up of two parts 8 and 9, but obviously the number of parts can vary according to the requirements of the device. Second shaft 7 consists of a screw with a nut 7a which

fixes the desired vertical position of arm 8, 9. The section of parts 8 and 9 is oval and such that part 9 has certain play with respect to part 8, so that when part 9 rotates with respect to part 8 said part 9 is locked or blocked in position with respect to part 8, whereby it is possible to select the length of the telescopic arm and keep it in a fixed position.

[0031] Furthermore, in order to fix the position of the length of the telescopic arm, at the end of part 8 and on its inside it comprise a snap inserted oval bushing 10, along which part 9 extends, there being provided at the end of part 8 and in correspondence with the position of bushing 10, an adjustment screw 12, which when tightened presses oval bushing 10 on part 9, which fixes the relative position between parts 8 and 9 in a consistent, long-lasting manner.

[0032] Obviously parts 8 and 9 can also have a cylindrical shape and their position can be fixed by adjustment screw 12, except that in this case bushing 10 has a cylindrical shape which adapts to the inside of part 8.

[0033] The end of part 9 is provided with a rotating support 14 that has an extension 15 in which a third shaft 17 is retained for fixing hooks 16, so that said hooks 16 can rotate freely on the third shaft 17, whereby they are always in a vertical position. Also rotating support 14 has an adjustment screw 13 which when tightened enables extension 15, and consequently hooks 16, to lie on the bottom side of part 9, so that hooks 16 are perfectly aligned facing the water.

[0034] The bottom part of part 8 contains a retention element 26, which according to an embodiment of the invention is made up of a curved, flexible body 26 attached to arm 8 at the bottom end thereof and open 20 at the top end for inserting/removing the ropes as described below.

[0035] In another embodiment of the invention it has been envisaged that retention element 26 be made up of two curved, flexible bodies 26a y 26b that remain facing each another and are attached at the bottom end thereof to part 8, and are also open at the top end thereof for inserting/removing a rope as in the previous case.

[0036] Based on the description it is easily understood that the user of a vessel 23 adjusts the position of the telescopic arm by acting on the first shaft 6, second shaft 7 and third shaft 17 so that hooks 16 lie in the most convenient position according to the size of vessel 23, so that from said vessel, the user can access hooks 16 without having to leave the vessel.

[0037] According to Figure 1 this structure allows the boat's mooring line 19, to be attached at one end thereof to a mooring buoy 21, its other end being retained in one of the hooks 16, which means the user can access it easily, and after removing the end of rope 19 it can moor the boat to the cleat 22 on vessel 23.

[0038] Also, this arrangement means that guide rope 18, extending along the seabed 27 of the port, lies close to wall 25 of the port dock, whereby said guide rope 18 is inserted, through opening 20, into retention element

26 and then retained in a hook 16; or passes through one of hooks 16 and attaches to the mooring buoy 21, so that guide rope 18 is out of the reach of the propeller 24 of vessel 23, so that said propeller does not come into contact with said guide rope 18,

[0039] In another embodiment of the invention, a complementary line 30 is provided, with one of its ends being retained in a loop, in third shaft 17 and the other end, also retained by a loop in retention element 26, so that guide rope 18 is attached to the bottom loop of the complementary line 30 whereby it is used to remove guide rope 18 from the seabed of the port 22. This way when vessel 23 returns to port the user takes up the top end of the complementary line 30 and with a gentle pull releases the bottom loop thereof from the retention element 26, leaving the guide rope 18 free so that it can be pulled up from the seabed of the port.

[0040] In either case the user of the vessel can access guide rope 18 quickly, and before the boat has finished the approximation manoeuvre.

[0041] Lastly it is worth mentioning that rotating base 2 can also be fixed to a post 31, as shown in Figures 7 and 8, whereby fixed platform 1 is integral with a clamp 32 provided with a screw 33 for attaching it to post 31, making the device more versatile as it can be fixed to any post, in the port.

Claims

1. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, comprising a rotating base (2) on a first shaft (5) and means (5, 6) for fixing a selected angular position of rotating base (2) on which an arm (8) is attached that has means for suspending the mooring lines (18, 19, 30), **characterized in that** arm (8, 9) is fixed to the base by means of a second shaft (7) on which arm (8) can tilt up and down; and having means (7, 7a) for fixing a selected up/down position of arm (8).
2. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 1, **characterized in that** the arm is telescopic, its parts (8, 9) having a section selected between cylindrical, oval and a combination of both; with the oval telescopic parts being arranged with play so that their relative position can be fixed by means of an axial turn.
3. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 1, **characterized in that** arm (8, 9) is attached to rotating base (2) in an extension (11) arranged on rotating base (2), extension (11) having a housing for the bottom end of arm (8) in which it is fixed by means of a screw (7) that constitutes the second shaft and includes a nut (7a) which determines the

means for fixing a selected up/down position of the arm.

4. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 1, **characterized in that** the means for suspending the mooring lines (18, 19, 30) comprise a rotating support (14) provided with means for holding at least one hook (16) in a vertical position with respect to the water level; and the rotating support (14) having means for fixing an angular position over arm (9) in which at least hook (16) lies along a bottom longitudinal axis of arm (9) to keep the at least one hook (16) facing the water. 5
5. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 4, **characterized in that** the means for holding at least one hook (16) of rotating support (14) comprise an extension (15) arranged in rotating support (14), in which a third shaft (17) is fixed on which the at least one hook (16) is retained and rotates freely. 10 15
6. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 4, **characterized in that** the means for fixing an angular position on arm (9) of rotating support (14), comprise a screw (13) perpendicular to rotating support (14) to press on arm (9) and fix the angular position. 20 25 30
7. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 1 or 2, **characterized in that** arm (8, 9) comprises at the bottom part thereof a retention element (26) for a guide rope (18) on the seabed (27) in the port to keep it lying against the dock wall (25) and prevent it from crossing the path of propeller (24) of vessel (23). 35 40
8. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 7, **characterized in that** retention element (26) comprises a curved, flexible body (26) attached to arm (8) at the bottom end thereof and open (20) at the top end for inserting/removing the line (18, 19, 30). 45
9. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 7, **characterized in that** retention element (26) comprises two curved, flexible bodies (26a, 26b), facing each other and attached at the bottom end thereof and open at the top end for inserting/removing the line (18, 19, 30). 50 55
10. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to

claim 7, **characterized in that** it comprises a complementary line (30) with one of its ends retained in retention element (26), and the other end in third shaft (17); for fixing the end of a guide rope (18) on the seabed (27) of the port to the bottom end of the complementary line (30) and facilitate access to guide rope (18) by means of complementary line (30).

11. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 1, **characterized in that** rotating base (2) is arranged on a rotating platform (3) in turn lying on a fixed platform (1) which is fixed to the floor of the dock, these being associated by means of the first rotating shaft (5). 10 15
12. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 1, **characterized in that** rotating base (2) lies on an intermediate platform (3) lying on a fixed platform (1) which is attached to a clamp (32) with the corresponding screw (33) so that it can be attached to a cylindrical body (31). 20 25 30
13. DEVICE FOR SUSPENDING MOORING LINES BETWEEN A VESSEL AND A DOCK, according to claim 2, **characterized in that** the top end of telescopic parts (8, 9) comprises a bushing (10) selected between oval and cylindrical, snap attached inside each telescopic part (8, 9) and selectively provided with an adjustment screw (12) that presses bushing (10) to fix the position of each telescopic part (8, 9). 35 40 45 50 55

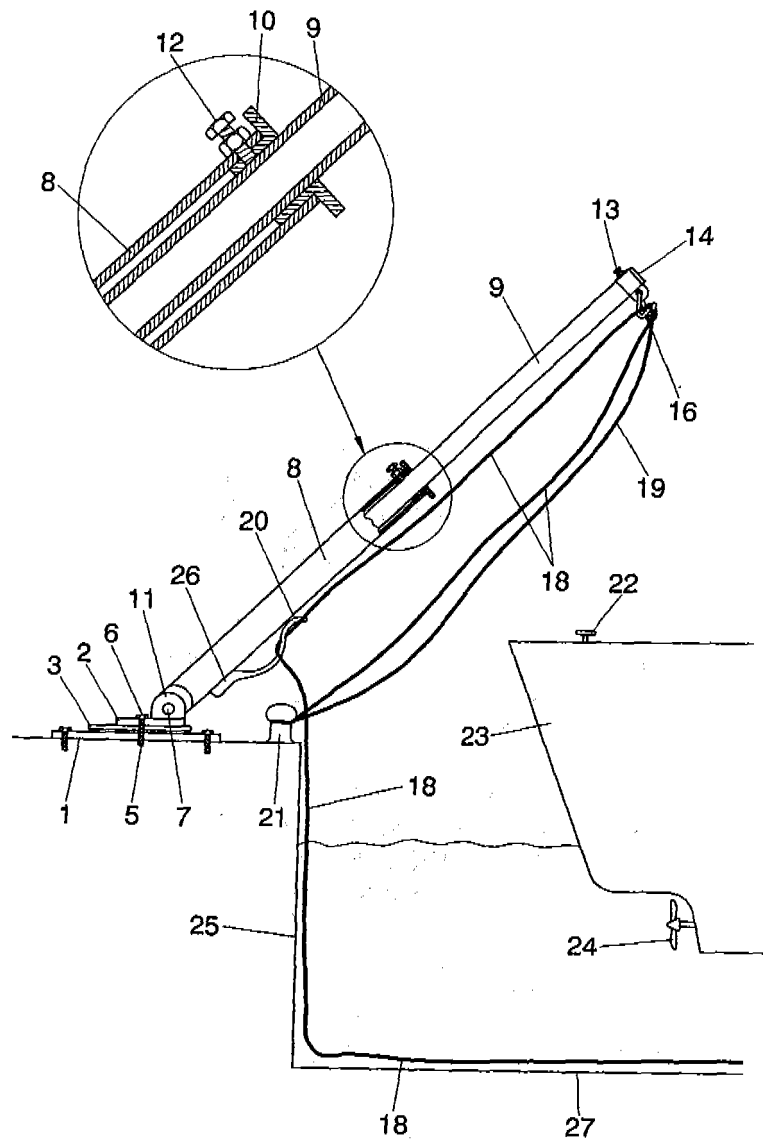


FIG. 1

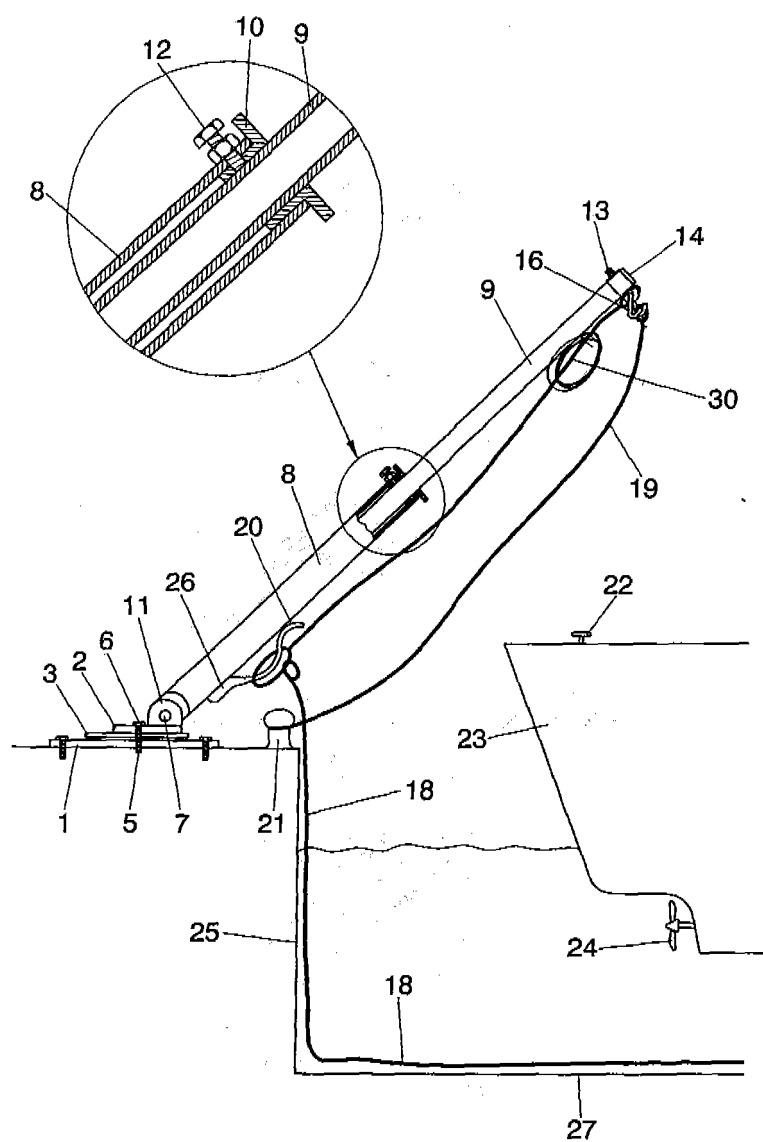


FIG. 2

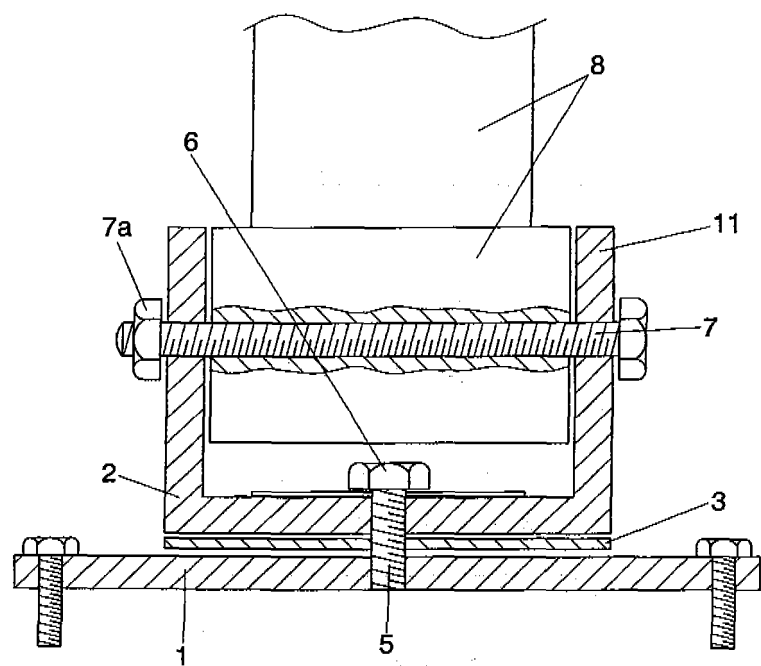


FIG. 3

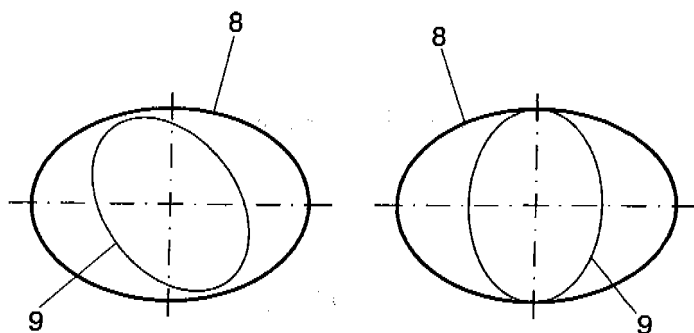


FIG. 4

FIG. 5

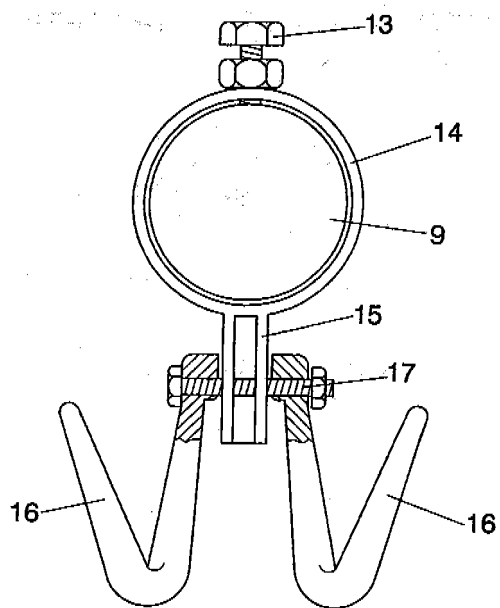


FIG. 6

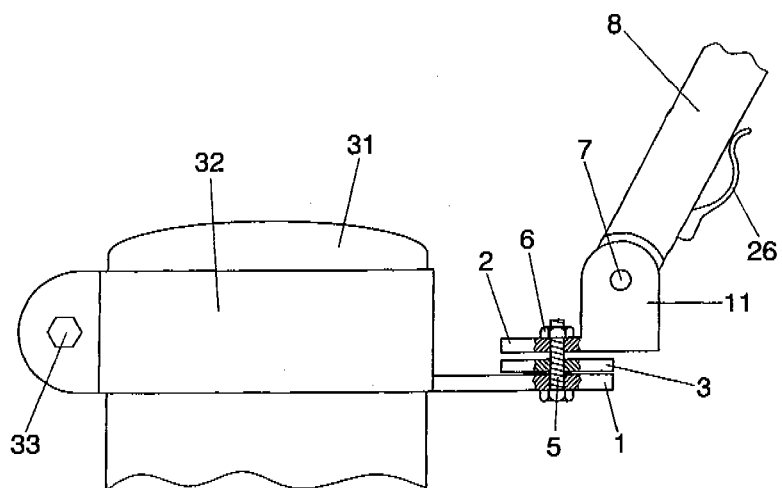


FIG. 7

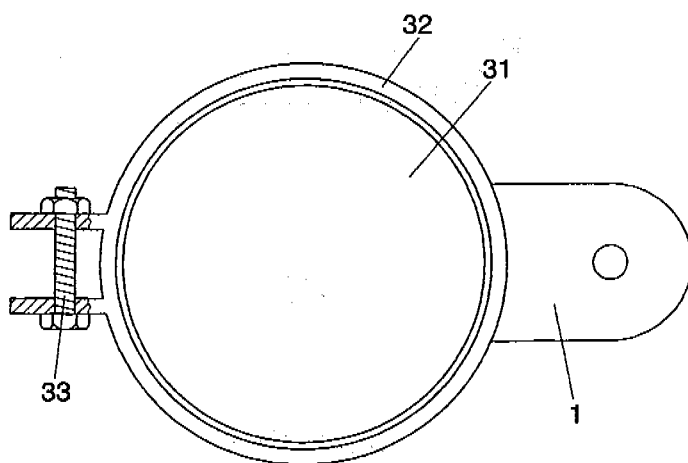


FIG. 8

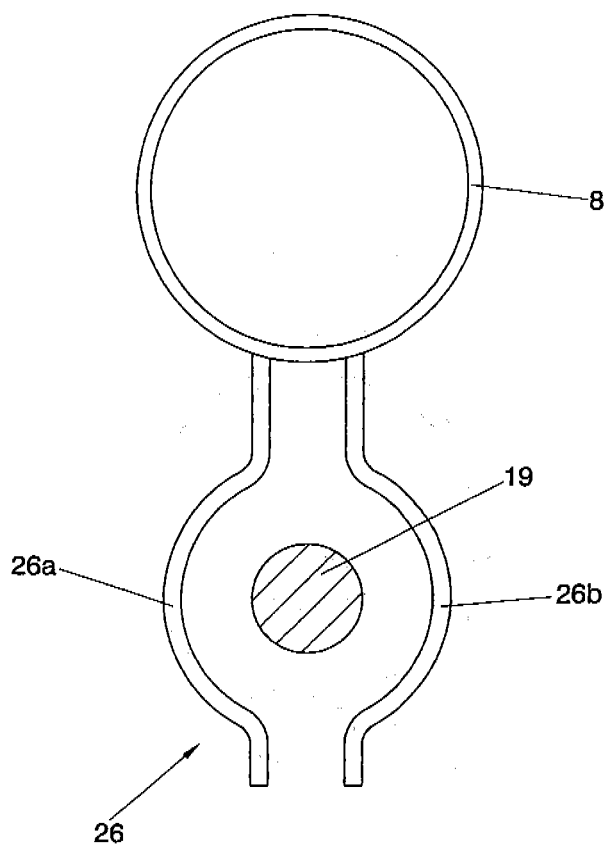


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ ES 2007/000127

A. CLASSIFICATION OF SUBJECT MATTER

see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B63B21, E02B3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT,EPODOC,PAJ,WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 3280784 A (STAINBROOK THEODORE S) 25.10.1966, the whole the document.	1,3-6,11 12
X Y	US 5282434 A (HART ANDREW J) 01.02.1994, the whole the document.	1,3,11 12
A	US 3151595 A (STAINBROOK THEODORE S) 06.10.1964, the whole the document.	1-13
A	GB 2226998 A (ROBOAM PTY LTD) 18.07.1990, figures and abstract.	1-13
A	WO 8103156 A1 (BREGOFF D) 12.11.1981, the whole the document.	1-13
A	US 6123045 A (PRONGAY EDWARD) 26.09.2000, the whole the document.	1-13

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"E" earlier document but published on or after the international filing date	
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"P" document published prior to the international filing date but later than the priority date claimed	
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Date of the actual completion of the international search

05.June.2007 (05.06.2007)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/ ES 2007/000127

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INTERNATIONAL SEARCH REPORT

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CLASSIFICATION OF SUBJECT MATTER

B63B 21/00 (2006.01)

B63B 21/54 (2006.01)

E02B 3/24 (2006.01)

REFERENCES CITED IN THE DESCRIPTION

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