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(54) Title: A MARINE STRUCTURE WITH A DAVIT DEVICE

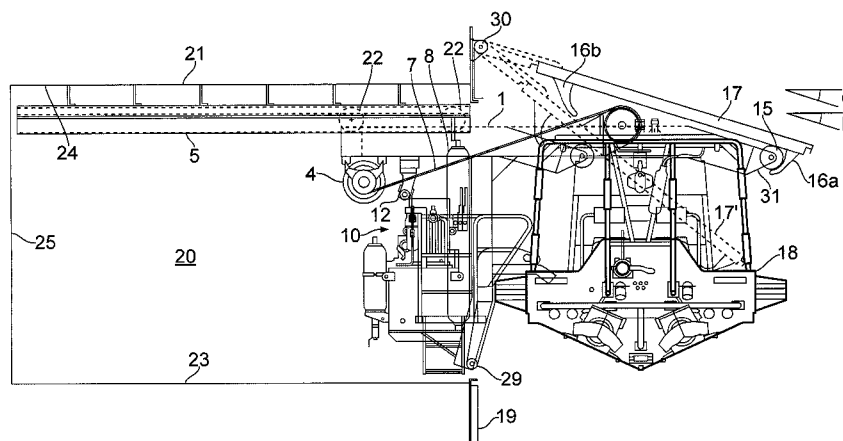


FIG. 4

(57) Abstract: A vessel (28) comprising a hull (19) and a compartment (20) with an opening (29) in the hull has a davit device (26) for a boat (18) and means for moving the davit device between a first position where the boat is located inside the compartment and a second position where the boat is located outside the compartment and the opening (29). The opening comprises a closing element (17) and the davit device (26) comprises at least one activation device (1, 15, 31) for the closing element. The activation device is arranged to open the closing element when the davit device is moved to the second position and to close the closing element when the davit device is moved to the first position.

A marine structure with a davit device

The invention relates to a davit device for a vessel or an installation placed over a water surface. More specifically, the invention relates to a marine structure with a davit device as indicated in the preamble to claim 1.

5 The background to the invention

Davit devices for ships and offshore installations are well known, and are used typically for lowering lifeboats and/or for lowering and hoisting auxiliary craft (e.g. rescue boats or so-called "MOB boats").

10 An example of a davit device is disclosed in WO 01/51348 A1, which describes a davit device arranged suspended over a boat on board a ship. The davit device is mounted directly beneath one of the ship's decks and in a compartment which is at a distance from the ship's side. Horizontally telescopically extendable davit arms can move the boat between a parked position (inside the compartment) and a deployment position (beyond the ship's side), while a hoisting appliance can move
15 the boat vertically along the ship's side and down to the surface of the water. Since the hoisting appliance is attached to the davit arms' radially innermost, axially extendable telescopic part, the vertical and horizontal movements can be undertaken separately in a controlled manner.

20 Lifeboats and MOB boats on ships travelling in exposed areas are subjected to substantial stresses when suspended in the davits. Sea spray and icing are examples of factors which can influence the function of the davits, in the form of corrosion and ice. Thus it is desirable to shield boat and davits from the elements to a greater extent than hitherto known. On the other hand it is important that there should be rapid access to lifeboats and MOB boats. Existing legislative requirements
25 (SOLAS) state that a boat should be able to be launched within five minutes from a ship which has a 20° list and 10° trim.

The object of the invention is to provide better protection for boat and davits than that which is hitherto known, while at the same time satisfying the requirements of the authorities as to reaction time and operational reliability.

30 Summary of the invention

The invention is described and characterised in the independent claim, while the dependent claims specify other characteristics of the invention.

A marine structure is therefore submitted comprising a hull with an outer side and a compartment with an opening in the outer side; where the compartment is equipped
35 with a davit device for a boat and means for moving the davit device between a first position where the boat is located inside the compartment and a second position

where the boat is located outside the compartment and the opening. The marine structure is characterised in that the opening comprises a closing element and the davit device comprises at least one activation device for the closing element, and that the activation device is arranged to open the closing element when the davit device is moved to the second position and to close the closing element when the
5 davit device is moved to the first position.

In an embodiment the closing element is provided with a first locking element which is arranged for releasable engagement with at least a part of the activation device when the davit device is in the second position. In an embodiment the
10 closing element is also provided with a second locking element which is arranged for releasable engagement with at least a part of the activation device when the davit device is in the first position.

The closing element is preferably pivotally mounted in at least one hinge element attached in the outer side. In an embodiment the davit device comprises a pair of
15 davit arms rotatably mounted via rollers on a track way in the compartment, and operating means provided on the davit device and arranged to move the davit device between the said first and second positions, and means for raising and lowering the boat.

In an embodiment the activation device comprises at least one wheel mounted on an
20 outer, free end of a davit arm, where the wheel is arranged for rotatable abutment against the closing element, between the first locking element and the second locking element.

The marine structure may be a ship or a floating platform, or a platform or the like located on a seabed.

25 **Brief description of the drawings**

The above-mentioned and other characteristics of the invention will be explained in the following description of a preferred embodiment, presented as a non-limiting example, together with the attached drawings in which:

Figure 1a is a semi-sectional view of a ship, illustrating a possible placement of the
30 davit device according to the invention, in a retracted and closed position;

Figure 1b is a semi-sectional view of a ship, illustrating a possible placement of the davit device according to the invention, in an extended and open position;

Figure 2 is a side view illustrating a boat (viewed from one end) suspended in an embodiment of the davit device according to the invention, where the davit arms are
35 retracted and the port is closed;

Figure 3 corresponds to figure 2, where the boat is viewed from one side;

Figure 4 corresponds to figure 2, but shows the davit arms in a position where they are extended from the compartment in order to be able to lower and raise the boat, and the port is kept in an open position; and

5 Figure 5 illustrates the davit device according to the invention viewed from above, showing the davit arms and port in a retracted and closed position (unbroken lines) and in an extended and open position (dotted lines).

Description of an embodiment of the invention

We refer first to figures 1a and 1b, which illustrate a possible placement of the davit device 26 according to the invention on board a ship 28 in a closed and open position respectively. The ship has a hull with outer sides 19 and a superstructure 10 27. The davit device 26, which is supporting a boat 18, is provided in a compartment 20 in the ship's hull above a water surface V, and in figure 1a this compartment 20 is shown closed by a port 17 in the ship's side. In figure 1b the davit device is extended so that the boat is suspended beyond the outer sides, and 15 the port is in an open position. The invention will now be described in further detail, with reference to figures 2-5.

Figures 2 and 3 show the boat 18, which is suspended in a known per se manner in the davit device 26. In the illustrated embodiments the davit device comprises a pair of davit arms 1 in which the boat is suspended via a lifting hook 6 with 20 counterweights. The lifting hook is attached in a wire 7 extending via a pulley 3 into a winch 4. In the illustrated embodiment the winch 4 is hydraulically operated via a hydraulic operating unit 10 with a hydraulic oil reservoir 10a and connected to a hydraulic package 12. Accumulator bottles 8 are connected to the operating unit, thereby enabling the davit device to be operated even if the operating unit should 25 fail (e.g. in the event of a power failure in the ship's systems). The pulley 3 and the winch 4 are attached to the davit arms. In the same way the operating unit 10 together with the associated hydraulic reservoir, package and accumulator bottles are attached to the davit arms via a platform 9 and a support structure 2. The 30 operating unit, winch, accumulator bottles etc. thereby follow the davit arms when they are moved backwards and forwards. Supply hoses and lines, control bodies etc. are not shown since they are known in the prior art.

In the illustrated embodiment the boat 18 is a MOB boat, but it should be understood that the davit device according to the invention can be employed on any type of boat, including lifeboats.

35 The davit arms are mounted via rollers 22 which in turn are mounted in a track way on a beam 5 and can roll forwards and backwards there in a known per se manner. The beam 5 is attached to a structural element on the ship, for example on the underside of a deck 21.

The davit device according to the invention is provided in a compartment 20 within the ship's outer side 19, where the compartment is defined by a floor 23, ceiling 24 and walls 25. The compartment 20 has one or more access openings (not shown) for personnel, together with an opening 29 in the ship's outer side 19 through which the
5 davit arms and the boat can be deployed (see e.g. figure 4).

When the boat 18 is not in use, it is suspended as shown in e.g. figure 2, inside the compartment 20. The opening 29 in the hull's outer side 10 is closed by the port 17. The port 17 is suspended in the ship's outer side 19 via hinges 30, thereby enabling it to be pivoted between a closed position (e.g. figure 2) and an open position (e.g.
10 figure 4). On the inside of the port two pairs of grip-hooks 16a, b are attached, and each davit arm 1 is provided at its outer, free end 31 with a wheel 15. The wheel 15 is preferably a solid wheel of a non-elastic material, such as steel or a synthetic material. When the davit arms 1 are in a retracted position (figure 2), the wheel 15 is engaged with the inner or upper grip-hook 16b, thereby keeping the port 17
15 closed.

When the davit device has to be deployed, the davit arms are pushed (by means of the operating unit 10) out of the compartment 20. When the davit arms begin to move outwards, each of the wheels 15 will be released from its respective internal grip-hook 16b, pushing the port 17 towards an open position (the port marked 17' illustrated by dotted lines in figure 4 illustrates an intermediate position). Such an open position is illustrated in figure 4: the wheels 15 (only one shown in figure 4) abut against the port 17, keeping it open while being engaged with an outer or lower grip-hook 16a, thereby securing the port 17 in this position. The design of the grip-hook 16a not only ensures that the port is kept open, but also that it is secured and is
20 not moved up and down over the davit arms on account of wave movements and/or a heavy sea. When the davit device is in the position illustrated in figure 4, the boat 18 can be lowered to the water surface. If required, the davit arms can be retracted again and the port closed until the boat has to be hoisted up again. When the davit arms are retracted again, the port, which is supported by the wheels 15, will be
25 lowered and closed.
30

The port's opening angle α is determined by the corresponding bending angle β on the free ends 31 of the davit arms and the position of the hinges 30 over the opening 29.

Figures 3 and 5 illustrate amongst other things that the port and the opening may
35 advantageously have an outline matching the boat's profile. Figure 5 illustrates the above-mentioned positions, but from a different perspective. The parts illustrated by dotted lines indicate the davit arms in an extended position, whereby the port is kept in an open position.

Thus the port 17 as described above is directly driven by the davit arms. The port is not dependent on a special operating system, but takes advantage de facto of the davit arms' operating system.

CLAIMS

1. A marine structure (28) comprising a hull with an outer side (19) and a compartment (20) with an opening (29) in the outer side; where the compartment is equipped with a davit device (26) for a boat (18) and means for moving the davit device between a first position where the boat is located inside the compartment and a second position where the boat is located outside the compartment and the opening (29),
characterised in that the opening comprises a closing element (17) and the davit device (26) comprises at least one activation device (1, 15, 31) for the closing element, and that the activation device is arranged to open the closing element when the davit device is moved to the second position and to close the closing element when the davit device is moved to the first position.
2. A marine structure according to claim 1, where the closing element (17) is provided with a first locking element (16a) which is arranged for releasable engagement with at least a part (15) of the activation device when the davit device is in the second position.
3. A marine structure according to claim 1 or claim 2, where the closing element (17) is provided with a second locking element (16b) which is arranged for releasable engagement with at least a part (15) of the activation device when the davit device is in the first position.
4. A marine structure according to any of the claims 1-3, where the closing element (17) is pivotally mounted in at least one hinge element (30) attached in the outer side (19).
5. A marine structure according to any of the claims 1-4, where the davit device (26) comprises a pair of davit arms (1) rotatably mounted via rollers (22) on a track way (5) in the compartment, and operating means (8, 10, 10a, 12) provided on the davit device and arranged to move the davit device between the said first and second positions, and means (4, 6, 7) for raising and lowering the boat (18).
6. A marine structure according to any of the claims 3-5, where the activation device comprises at least one wheel (15) mounted on an outer, free end (31) of a davit arm (1), where the wheel is arranged for rotatable abutment against the closing element, between the first locking element (16a) and the second locking element (16b).

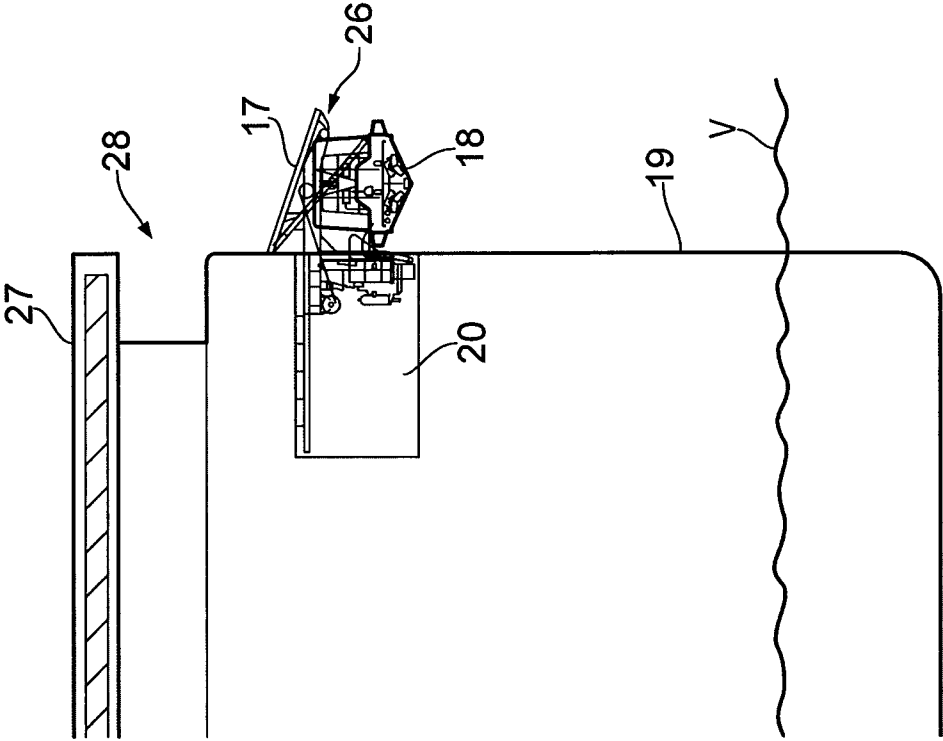


FIG. 1B

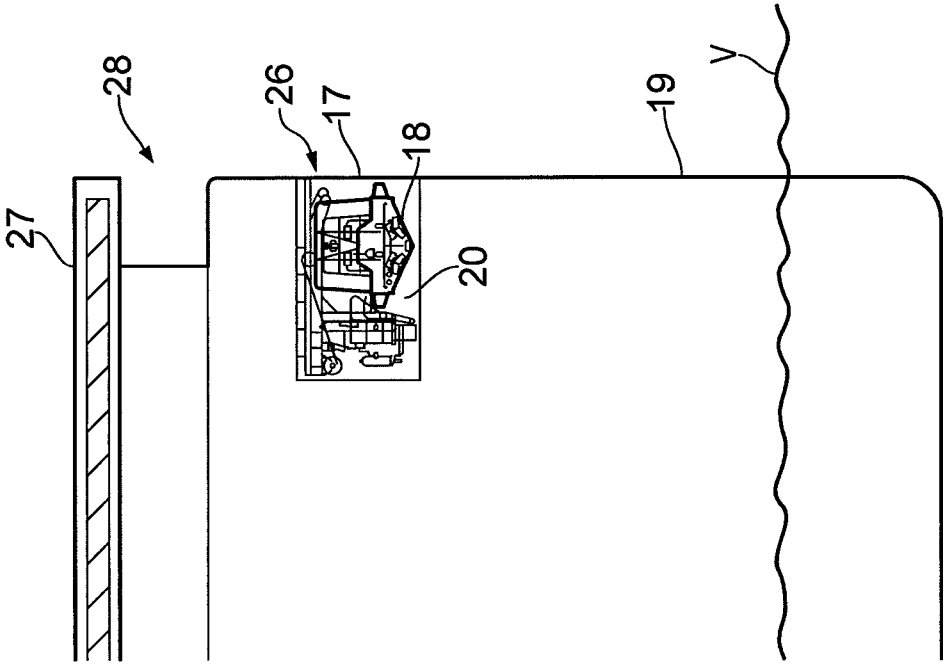


FIG. 1A

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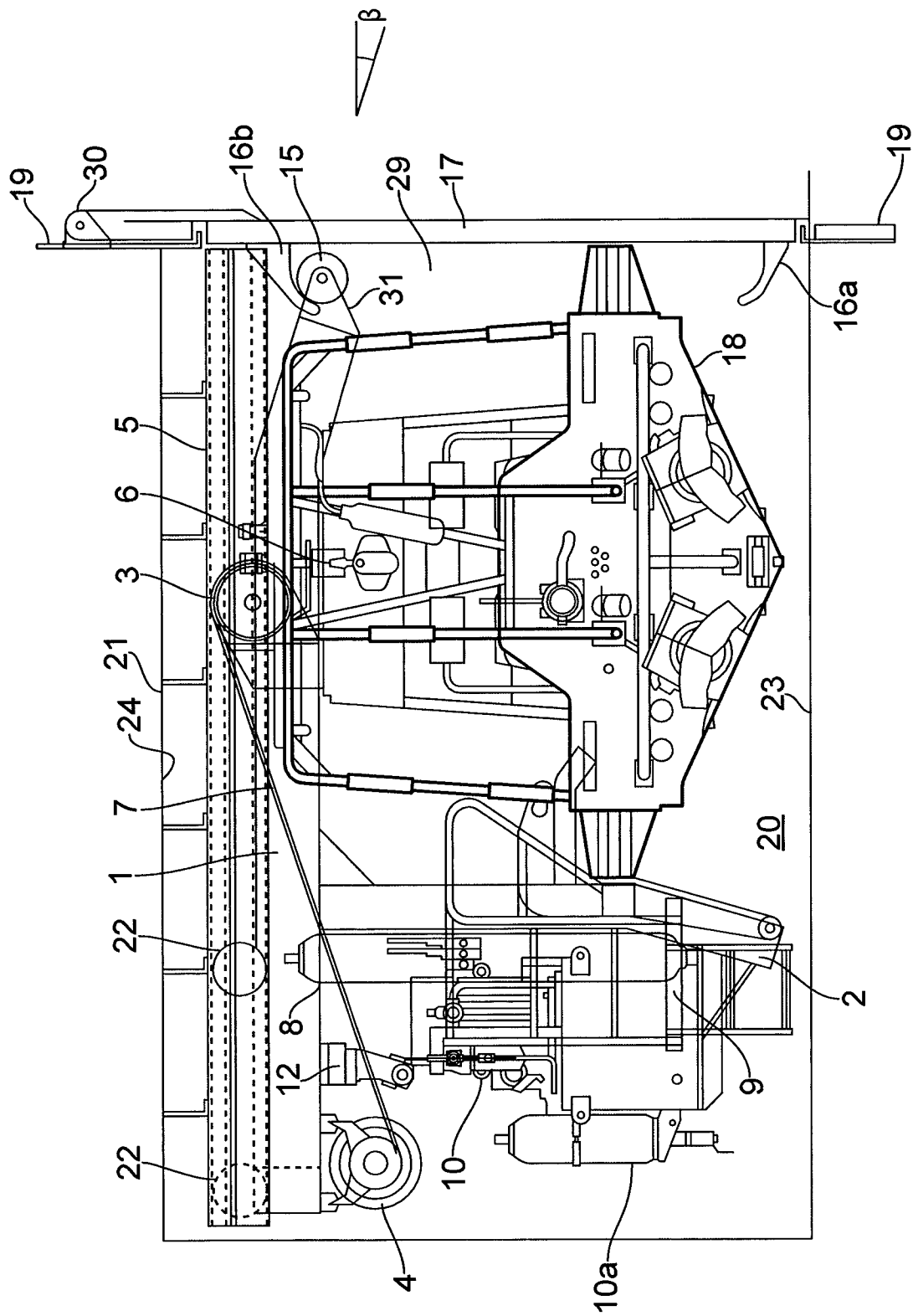


FIG. 2

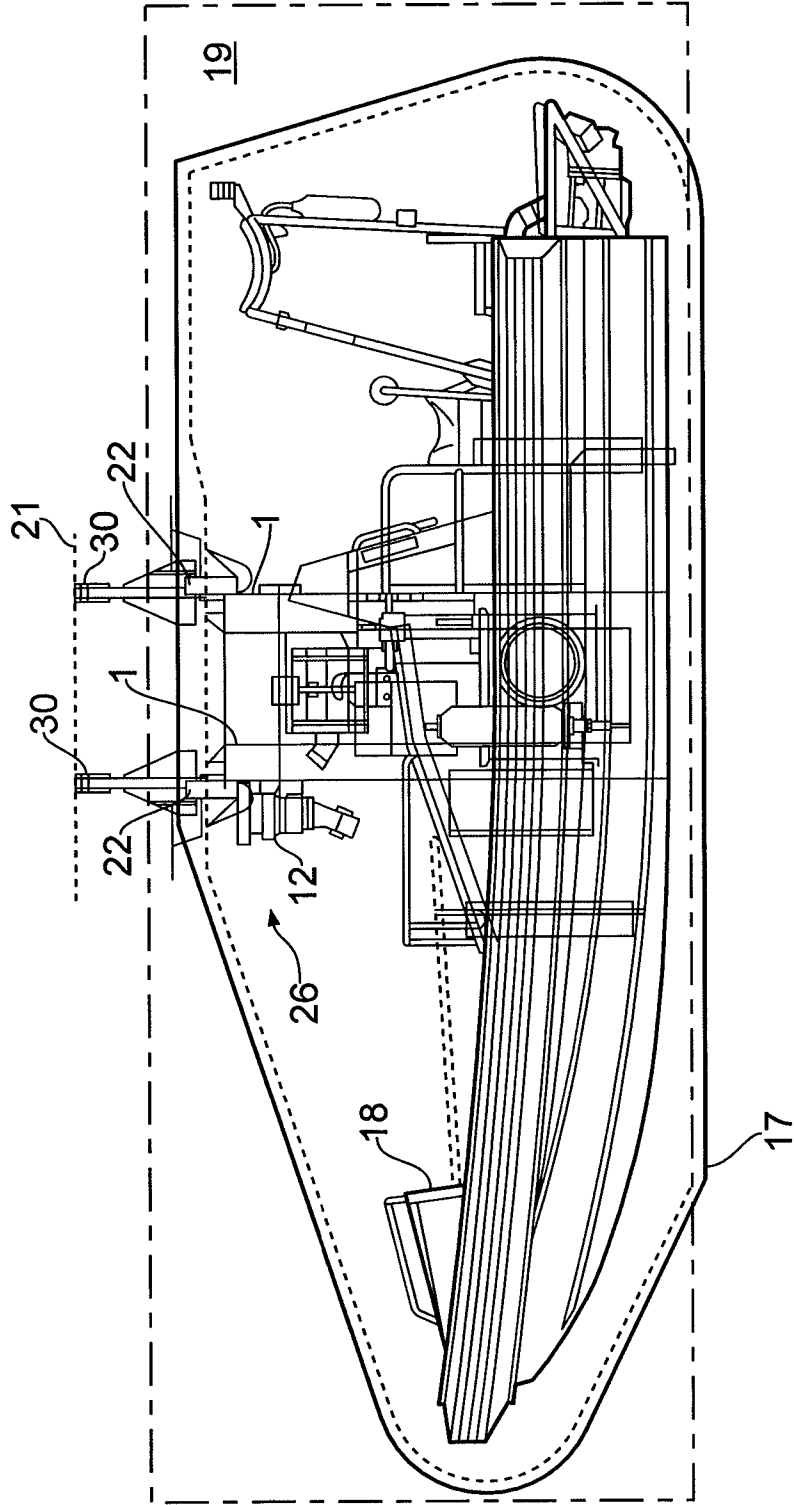


FIG. 3

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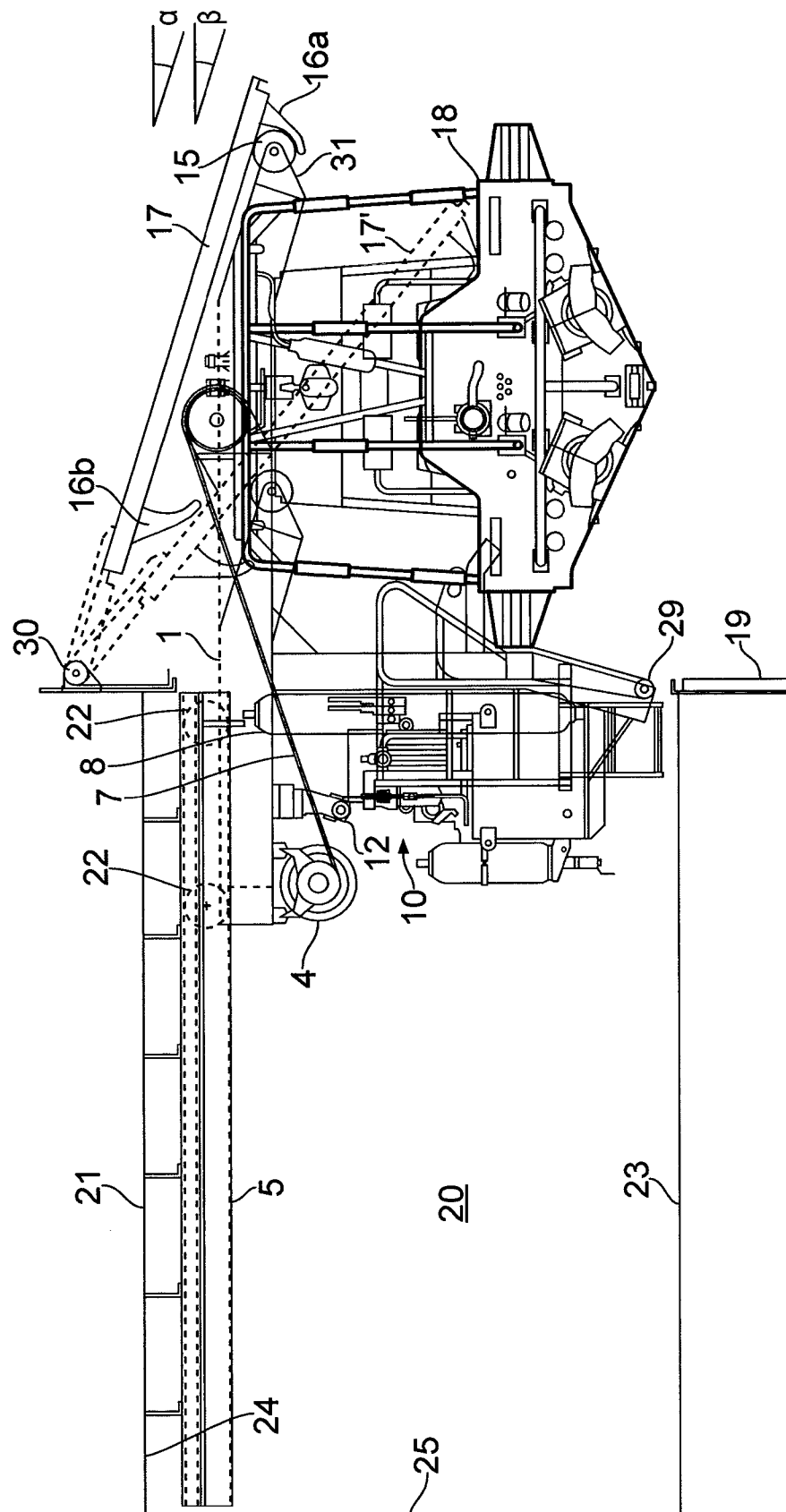


FIG. 4

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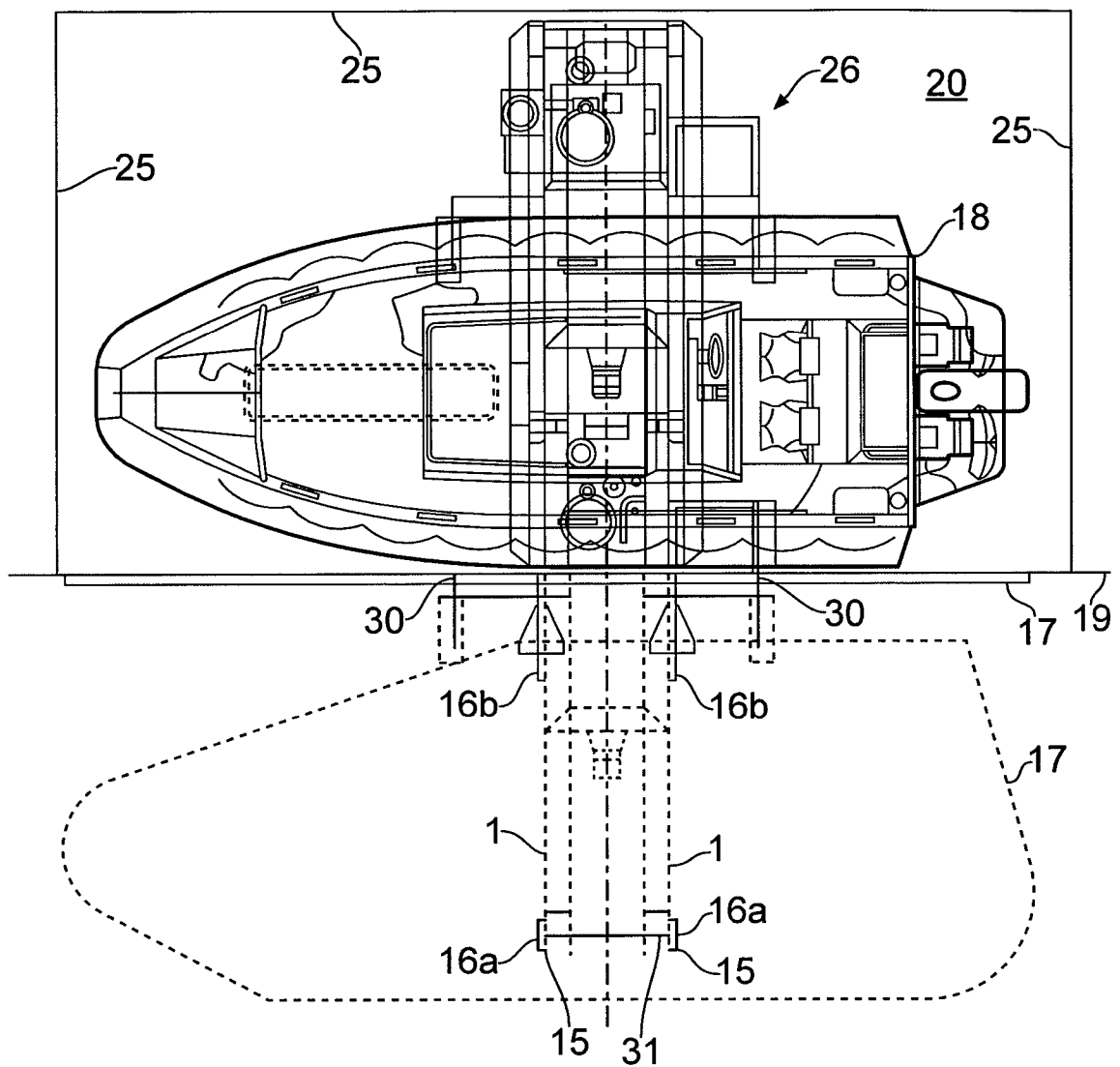


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/050529

A. CLASSIFICATION OF SUBJECT MATTER
INV. B63B23/26 B63B27/16
ADD.

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)
B63B

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 331 913 A (TANAKA TOKUMI [JP] ET AL) 26 July 1994 (1994-07-26) column 3, lines 52-66; figures 1,2	1,4,5
A	----- WO 01/51348 A1 (VESTDAVIT AS [NO]; KALVE ATLE [NO]) 19 July 2001 (2001-07-19) cited in the application figures 1,8	1
A	----- GB 2 186 547 A (GEVERT WOLFGANG) 19 August 1987 (1987-08-19) figures 2,3,4	1
A	----- EP 2 058 221 A2 (BLOHM & VOSS SHIPYARDS GMBH [DE]) 13 May 2009 (2009-05-13) figures 2,3	1
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Further documents are listed in the continuation of Box C.



See patent family annex.

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2013/050529

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 55 031799 U (NONTRANSLATED) 29 February 1980 (1980-02-29) figures 3,7 -----	1
A	JP 2007 302180 A (UNIVERSAL SHIPBUILDING CORP) 22 November 2007 (2007-11-22) figure 5 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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