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(54) **SHIP'S HOLD FOR STORING AT LEAST ONE TENDER OR SIMILAR**

(57) Ship's hold (10) for storing at least one tender or similar, comprising:

- a doorway (11), provided in a wall (M) and at least partially closed by means of at least one hatch (12), and
- at least one part of a deck forming a ceiling (13) of the hold, characterized in that it comprises at least one translator-elevator device (10.1), suspended from said ceiling and configured to move in a vertical direction and translate in a horizontal direction said at least one tender and including:

- support and guide means (14), fixed to said ceiling (13),
- first carriage means (15), directly supported movable with respect to said support and guide means (14), in a first horizontal direction parallel to a vertical mid-plane of said doorway (11), and configured to support, at a first end (15.2) said at least one hatch (12) between a first operational position, wherein said first end (15.2) of first

carriage means (15) is placed inside said hold (10) and said at least one hatch (12) closes said doorway (11) at least partially, and a second operational position, wherein said first end (15.2) of said first carriage means (15) is extended through said doorway (11) to the outside of said hold (10) and said doorway (11) is open, and

- second carriage means (18), directly supported movable with respect to said first carriage means (15), which are configured to support tackle means (19), provided with at least one winding drum (19.1) having an axis of rotation orthogonal to said vertical mid-plane, between a first operational position, wherein said tackle means (19) are placed distal to said first end (15.2) of said first carriage means (15), and a second operational position, wherein said tackle means (19) are placed close to said first end (15.2) of said first carriage means (15).

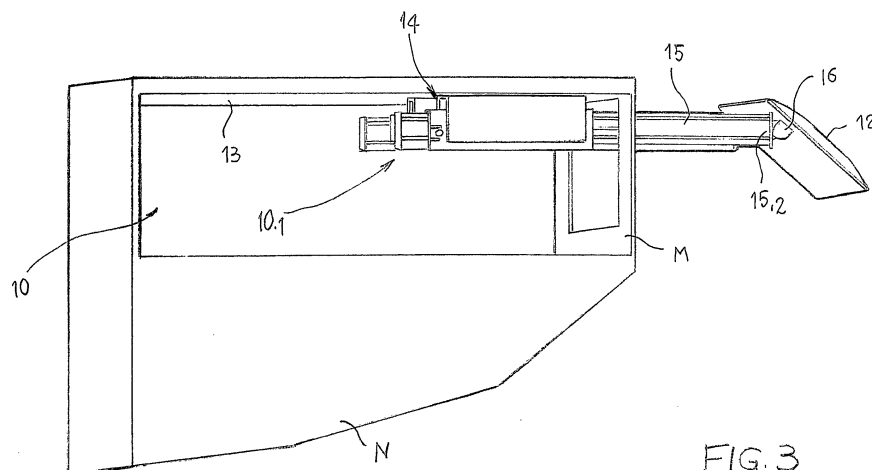


FIG. 3

Description

[0001] The present invention relates to a ship's hold for storing at least one tender or similar.

[0002] A ship's hold for storing at least one tender or similar comprises a doorway, provided in a wall and at least partially closed by means of at least one hatch, and further comprises at least one part of a deck forming a ceiling of the hold.

[0003] There is known a ship's hold for storing a tender or similar provided with a horizontal translation system for moving the tender. This known system comprises hydraulic control means for moving the tender from the inside to the outside of the ship, and vice versa.

[0004] Moreover, this known translation system is separate from the control means for the operations to open and close the corresponding doorway. To this end, there is provided a hatch, which is hinged with respect to the wall of the nave and which, when oscillated toward the outside of the hull, represents an obstacle for the correct performance of operations to store and launch of the tender.

[0005] However, in said known translation system, the hydraulic control means do not always guarantee a suitable hydraulic seal, resulting in possible environmental pollution caused by leakage of liquid.

[0006] Moreover, said hydraulic control means, which require a hydraulic control unit, are relatively complex, heavy and cumbersome, as well as being costly due to the hydraulic cables.

[0007] The document JP2016010997A discloses a ship's hold for storing at least one tender or similar according to the preamble of the main claim. An object of the present invention is to provide a ship's hold for storing at least one tender or similar, wherein the space can be exploited optimally and possibly reduced, at least in height.

[0008] A further object of the present invention is to provide a ship's hold for storing at least one tender or similar, which does not comprise hydraulic control means for moving at least one tender from the inside to the outside of the ship, and vice versa, in order to prevent environmental pollution caused by hydraulic leaks and fires caused by pressurized oil spillage due to broken pipes or connections.

[0009] Another object of the present invention is to provide a ship's hold for storing at least one tender or similar, which has a simplified structure. In view of these objects, the present invention provides a ship's hold for storing at least one tender or similar, the essential feature of which forms the subject matter of claim 1.

[0010] In particular, the present invention provides a ship's hold for storing at least one tender or similar, characterized in that it comprises at least one translator-elevator device, suspended from said ceiling and configured to move in a vertical direction and translate in a horizontal direction at least one tender and including:

- support and guide means, fixed to said ceiling of the hold,
- first carriage means, directly supported movable with respect to said support and guide means in a first horizontal direction parallel to a vertical mid-plane of said doorway, and configured to support, at a first end, at least one hatch between a first operational position, wherein said first end of said first carriage means is placed inside said hold and said at least one hatch closes said doorway at least partially, and a second operational position, wherein said first end of said first carriage means is extended through said doorway to the outside of said hold and said doorway is open, and
- second carriage means, directly supported movable with respect to said first carriage means, which are configured to support tackle means, provided with at least one winding drum having an axis of rotation orthogonal to said vertical mid-plane, between a first operational position, wherein said tackle means are placed distal to said first end of said first carriage means, and a second operational position, wherein said tackle means are placed close to said first end of said first carriage means.

[0011] It will be noted that said first carriage means are within the transverse overall width, according to a vertical plane orthogonal to said vertical mid-plane, of said support and guide means; said second carriage means are within the transverse overall width, according to said vertical plane orthogonal to said vertical mid-plane, of said first carriage means, and said winding drum of said tackle means is within the transverse overall width, according to said vertical plane orthogonal to said vertical mid-plane, of said second carriage means.

[0012] Other features and advantages of the invention will be apparent from the following detailed description of an example of embodiment with reference to the accompanying drawing, which shows important details for the invention, and from the claims. The features illustrated herein should not necessarily be understood to be in scale and they are represented so that the peculiarities according to the invention are clearly highlighted. The different features can be obtained individually or in any combination with each other, as variants of the invention.

[0013] In the accompanying drawing:

- Figs. 1 to 3 are schematic perspective views, in vertical section, of a ship's hold for storing at least one tender or similar, according to an example of embodiment of the invention, wherein a translator-elevator device fixed to the ceiling of the hold is illustrated, respectively, in three different operational positions;
- Fig. 4 is a schematic perspective top view of said translator-elevator device in disassembled state and illustrated in the position corresponding to that of Fig. 1;

- Fig. 5 is a view similar to that of Fig. 4, but illustrating said translator-elevator device in disassembled state and illustrated in a position corresponding to that of Fig. 2 or of Fig. 3;
- Figs. 6 and 7 are sectional views, respectively along the lines VI-VI and VII-VII of Fig. 4, in a different scale;

[0014] With reference to the drawing, the reference numeral 10 indicates a ship's hold N (only partially illustrated) for storing at least one tender or similar (not illustrated).

[0015] Said ship's hold 10 comprises a doorway 11, provided in a wall M of the ship and at least partially closed by means of a hatch 12 (said doorway could also be closed by means of more than one hatch). Moreover, said hold 10 comprises an upper part of a deck forming a ceiling 13. According to the present invention, said hold 10 comprises a translator-elevator device 10.1, suspended from said ceiling and configured to move in a vertical direction and translate in a horizontal direction said at least one tender.

[0016] Said translator-elevator device 10.1 comprises:

- support and guide means 14, fixed to said ceiling 13,
- first carriage means 15, directly supported movable with respect to said support and guide means 14 in a first horizontal direction parallel to a vertical mid-plane of said doorway 11, and configured to support, at a first end 15.2, said at least one hatch 12 between a first operational position, wherein said first end 15.2 of first carriage means 15 is placed inside said hold 10 (Fig. 1) and said at least one hatch 12 at least partially closes said doorway 11, and a second operational position, wherein said first end 15.2 of said first carriage means 15 is extended through said doorway 11 to the outside of said hold 10 (Figs. 2, 3) and said doorway 11 is open, and
- second carriage means 18, directly supported movable with respect to said first carriage means 15, which are configured to support tackle means 19, provided with at least one winding drum 19.1 having an axis of rotation orthogonal to said vertical mid-plane, between a first operational position, wherein said tackle means 19 are placed distal to said first end 15.2 of said first carriage means 15, and a second operational position, wherein said tackle means 19 are placed close to said first end 15.2 of said first carriage means 15.

[0017] Moreover, with particular reference to Figs. 6 and 7, it will be noted that said first carriage means 15 are within the transverse overall width, according to a vertical plane orthogonal to said vertical mid-plane, of said support and guide means 14; said second carriage means 18 are within the transverse overall width, according to said vertical plane orthogonal to said vertical mid-plane, of said first carriage means 15, and said winding drum 19.1 of said tackle means 19 is within the transverse

overall width, according to said vertical plane orthogonal to said vertical mid-plane, of said second carriage means 18.

[0018] In particular, according to the example of embodiment illustrated, it will be noted (Fig. 7) that:

- said support and guide means 14 have two vertical opposite wings, parallel to said vertical mid-plane of said doorway 11, and which comprise first stationary straight guide means 14.1 oriented in said first horizontal direction. In particular, in the example illustrated, said support and guide means 14 comprise an overturned U-shaped structure made of metal sheet or plate, wherein the intermediate branch of the U-shaped structure is fixed to said ceiling 13 and the lateral branches are substantially vertical and parallel with respect to said vertical mid-plane of said doorway 11. Said vertical branches have on the inner face a plurality of fixed shoes, C-shaped and with mirror image symmetry, which provide said first stationary guide means 14.1;
- said first carriage means 15 have two opposite sidewalls, parallel to said vertical mid-plane of said doorway 11, and which each comprise, on a respective first face, first movable straight guide means 15.1, corresponding and engaged for straight-line sliding with respect to said first stationary straight guide means 14.1, and, on a respective second face opposite said first face, second stationary straight guide means 15.3, oriented parallel to said first direction. In particular, in the example illustrated, said first carriage means 15 comprise an overturned U-shaped structure made of metal sheet or plate, included at least partially in said support and guide means 14 and wherein the lateral branches are substantially vertical and parallel with respect to said vertical mid-plane of said doorway 11. Four guide profiles 15.1 in pairs opposite each other are fixed to the outer face of the vertical lateral branches of said first carriage means 15 and are coupled slidingly with respect to said corresponding stationary guide shoes of said first guide means 14.1;
- said second carriage means 18 have two opposite sidewalls, parallel to said vertical mid-plane of said doorway 11, and which each comprise, on a respective face, second movable straight guide means 18.1, corresponding and engaged for straight-line sliding with respect to said second stationary guide means 15.3. In particular, according to the example illustrated, said second carriage means 18 comprise an overturned U-shaped structure made of metal sheet or plate, included at least partially in said first carriage means 15 and wherein the lateral branches are substantially vertical and parallel with respect to said vertical mid-plane of said doorway 11. Said vertical branches of said second carriage means 18 have on their outer face guide shoes forming said first guide means 18.1, C-shaped and with mirror-

image symmetry, which are coupled slidingly to said second stationary guide means 15.3, formed by means of corresponding guide profiles fixed on the inner face of the vertical branches of said first carriage means 15.

[0019] Moreover, according to the present example of embodiment, said translator-elevator device 10.1 comprises (Fig. 6):

- first translation control means 17, configured to selectively move in translation said first carriage means 15, by means of sliding said first movable guide means 15.1 with respect to said first stationary guide means 14.1, between said first operational position and said second operational position, and vice-versa. In particular, according to the example illustrated, said first control means 17 comprise first rack means 17.1, in one piece with said first carriage means 15 and extending parallel to said first direction, first electric gear motor means 17.2 with reversible rotation, in one piece with said support and guide means 14, and first pinion means 17.3, rotating around an axis orthogonal to said vertical mid-plane, engaging with said first rack means 17.1 and controlled in rotation by means of said first electric gear motor means 17.2;
- second translation control means 20, configured to selectively move in translation said second carriage means 18, by means of sliding said second movable guide means 18.1 with respect to said second stationary guide means 15.3, between said first operational position and said second operational position, and vice-versa. In particular, according to the example illustrated, said second control means 20 comprise second rack means 20.1, in one piece with said first carriage means 15 and extending parallel to said first direction, second electric gear motor means 20.2 with reversible rotation, in one piece with said second carriage means 18, and second pinion means 20.3, rotating around an axis orthogonal to said vertical mid-plane, engaging with said second rack means 20.1 and controlled in rotation by means of said second electric gear motor means 20.2.

[0020] Moreover, said first carriage means 15 support said at least one hatch 12 by means of connecting means 16 (Figs. 4, 5), including hinged articulation means 16.1, connecting said first end 15.2 of said first carriage means 15 and said at least one hatch 12 oscillating around an axis of articulation orthogonal to said vertical mid-plane, and actuation means, configured to selectively oscillate said at least one hatch 12 around said axis of articulation between a first operational position closed flush with said wall M (Fig. 1), when said first carriage means 15 are in said first operational position, and a second operational position open at a distance from said wall M (Figs. 2, 3), wherein said at least one hatch can be turned upwards, when said first carriage means 15 are in said second

operational position. In particular, according to the example illustrated, said actuation means (known per se and not illustrated in the drawing) comprise electric gear motor means with reversible rotation, configured to control the rotation of a hinge axis in one piece with said hatch 12 with respect to bearing articulated connecting means fixed to said first end 15.2 of said first carriage means 15.

[0021] Said tackle means 19 with at least one winding drum 19.1 (Figs. 6, 7) are of conventional type, are controlled by means of electric gear motor means with reversible rotation, known per se and therefore not further illustrated and described.

[0022] It will be noted that said translator-elevator device 10.1 of said ship's hold advantageously comprises automatic control means of said first control means 17, of said second control means 20 and of said actuation means of said at least one hatch 12, configured to control the sequential action of said first control means 17, of said second control means 20 and of said actuation means to arrange said first carriage means 15, said second carriage means 18 and said at least one hatch 12 in the first operational positions, respectively in said second operational positions, sequentially. The tackle means 19 can be controlled independently.

[0023] In particular, said first control means 17, said second control means 20 and said actuation means can be electrically connected to electric circuit means including a programmable logic controller that executes one or more operating sequences programmed to control the functions of putting at least one tender into and out of service, with respect to the hold 10, by means of said control means and of said actuation means.

[0024] Operation of the translator-elevator device 10.1 of the hold 10.

[0025] As is apparent from the above, said first carriage means 15 move linearly with respect to said support and guide means 14, while said second carriage means 18 move linearly with respect to said first carriage means 15, in said first direction. Said first carriage means 15 support, at said first end 15.2 thereof, said hatch 12 oscillating around an axis transverse to said first direction (hinged articulation 16.1).

[0026] Said first control means 17, when operated, cause the translation of said first carriage means 15 with respect to said support and guide means 14, between said first operational position, wherein said hatch 12 at least partially closes doorway 11, and said second operational position, wherein said hatch 12 is extended beyond the wall M and said doorway 11 is open, and vice-versa.

[0027] Said second control means 20 cause, when operated, the translation of said second carriage means 18, which support said tackle means 19, with respect to said first carriage means 15, between said first operational position, wherein said tackle means 19 are placed distal to said first end 15.2 of said first carriage means 15, and said second operational position, wherein said tackle

means 19 are placed close to said first end 15.2 of said first carriage means 15. It will be noted that, by means of the translator-elevator device 10.1, a plurality of intermediate positions of said tackle means 19, between said first position and said second position of the same tackle means, can be obtained.

[0028] In this way, the first carriage means 15 can extend towards the outside of the hold 10 together with the hatch 12, opening the doorway 11 and providing a straight runway for moving the second carriage means 18 with the tackle means 19, from the inside of the hold 10 to the outside of the corresponding wall M of the ship N. Preliminarily, said tackle means 19, by means of said at least one winding drum 19.1, and an appropriate harness, lift said at least one tender or similar parked in the hold 10.

[0029] Said hatch 12, when placed outside the wall M, is made to oscillate around said transverse axis of the hinged articulation means 16.1, in a position raised from the surface of the sea, wherein it does not interfere with said at least one tender or similar lifted and transported by means of said tackle means 19, said first carriage means 15 and said second carriage means 18 from inside the hold 10 towards the surface of the sea.

[0030] With a sequence of operations in reverse order, a tender or similar is lifted from the surface of the sea outside the wall M, is returned to the hold 10, wherein it is put out of service, while the hatch 12 at least partially closes the doorway 11. In the example illustrated, the hatch 12 totally closes and seals said doorway 11, by means of peripheral sealing means, known per se and not illustrated.

[0031] Although not illustrated, advantageously, for example in the case of a doorway and corresponding closing hatch of large size, the hold for storing at least one tender comprises a pair of translation-elevation devices 10.1 arranged in parallel and that co-act synchronously in tandem to perform the operations described above.

[0032] As is apparent from the above, the present invention provides a ship's hold for storing at least one tender or similar that allows the objects specified above to be achieved in a simple and effective manner.

[0033] In fact, the ship's hold according to the invention comprises a translation-elevation device that performs, in a coordinated manner, the functions of putting at least one tender or similar into and out of service and of opening and closing the corresponding doorway, having extremely limited overall dimensions with respect to the height of the ship's hold. Moreover, the ship's hold according to the invention comprises a translation-elevation device of the type specified, including exclusively electromechanical control means, hence not subject to hydraulic leaks. Moreover, the present invention provides a ship's hold for storing at least one tender or similar, which has a simplified structure.

Claims

1. Ship's hold (10) for storing at least one tender or similar, comprising:

- a doorway (11), provided in a wall (M) and at least partially closed by means of at least one hatch (12), and
- at least one part of a deck forming a ceiling (13) of the hold, **characterized in that** it comprises at least one translator-elevator device (10.1), suspended from said ceiling and configured to move in a vertical direction and translate in a horizontal direction said at least one tender and including:
 - support and guide means (14), fixed to said ceiling (13),
 - first carriage means (15), directly supported movable with respect to said support and guide means (14), in a first horizontal direction parallel to a vertical mid-plane of said doorway (11), and configured to support, at a first end (15.2), said at least one hatch (12) between a first operational position, wherein said first end (15.2) of first carriage means (15) is placed inside said hold (10) and said at least one hatch (12) closes said doorway (11) at least partially, and a second operational position, wherein said first end (15.2) of said first carriage means (15) is extended through said doorway (11) to the outside of said hold (10) and said doorway (11) is open, and
 - second carriage means (18), directly supported movable with respect to said first carriage means (15), which are configured to support tackle means (19), provided with at least one winding drum (19.1) having an axis of rotation orthogonal to said vertical mid-plane, between a first operational position, wherein said tackle means (19) are placed distal to said first end (15.2) of said first carriage means (15), and a second operational position, wherein said tackle means (19) are placed close to said first end (15.2) of said first carriage means (15).

2. Ship's hold (10) for storing at least one tender or similar, according to claim 1, **characterized in that** said first carriage means (15) are within the transverse overall width, according to a vertical plane orthogonal to said vertical mid-plane, of said support and guide means (14); said second carriage means (18) are within the transverse overall width, according to said vertical plane orthogonal to said vertical mid-plane, of said first carriage means (15), and said winding drum (19.1) of said tackle means (19) are within the transverse overall width, according to said vertical plane orthogonal to said vertical mid-plane, of said second carriage means (18).

3. Ship's hold (10) for storing at least one tender or similar, according to claim 1 and/or 2, **characterized in that:**

- said support and guide means (14) have two vertical opposite wings, parallel to said vertical mid-plane of said doorway (11), and which comprise first stationary straight guide means (14.1) oriented in said first horizontal direction;
 - said first carriage means (15) have two opposite sidewalls, parallel to said vertical mid-plane of said doorway (11), and which each comprise, on a respective first face, first movable straight guide means (15.1), corresponding and engaged for straight-line sliding with respect to said first stationary straight guide means (14.1), and, on a respective second face opposite said first face, second stationary straight guide means (15.3), oriented parallel to said first direction;
 - said second carriage means (18) have two opposite sidewalls, parallel to said vertical mid-plane of said doorway (11), and which each comprise, on a respective face, second movable straight guide means (18.1), corresponding and engaged for straight-line sliding with respect to said second stationary guide means (15.3);

and **in that** said translator-elevator device (10.1) comprises:

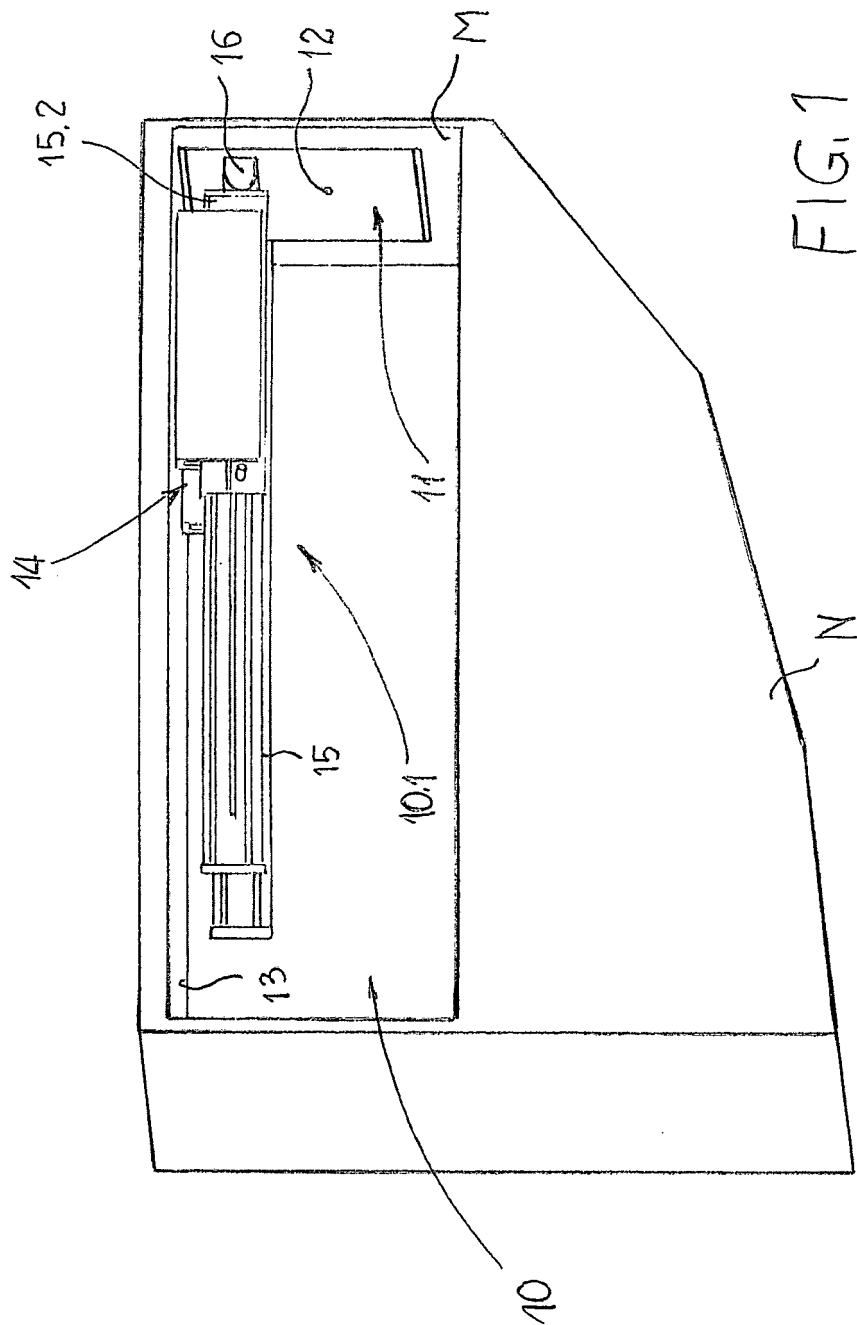
- first translation control means (17) for said first carriage means (15), configured to selectively move in translation said first carriage means (15), by means of sliding said first movable guide means (15.1) with respect to said first stationary guide means (14.1), between said first operational position and said second operational position, and vice-versa, and
 - second translation control means (20), configured to selectively move in translation said second carriage means (18), by means of sliding said second movable guide means (18.1) with respect to said second stationary guide means (15.3), between said first operational position and said second operational position, and vice-versa.

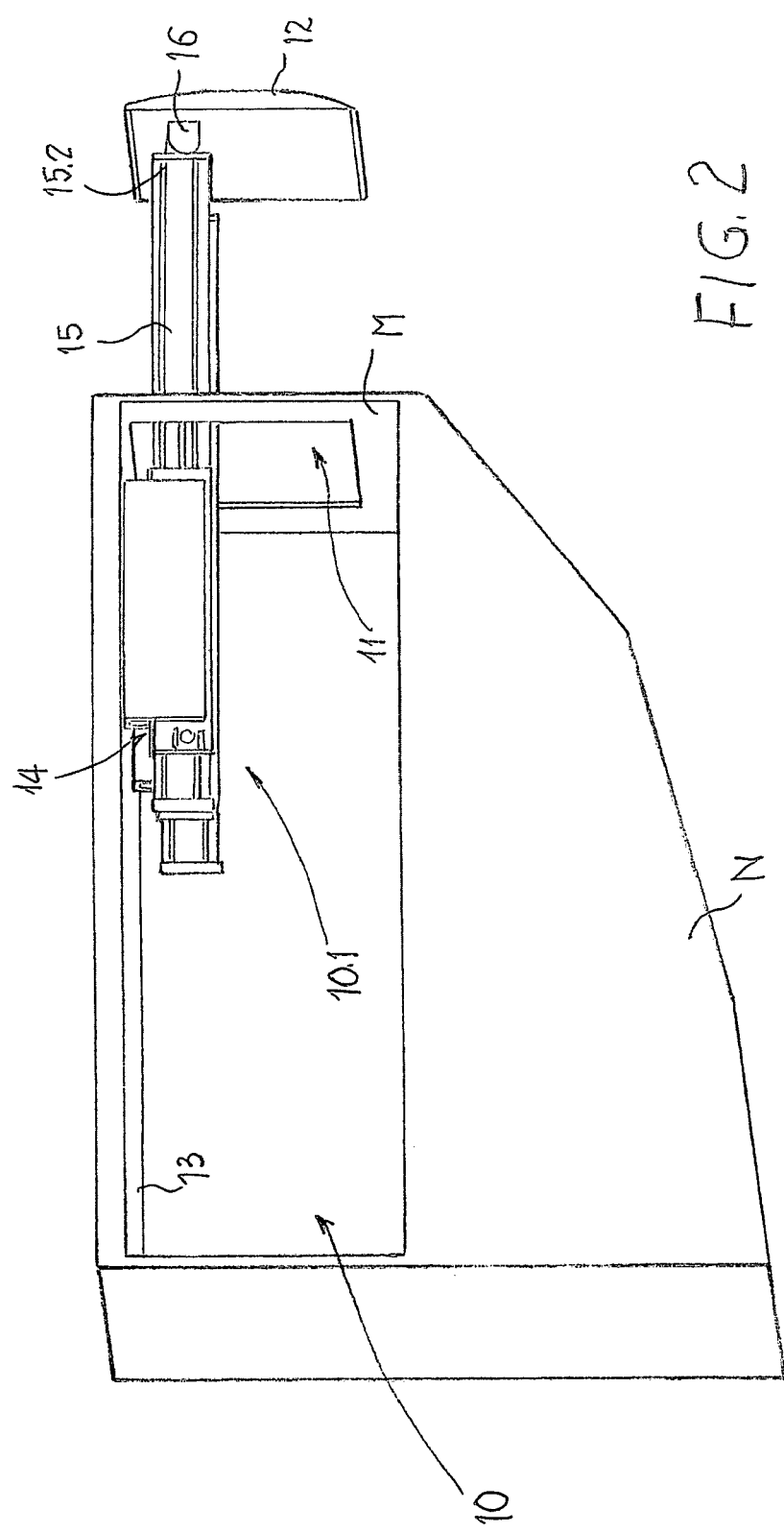
4. Ship's hold (10) according to claim 3, **characterized in that** said first control means (17) comprise first rack means (17.1), in one piece with said first carriage means (15) and extending parallel to said first direction, first electric gear motor means (17.2) with reversible rotation, in one piece with said support and guide means (14), and first pinion means (17.3), rotating around an axis orthogonal to said vertical mid-plane, engaging with said first rack means (17.1) and controlled in rotation by means of said first electric gear motor means (17.2).

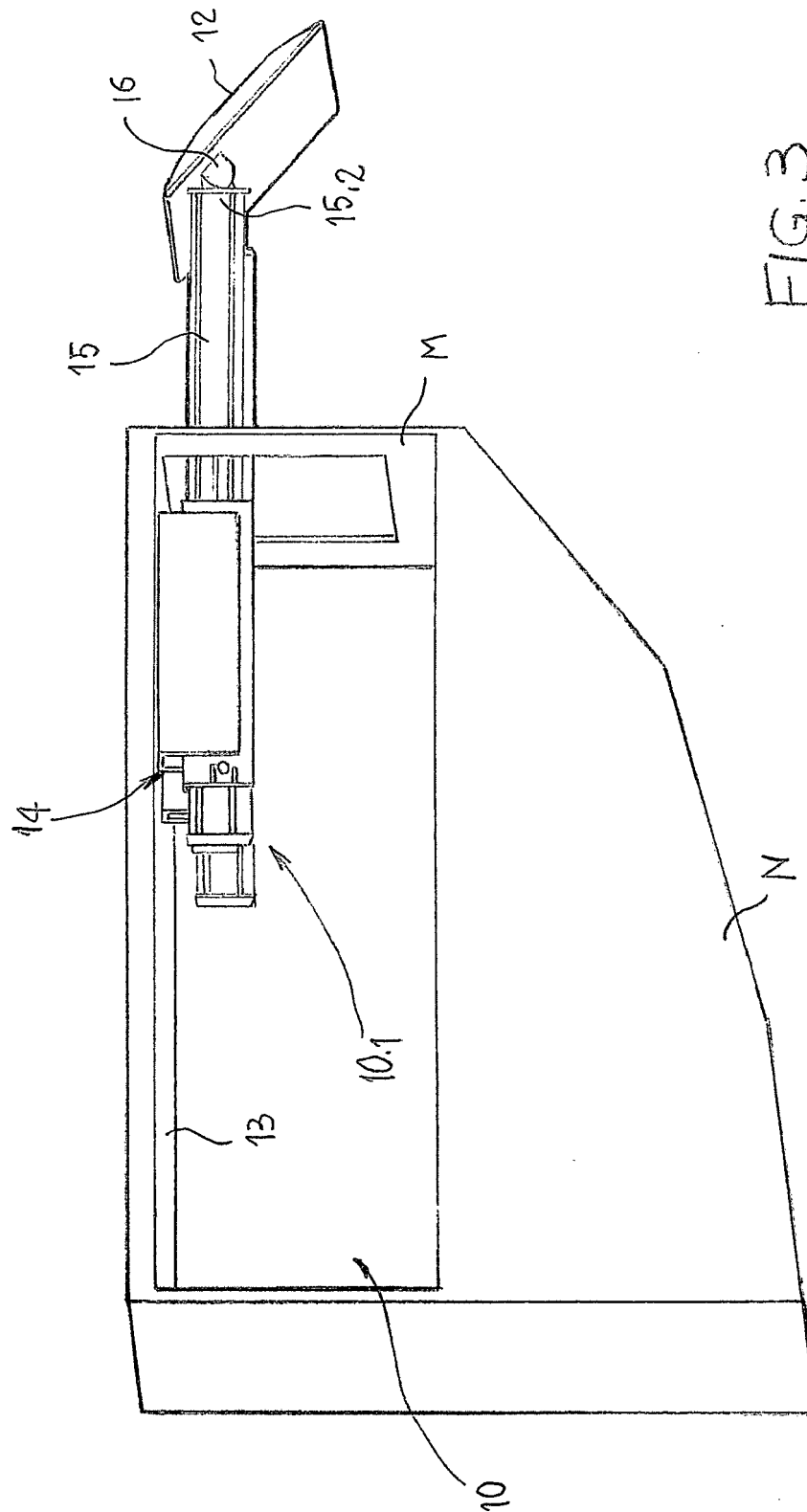
5. Ship's hold (10) according to claim 3, **characterized in that** said second control means (20) comprise second rack means (20.1), in one piece with said first carriage means (15) and extending parallel to said first direction, second electric gear motor means (20.2) with reversible rotation, in one piece with said second carriage means (18), second pinion means (20.3), rotating around an axis orthogonal to said vertical mid-plane, engaging with said second rack means (20.1) and controlled in rotation by means of said second electric gear motor means (20.2).

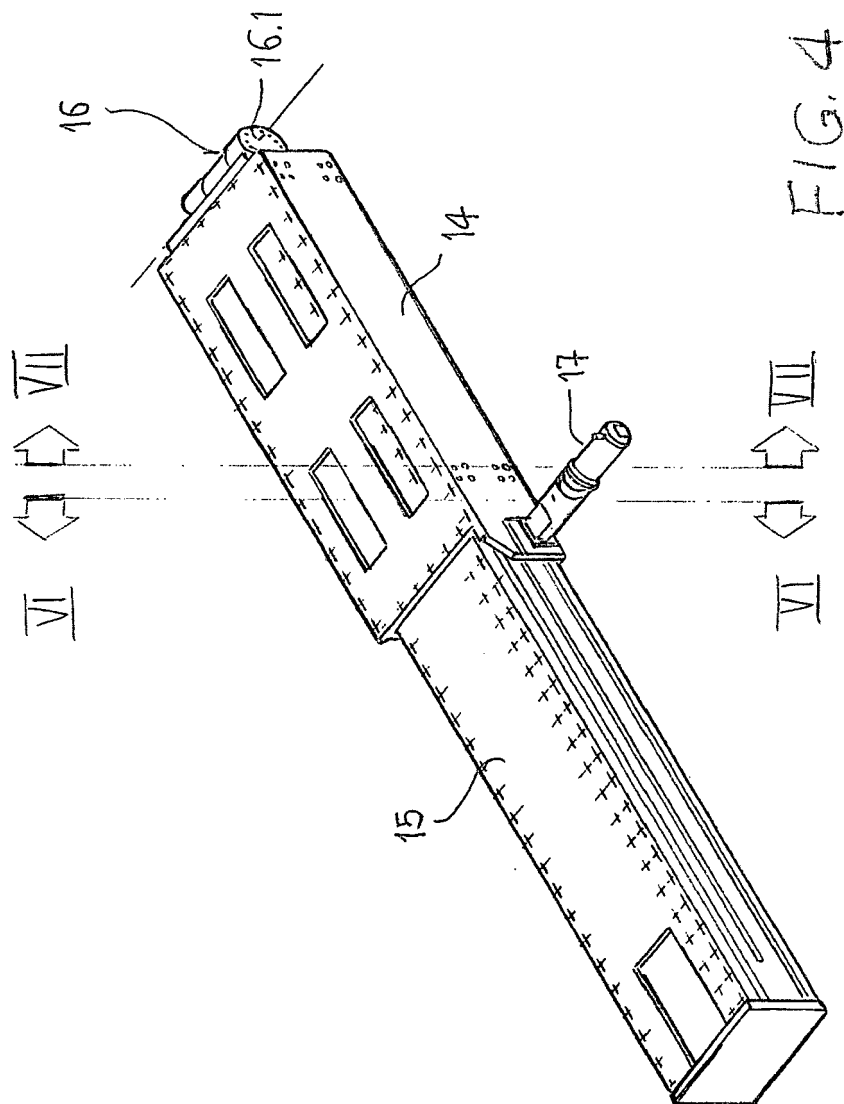
6. Ship's hold (10) according to one or more of the previous claims, **characterized in that** said first carriage means (15) support said at least one hatch (12) by means of connecting means (16) including hinged articulation means (16.1), connecting said first end (15.2) of said first carriage means (15) and said at least one hatch (12) oscillating around an axis of articulation orthogonal to said vertical mid-plane, and actuation means, configured to selectively oscillate said at least one hatch (12) around said axis of articulation between a first operational position flush with said wall, when said first carriage means (15) are in said first operational position, and a second operational position at a distance from said wall (M), wherein said at least one hatch is turned upwards, when said first carriage means (15) are in said second operational position.

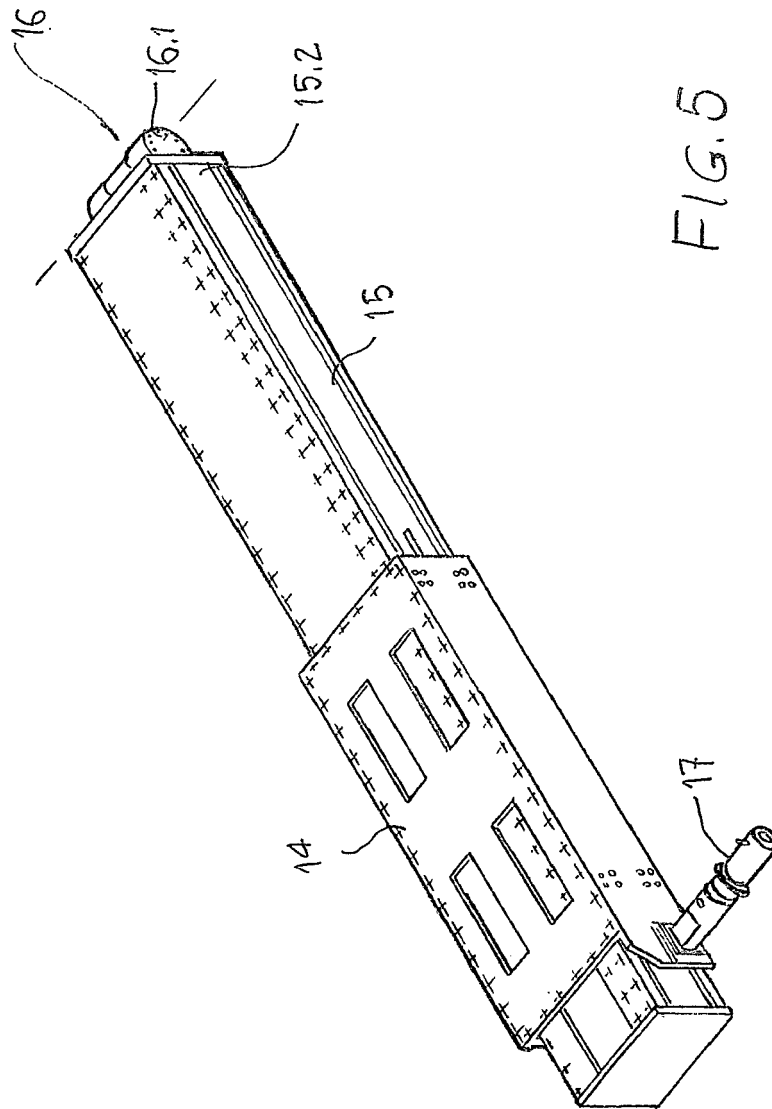
7. Ship's hold (10) according to one or more of the previous claims, **characterized in that** it comprises a pair of translation-elevation devices (10.1) arranged in parallel and operating synchronously in tandem.

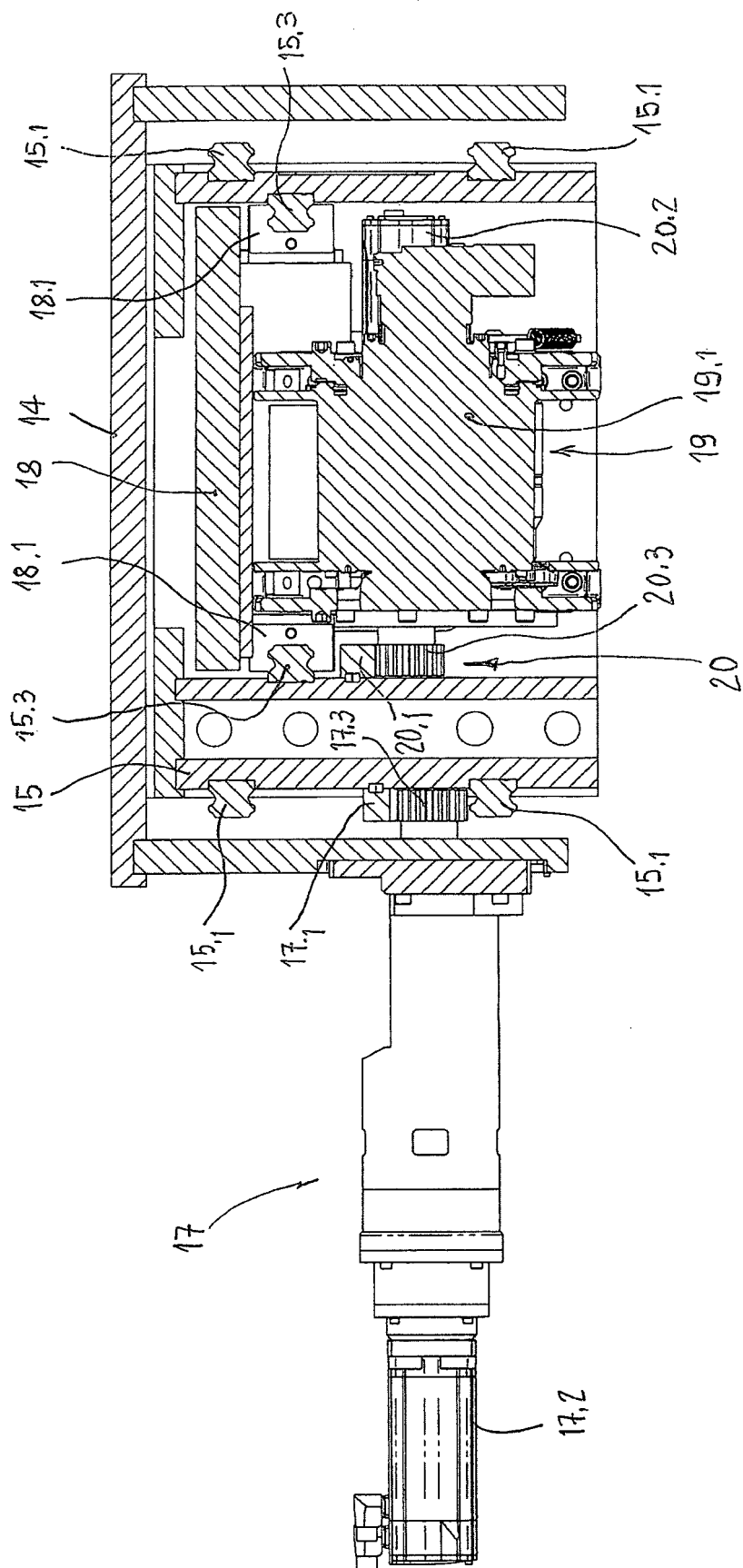












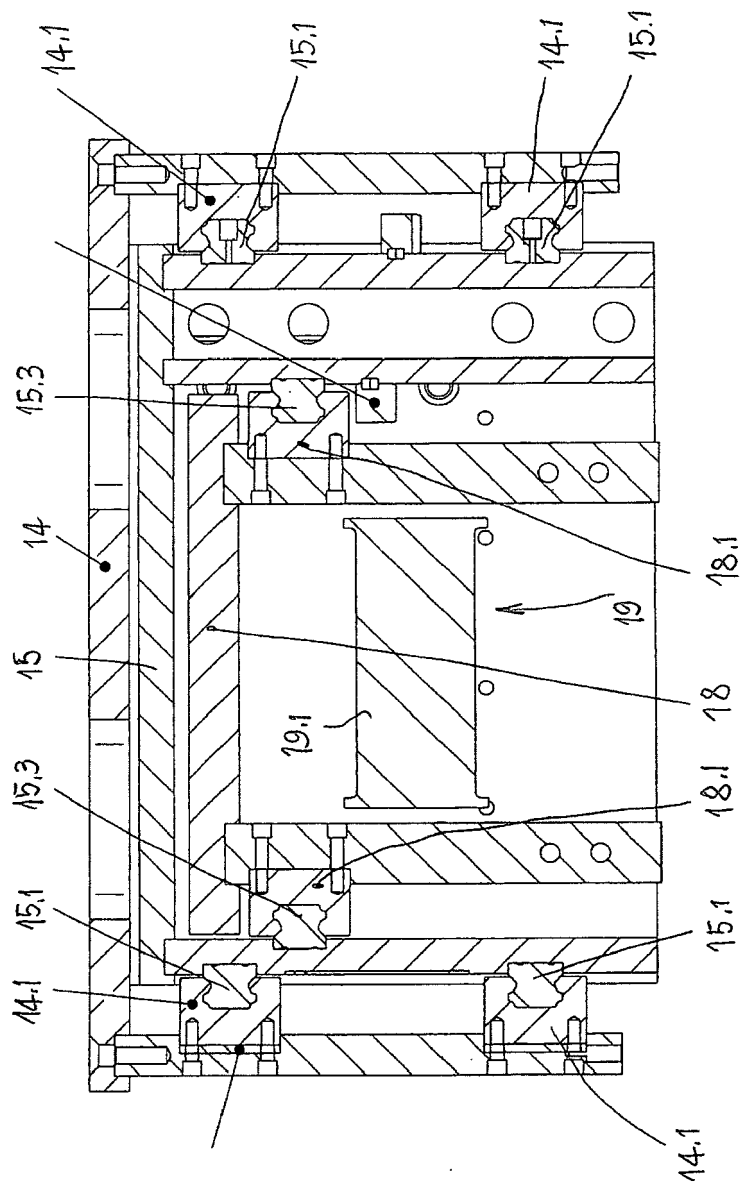


FIG. 7



EUROPEAN SEARCH REPORT

Application Number
EP 19 00 0458

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 February 2020	Examiner Freire Gomez, Jon
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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