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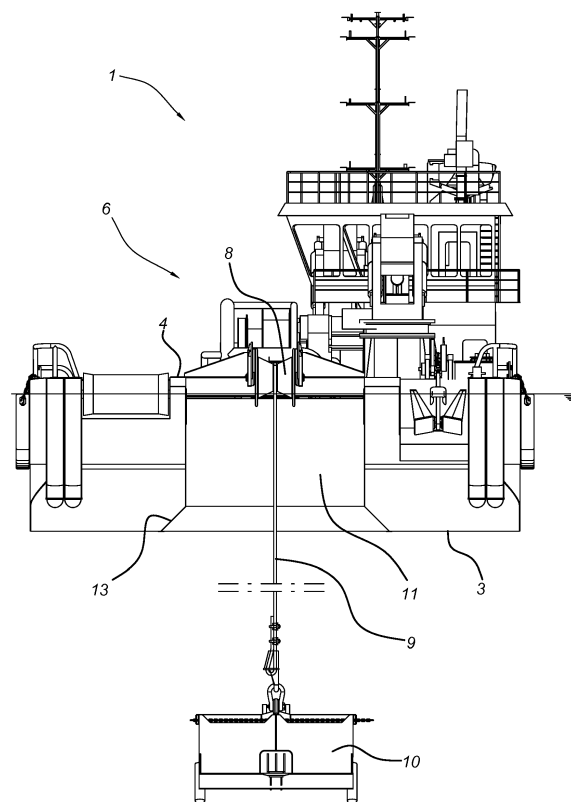
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(54) **WORKBOAT FOR ANCHOR HANDLING**

(57) The present invention relates to a vessel (1) comprising a hull (2) with a bottom (3) and a circumferential hull side (5), a deck (4), and a well (11). The well opens out at the bottom, the deck and the circumferential hull side. The vessel further comprises anchor handling system (6) for handling an anchor with a handling line (8) through the well.

The present invention further relates to an assembly comprising a vessel and an anchor and a method for operating the above vessel.

Fig. 2



Description

[0001] The present invention relates to a vessel for anchor handling. The present invention further relates to an assembly according to claim 13 and methods for operating the vessel according to claims 14 and 15.

State of the Art

[0002] An anchor handling vessel is a vessel by means of which relatively heavy anchors are handled for anchoring objects, such as for example dredging vessels. Other examples include semi-floating platforms as applied in the oil and gas industry, or work platforms for the construction of offshore wind farms and the like.

An anchor handling vessel consists of a hull with a bottom, a circumferential side and a deck, and usually has relatively limited dimensions with a limited gross tonnage. On the deck of the vessel an anchor handling system is provided consisting of a winch on which a handling line can be wound. At the end of the hull, there is a bow roller. The handling line is over the bow roller connected to a to be handled anchor. Thus, when the handling line is connected to the winch, it is possible by energizing the winch to lift, respectively lower, the anchor, relating to placing it in a desired position on the bottom of a body of water. The anchor continues to be connected via an anchor line to the to be anchored object. After the anchor is placed, the handling line is disconnected from the winch.

[0003] A known problem of such a relatively light vessel according to the state of the art is that when lifting a relatively heavy anchor, which is suitable for use in the above mentioned applications, especially dredging operations, immersion of the deck can occur. An important part of this is the circumstance that the handling line runs over the bow roller located at the end of the hull. The anchor hanging on the handling line therefore exercises a relatively large moment on the hull, such that the vessel may lie tilted.

Object of the Invention

[0004] An object of the invention is to provide a limited gross tonnage vessel, for example less than 500 tons, with the help of which relatively heavy objects, such heavy anchors, can be handled without that immersion of the deck of the vessel occurs. Another object of the invention is to provide a vessel with the help of which a heavy object, such as an anchor, can be handled safely during both lifting and lowering thereof. A further goal is providing a vessel wherein a heavy object, such as an anchor, can be handled wherein the risk of damage to the vessel is reduced.

Description of the Invention

[0005] These and other goals are achieved with an an-

chor handling vessel comprising a hull with a bottom, a deck, a circumferential hull side, a well which opens out at the bottom, at the deck and at the circumferential hull side, and a system for handling an anchor with a handling line through the well. The vessel is provided with a, preferably relatively large, well with a system for lifting an anchor in the well such that the anchor can be lifted relatively close to the center of gravity of the vessel. Because of this the moment of the vessel due to the weight of the anchor is diminished, and consequently the chance of immersion is reduced with such a relatively light (less than 500 tons) vessel. Not only is the immersion of the deck avoided, but it is also ensured that the vessel's screw remains immersed.

[0006] An embodiment relates to a preceding vessel, wherein the anchor handling system comprises an anchor handling gantry having a guide pulley for the handling line which is arranged above the well such that, in top view, the guide pulley is within a circumference of the well. Preferably, the guide pulley and/or the handling line guided thereover is as close as possible to the center of gravity, such that during lifting the moment exercised on the vessel is minimal. In particular, seen in top view of the vessel, the guide pulley has a greater distance to the open end of the well than to the closed end of the well opposite to the open end.

[0007] An embodiment relates to a preceding vessel, wherein the anchor handling system comprises a winch for winding or unwinding the handling line.

[0008] An embodiment relates to a preceding vessel, wherein the well is enclosed between a double hull. Due to the fact that the well is confined by hull parts that are double-formed, the integrity of the vessel is also protected if the hull is damaged during anchor handling activities.

[0009] An embodiment relates to a preceding vessel, wherein the bottom adjoins the well through knuckled bilges, said knuckled bilges guiding the anchor into the well from below. Because at the bottom of the well knuckled bilges are provided, an anchor located under the vessel can be guided easier in the well from below due to, on the one hand, the wider opening at the bottom of the well and, on the other hand, the oblique sides of the bilges.

[0010] An embodiment relates to a preceding vessel, wherein the well is coverable with a removable working deck. The well can be partially (in combination with the portal) or fully covered with a removable working deck.

[0011] An embodiment relates to a preceding vessel, wherein a dismountable bow roller is provided which bridges the free or outer end of the well. By removing the bow roller, the well is fully open on one side. Because of this cables and other objects can be brought into the cove without any hindrance.

[0012] An embodiment relates to a preceding vessel, wherein the tonnage of the vessel is less than 500 ton.

[0013] An embodiment relates to a preceding vessel, wherein the vessel is a workboat.

[0014] An embodiment relates to a preceding vessel,

wherein a length of the vessel ranges from 30-40 m and a width of the vessel ranges from 10-20 m, preferably the length of the vessel is about 34 m and the width of the vessel is about 15 m.

[0015] An embodiment relates to a preceding vessel, wherein a length of the well ranges from 10-20 m and a width of the well ranges from 3-8 m, preferably the length of the well is about 12,5 m and the width of the well is about 5,5 m.

[0016] Moreover, the invention relates to an assembly comprising a vessel as described above and an anchor with handling line connected to the anchor handling system.

[0017] Moreover, the invention relates to a method for operating the anchor handling vessel as described above, comprising the steps of:

- providing an anchor connected to a handling line, said anchor being located on the bed of a body of water and said handling line extending up to the surface of the body of water;
- displacing the handling line and the vessel with respect to each other in such a way that the handling line enters the well from the free or outer end thereof;
- guiding the handling line over a guide pulley above the well;
- connecting the handling line to the anchor handling winch; and
- energizing the anchor handling winch so as to lift the anchor, preferably up to a position within the well.

[0018] Moreover, the invention relates to a method for operating the anchor handling vessel as described above, comprising the steps of:

- providing an anchor connected to a handling line, said handling line being guided over a guide pulley above the well and being connected to and wound onto the anchor handling winch;
- unwinding the handling line from the anchor handling winch and depositing the anchor onto the bed of a body of water;
- disconnecting the handling line from the winch; and
- displacing the handling line and the vessel with respect to each other in such a way that the handling line exits the well through the free or outer end thereof.

Brief Description of the Figures

[0019] The invention will be described in more detail below with reference to an exemplary embodiment shown in the drawings.

Figure 1 shows a schematic side view of an anchor handling vessel according to the present invention; Figure 2 shows a schematic front view of the anchor handling vessel according to figure 1;

Figure 3A shows a schematic plan view of the anchor handling vessel of figure 1;

Figure 3B shows a schematic plan view of an embodiment of the anchor handling vessel of Figure 3A.

Detailed Description of the Figures

[0020] Figure 1 shows an anchor handling vessel 1 according to the present invention. The vessel 1 comprises a hull 2 with a bottom 3, a circumferential hull side 5 and a deck 4 (see figure 3a and 3b to be discussed further). For example, the vessel 1 can be a workboat and can be provided with propulsion means, in particular screws.

In an embodiment of a vessel according to the present invention, the length of the vessel varies from 30m to 40m and a width of the vessel varies from 10 to 20 m. In a preferred embodiment of a vessel according to the present invention, the length of the vessel is about 34 m and the width of the vessel is about 15 m.

In a preferred embodiment of a vessel according to the present invention, the tonnage of the vessel 1 is less than 500 ton.

[0021] Figure 2 shows the anchor handling vessel 1 according to figure 1 in front view. The vessel 1 comprises an well 11, wherein the well 11 opens up in the deck 4, in the bottom 3 and in the circumferential hull side 5. The well 11 is adapted to receive an anchor 10. More specifically for receiving the anchor 10 while sailing the anchor handling vessel 1. Preferably, the well 11 is adapted for receiving of an object, such as the anchor 10, with approximately the same shape and size as the well 11.

The vessel 1 further comprises a system 6 for handling the anchor 10, which in use is connected to a handling line 9 running through the well 11. The anchor handling system 6 comprises an anchor handling portal 7 (see figure 3a and 3b to be discussed below) with a guide pulley 8. The guide pulley 8 is disposed above the well 11 such that, in top view, the guide pulley 8 is within a circumference of the well 11. Further, the anchor handling system has a winch 12 for winding and unwinding of the handling line 9. In an embodiment of a vessel according to the present invention, the well 11 comprises walls which can be arranged as a double hull such that the well 11 is enclosed between a double hull.

Also, the bottom 3 of the hull 2 is connected to the well via knuckled bilges 13. This configuration makes it easier to guide the anchor 10 into the well from below.

[0022] Figure 3a shows the anchor handling vessel 1 according to the preceding figures in top view. Here is an anchor handling system 6 shown which comprises an anchor handling portal 7 with a guide pulley 8 for the handling line. Preferably, the anchor handling system 6 is arranged above the well 11 such that, in essence, the anchor handling system 6 is disposed above the water level. The anchor handling portal 7 can be mounted detachably. The guide pulley 8 is arranged above the well 11 such that, in top view, the guide pulley 8 is within the

circumference of the well 11. The guide pulley 8 is located near the center of gravity of the anchor handling vessel 1, preferably the guide pulley 8 is closer to the center of gravity than to the circumferential hull side 5.

In an embodiment of a vessel according to the present invention, a length of the well varies from 10 m to 20 m and a width of the well varies from 3 m to 8, in a preferred embodiment of a vessel according to the present invention, the length of the well is about 12,5 m and the width of the well is about 5,5m.

[0023] Figure 3b shows an embodiment of the anchor handling vessel 1 according to figure 3a, in which the well 11 is partially covered with a removable working deck 14. Further, a detachable bow roller 15 is provided which bridges the free or outer end of the well. Via this bow roller 15 cables, chains and the like can be guided to be used in performing various, mostly lightweight activities.

Claims

1. Anchor handling vessel (1) comprising a hull (2) with a bottom (3), a deck (4), a circumferential hull side (5), a well (11) which opens out at the bottom (3), at the deck (4) and at the circumferential hull side (5), and an anchor handling system (6) for handling an anchor (10) with a handling line (9) through the well (11).
2. Vessel according to claim 1, wherein the anchor handling system (6) comprises an anchor handling gantry (7) having a guide pulley (8) for the handling line (8) which is arranged above the well (11) such that, in top view, the guide pulley (8) is within a circumference of the well (11).
3. Vessel according to claim 2, wherein, seen in top view of the vessel, the guide pulley has a greater distance to the open end of the well than to the closed end of the well opposite to the open end.
4. Vessel according to any one of the preceding claims, wherein the anchor handling system (6) comprises a winch (12) for winding or unwinding the handling line (9).
5. Vessel according to any one of the preceding claims, wherein the well (11) is enclosed between a double hull.
6. Vessel according to any one of the preceding claims, wherein the bottom (3) adjoins the well (11) through knuckled bilges (13), said knuckled bilges (13) guiding the anchor (10) into the well (11) from below.
7. Vessel according to any one of the preceding claims, wherein the well (11) is coverable with a removable working deck (14).
8. Vessel according to any one of the preceding claims, wherein a dismountable bow roller (15) is provided which bridges the free or outer end of the well (11).
9. Vessel according to any one of the preceding claims, wherein the tonnage of the vessel (1) is less than 500 ton.
10. Vessel according to claim 1, wherein the vessel (1) is a workboat.
11. Vessel according to any of the preceding claims, wherein a length of the vessel (1) ranges from 30-40 m and a width of the vessel (1) ranges from 10-20 m, preferably the length of the vessel (1) is about 34 m and the width of the vessel (1) is about 15 m.
12. Vessel according to any of the preceding claims, wherein a length of the well (11) ranges from 10-20 m and a width of the well (11) ranges from 3-8 m, preferably the length of the well (1) is about 12,5 m and the width of the well (1) is about 5,5 m.
13. Assembly comprising a vessel according to any one of the claims 1-12 and an anchor (10) with handling line (9) connected to the anchor handling system (6).
14. Method for operating the anchor handling vessel (1) according to any of the claims 1-12, comprising the steps of:
 - providing an anchor (10) connected to a handling line (9), said anchor (10) being located on the bed of a body of water and said handling line (9) extending up to the surface of the body of water;
 - displacing the handling line (9) and the vessel (1) with respect to each other in such a way that the handling line (9) enters the well (11) from the free or outer end thereof;
 - guiding the handling line (9) over a guide pulley (8) above the well (11);
 - connecting the handling line (9) to the anchor handling winch (12); and
 - energizing the anchor handling winch (12) so as to lift the anchor (10), preferably up to a position within the well (11).
15. Method for operating the anchor handling vessel according to any of claims 1-12, comprising the steps of:
 - providing an anchor (10) connected to a handling line (9), said handling line (9) being guided over a guide pulley (8) above the well (11) and being connected to and wound onto the anchor handling winch (12);
 - unwinding the handling line (9) from the anchor

handling winch (12) and depositing the anchor (10) onto the bed of a body of water;

- disconnecting the handling line (9) from the winch (12); and

- displacing the handling line (9) and the vessel (1) with respect to each other in such a way that the handling line (9) exits the well through the free or outer end thereof.

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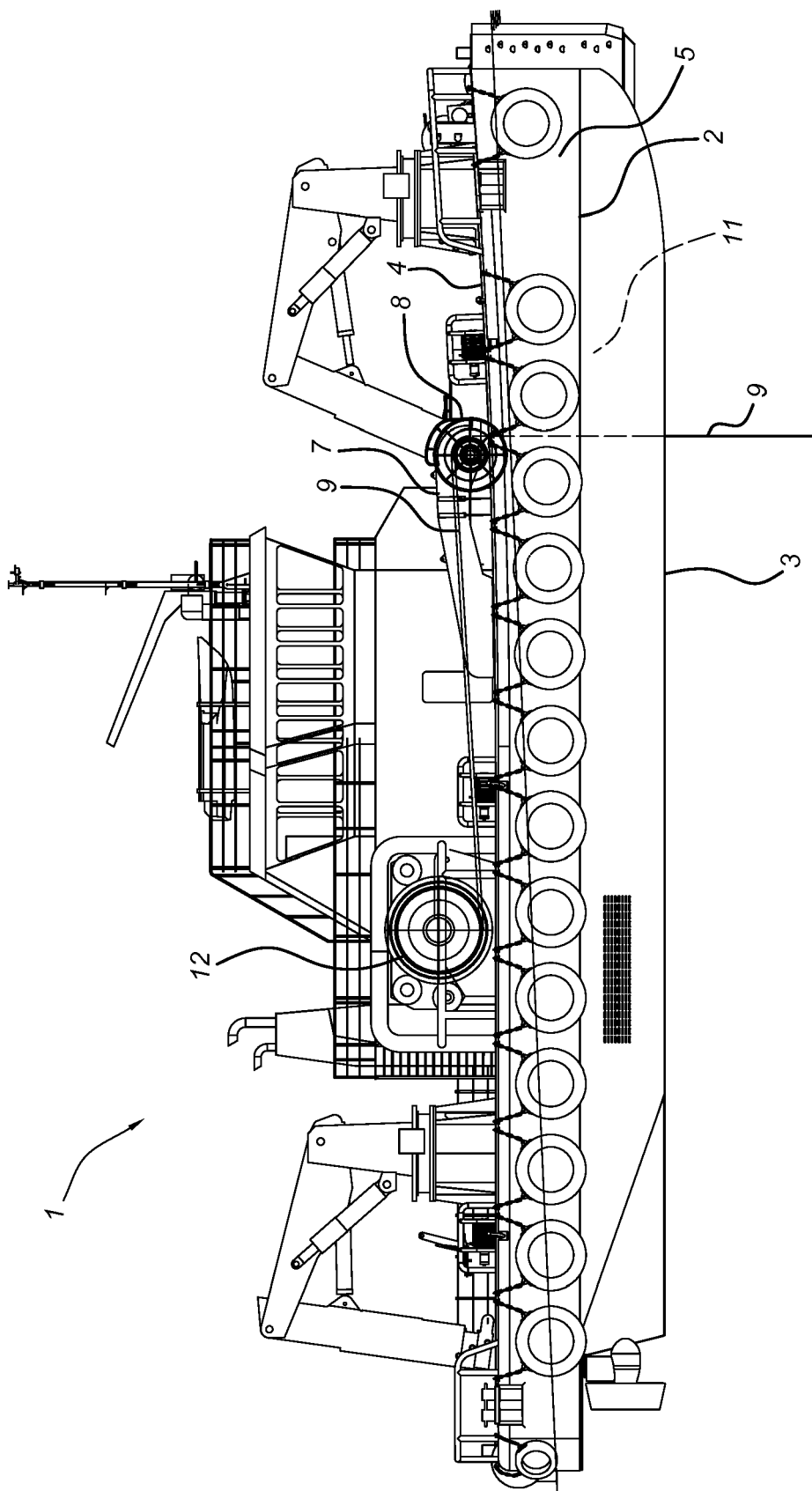


Fig. 1

Fig. 2

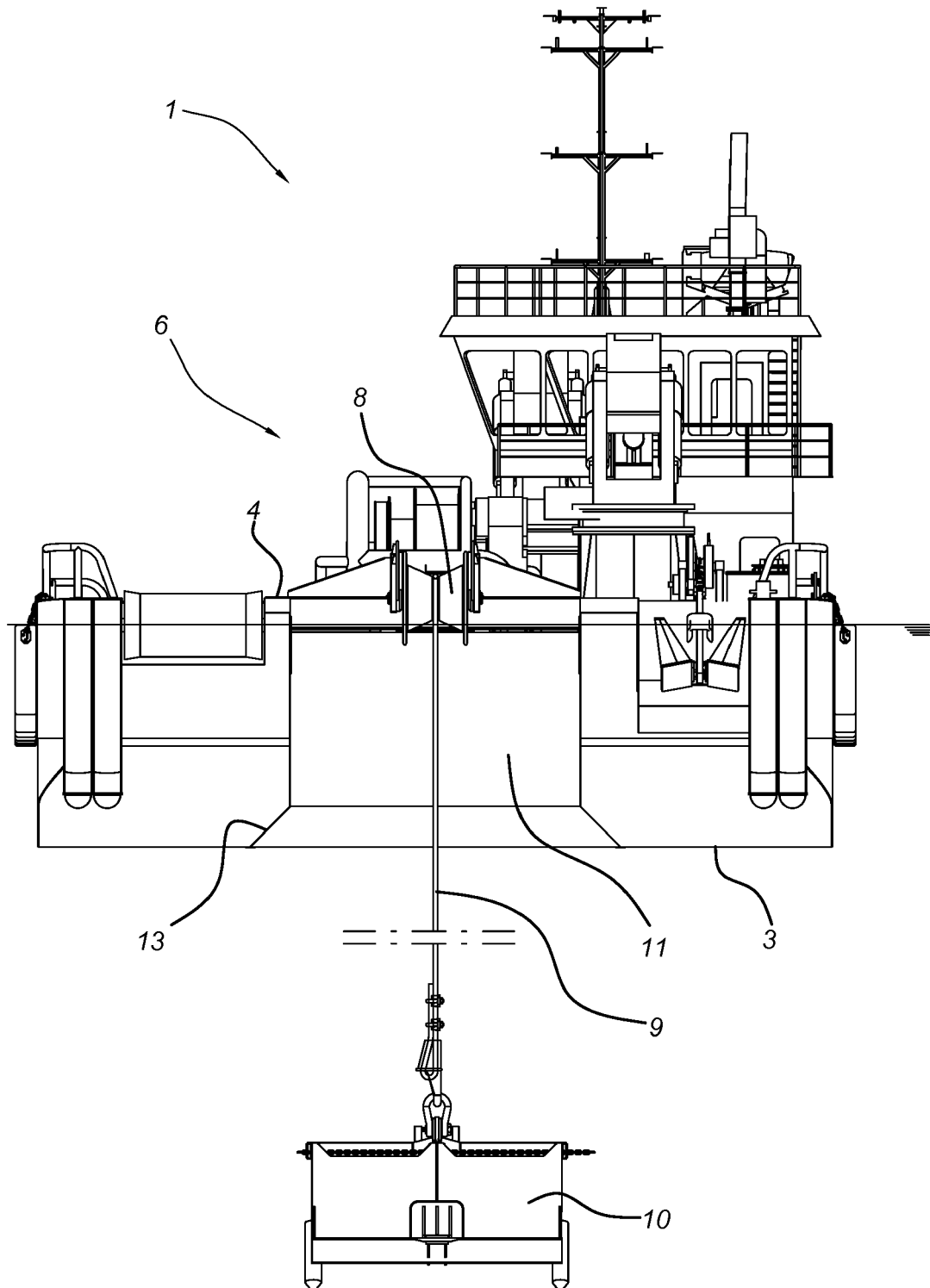


Fig. 3A

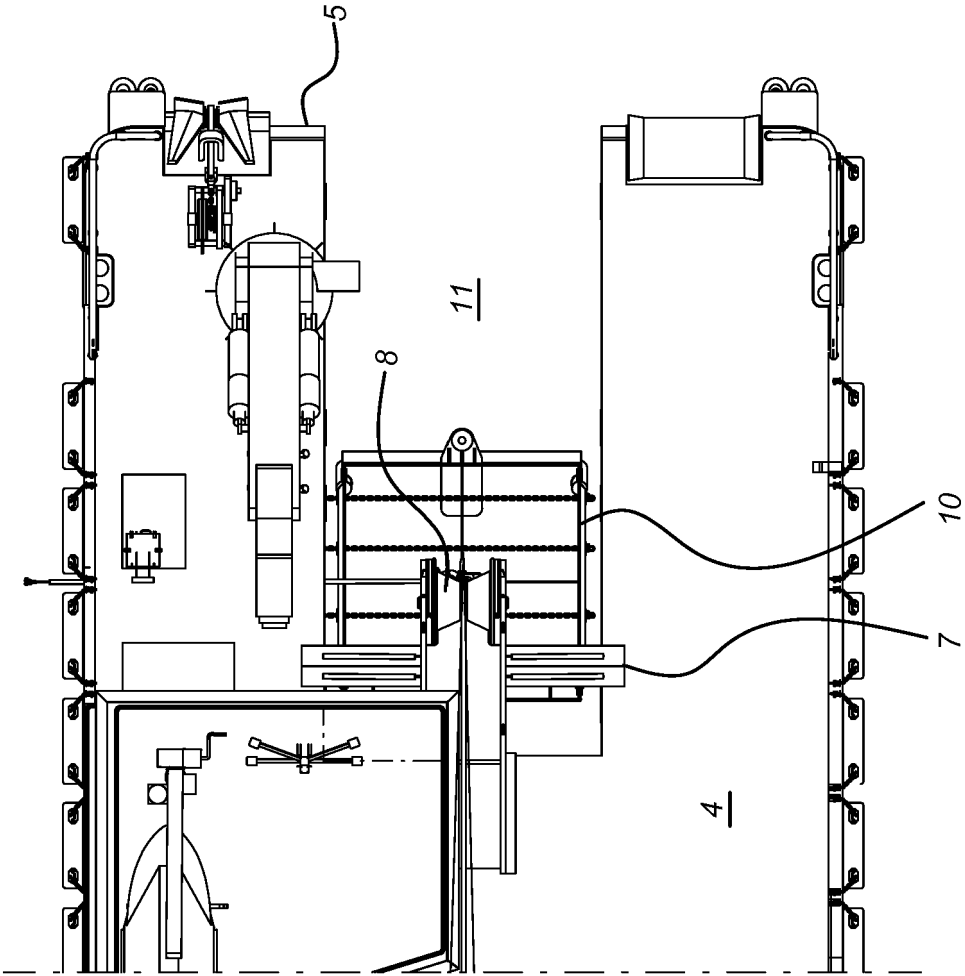
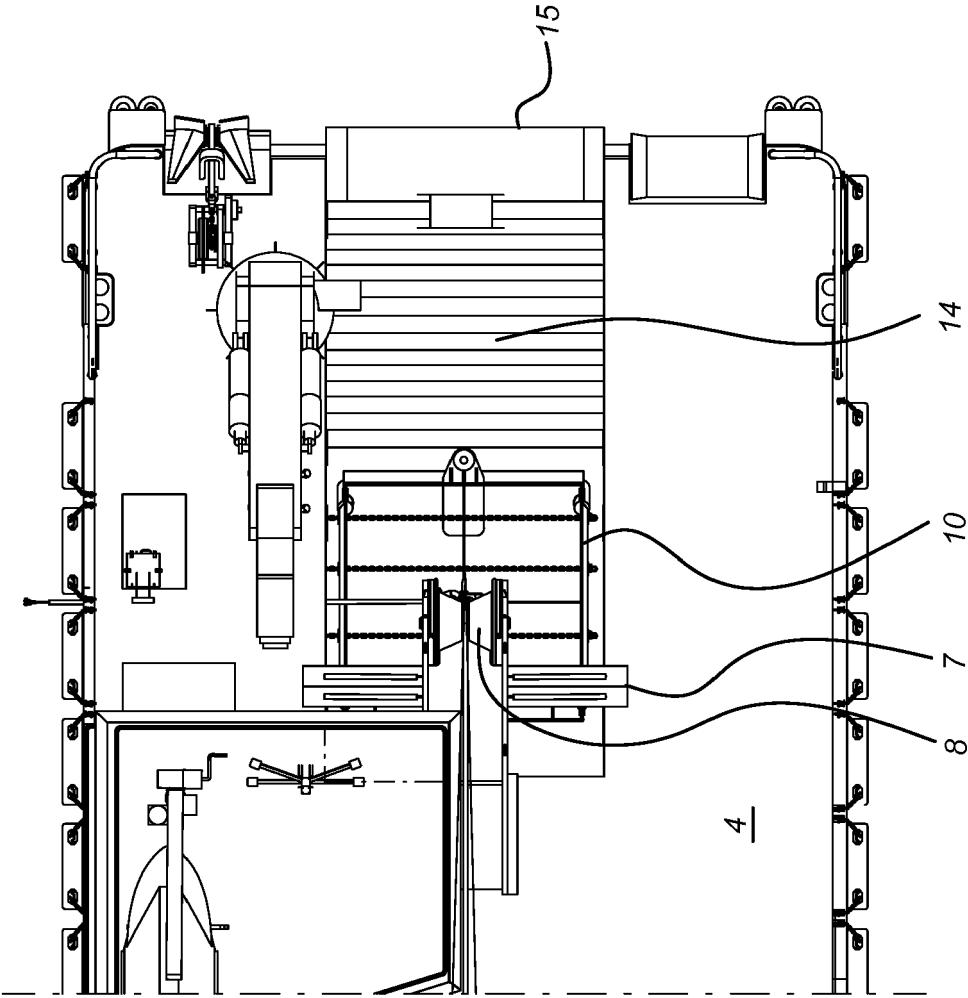


Fig. 3B





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EP 17 17 4529

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Place of search The Hague		Date of completion of the search 31 July 2017	Examiner Cauderlier, Frédéric
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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