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(54) **A DRIVE ARRANGEMENT FOR A MARINE VESSEL**

(57) The invention relates to a drive arrangement (1, 100) for a marine vessel (10), the drive arrangement (1, 100) comprising: an outboard drive unit (2) provided with at least one propeller (3), wherein the outboard drive unit (2) is configured to be arranged on an outside of a transom (11) of the marine vessel (10) and to be connected via an opening (12, 120) in the transom (11) to further parts (4, 40) of the drive arrangement arranged (1, 100) inside the marine vessel (10); and a supporting carrier (5, 50) configured to be arranged at the opening (12, 20) in the transom (11) for fastening and support of the outboard drive unit (2) so as to take up thrust and steering forces from the outboard drive unit (2) when the drive arrangement (1, 100) is installed and used for propelling the marine vessel (10). The drive arrangement (1, 100) further comprises a supporting frame structure (6, 60) configured to be fixed to a supporting hull structure (7) arranged on an inside of the marine vessel (10) forward of the transom (11), the supporting frame structure (6, 60) further being configured to extend aft-wards from or along the supporting hull structure (7) to the opening (12, 20) in the transom (11), wherein the supporting carrier (5, 50) forms part of or is firmly fixed to the supporting frame structure (6, 60). The invention also relates to a marine vessel (10) provided with such a drive arrangement (1, 100) and to a method for installing such a drive arrangement (1, 100) in a marine vessel (10).

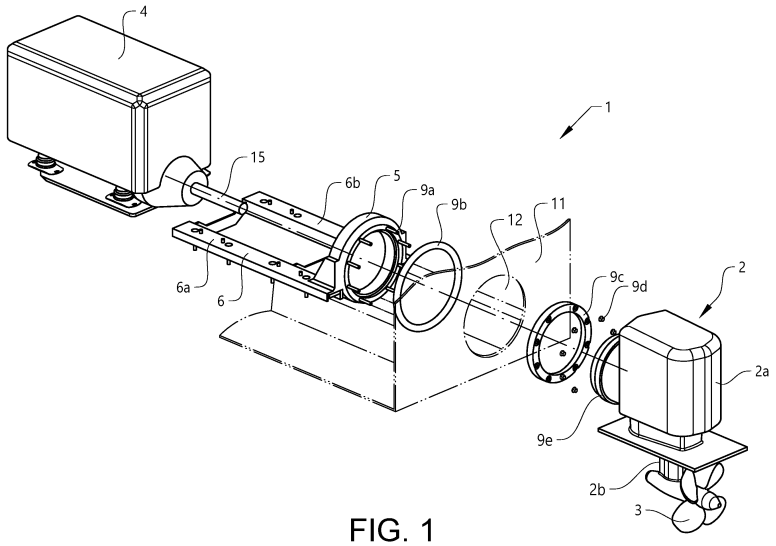


FIG. 1

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## Description

### TECHNICAL FIELD

**[0001]** The invention relates to a drive arrangement for a marine vessel and to a marine vessel provided with such a drive arrangement.

### BACKGROUND

**[0002]** Marine vessels, such as powerboats, may be equipped with a propulsion system in the form of an inboard/outboard drive arrangement including an outboard propeller-equipped drive unit arranged on an outside of a transom of the marine vessel and further including additional parts of the drive arrangement, such as a power source, arranged inside of the transom and thus on an inside of a hull of the marine vessel. An opening in the transom allows for various connections (power, control, hydraulics, etc.) between the outboard drive unit and the power source and other parts of the drive arrangement located inside the vessel. At least a lower part of the outboard drive unit is usually arranged to pivot about a vertical axis so as to allow for steering of the vessel.

**[0003]** Traditionally, such a drive arrangement comprises a power source in the form of an internal combustion engine operatively connected to the drive unit by means of a drive shaft extending through the opening in the transom. More recently it has been proposed various variants of drive arrangements where an electric motor is arranged for driving of the propeller(s), as an alternative or complement to traditional engine drive shaft driving. The electric motor is (in the type of marine vessels concerned here) connected to a relatively large electric power source in the form of an electric battery, a fuel cell or an electric generator powered by an internal combustion engine (or some combination of such sources) arranged inside the marine vessel. In cases where the electric motor is arranged in the outboard drive unit, a power cable is arranged through the opening in the transom so as to electrically connect the power source and the electric motor.

**[0004]** US5688152 and US5755604 disclose examples of conventional drive arrangements of the above type where a drive shaft extending through an opening in the transom is operatively connected between an internal combustion engine arranged inside the marine vessel and the outboard drive unit.

**[0005]** As shown in US5688152 and US5755604, a drive arrangement of this type comprises a supporting carrier arranged onto the transom at the opening thereof. The function of the supporting carrier is to fix and support the outboard drive unit onto the transom and take up e.g. thrust and steering forces from the outboard drive unit when the drive arrangement is used for propelling the marine vessel. The supporting carrier should also withstand crash forces in case the (underwater part of) the outboard drive unit hits a stone or other obstacle during operation of the vessel.

**[0006]** The supporting carrier is exposed to forces and loads of considerable magnitude, and these forces are transmitted to the transom onto which the supporting carrier is arranged. Although various designs of supporting carriers and transoms have been proposed over the years, there is still a need for improvements with regard to transmission of forces from the outboard drive unit to the transom.

### SUMMARY

**[0007]** An object of the invention is to provide a drive arrangement for a marine vessel that reduces the transmission of loads and forces from the outboard drive unit to the transom.

**[0008]** In a first aspect, the invention concerns a drive arrangement for a marine vessel, the drive arrangement comprising: an outboard drive unit provided with at least one propeller, wherein the outboard drive unit is configured to be arranged on an outside of a transom of the marine vessel and to be connected via an opening in the transom to further parts of the drive arrangement arranged inside the marine vessel; and a supporting carrier configured to be arranged at the opening in the transom for fastening and support of the outboard drive unit so as to take up thrust and steering forces from the outboard drive unit when the drive arrangement is installed and used for propelling the marine vessel.

**[0009]** The drive arrangement further comprises a supporting frame structure configured to be fixed to a supporting hull structure arranged on an inside of the marine vessel forward of the transom, the supporting frame structure further being configured to extend aft-wards from or along the supporting hull structure to the opening in the transom, wherein the supporting carrier forms part of or is firmly fixed to the supporting frame structure.

**[0010]** Thus, the outboard drive unit is supported by the supporting carrier that in turn forms part of or is firmly fixed to the supporting frame structure that in turn is fixed or intended to be fixed to the supporting hull structure arranged on an inside of the marine vessel. This allows the loads and forces from the outboard drive unit to be transmitted to the supporting hull structure during operation of the marine vessel, instead of to the transom as in conventional drive arrangements.

**[0011]** A main effect of this is that design and production of the vessel can be simplified since the transom no longer needs to support steering, thrust or crash loads. In turn, the transom, and possibly also other parts of the hull, can then be made thinner and lighter. A supporting hull structure is normally needed anyway for supporting the power source and for supporting the hull itself. The supporting hull structure may comprise one or more supporting beams, stringers, that extend along a bottom of the marine vessel in a longitudinal direction thereof. Other types of supporting hull structures are, however, possible, such as a homogeneous supporting zone arranged

in the bottom structure of the hull and/or supporting structures arranged at or along sidewalls of the hull.

**[0012]** A further effect of the drive arrangement of this disclosure is that a marine drive line manufacturer can deliver a pre-tested, pre-assembled and pre-packaged power transmission assembly containing both an outboard drive unit and a power source, where the drive unit and the power source may be operatively connected and both carried by the supporting frame structure (possibly with damper elements provided between the power source and the frame).

**[0013]** The outboard drive unit should preferably be relatively easily detachable and re-attachable from/to the supporting carrier/frame structure and from/to the power source so as to allow for an efficient re-assembly of the power transmission assembly when the frame structure has been installed inside the vessel (preferably while carrying the power source) and the outboard drive unit is to be re-attached to the carrier and the power source from outside of the vessel. This simplifies production of the vessel at the boat production site. With regard to the drive arrangement it is, besides fixing the supporting frame structure to the supporting hull structure, more or less only needed to make a hole/opening in the transom, preferably adapted in size and shape to the supporting carrier, and re-attach the outboard drive unit. The drive arrangement thus dispenses with the need to design the transom so that it can take up thrust, torque, impact, steering or trim loads.

**[0014]** The supporting frame structure may be designed in different ways. In an example, the frame structure comprises a front section configured to be fixed to the supporting hull structure and further configured to carry a battery, engine or other power source. The frame structure may further comprise a rear/aft section provided with a supporting carrier, such as a ring-shaped member, that faces the transom (when the frame structure is arranged inside the marine vessel) and that becomes suitably located in relation to the transom and the opening therein when the frame structure has been installed in the vessel (and when an opening has been made in the transom in case this is not done before installing the frame structure). The opening is preferably adapted to the size and shape of the supporting carrier, or vice versa. The supporting carrier may extend at least partly through the opening in the transom. Alternatively, the drive arrangement may be arranged so that the supporting carrier becomes located at an inside of the (opening in the) transom. The transom may be provided with more than one opening involved in the drive arrangement.

**[0015]** In an embodiment, the supporting frame structure comprises at least one supporting member configured to be fixed to a supporting hull structure comprising a longitudinal stringer arranged in a bottom of a hull of the marine vessel. The at least one supporting member may be a plate that can be fixed to two or more spaced-apart longitudinal stringers. As an alternative to such a plate, the supporting frame structure may comprise one or more elongated supporting members, each of which being arranged to extend along and be fixed to a corresponding stringer.

**[0016]** In an embodiment, the supporting frame structure is provided with a ring-shaped member configured to fit into a circular opening in the transom.

**[0017]** In an embodiment, the drive arrangement comprises a connection arrangement for connecting the outboard drive unit to the supporting carrier, wherein the connection arrangement is configured to allow fixation of the outboard drive unit to the supporting carrier when the supporting frame structure is installed inside the marine vessel and the outboard drive unit is located outside of the marine vessel. The connection arrangement may comprise flanges, bolts and nuts or other form of mounting arrangement. The connection arrangement may also comprise one or more sealing members for sealing around the opening in the transom. However, the one or more sealing members do not necessarily form part of the connection arrangement.

**[0018]** In an embodiment, a further part of the drive arrangement is arranged onto a section of the supporting frame structure configured to be fixed to the supporting hull structure, wherein the further part of the drive arrangement is an internal combustion engine, an electric battery, an electric generator or a fuel cell system. When also the outboard drive unit is arranged onto the supporting frame structure, this forms an example of the power transmission assembly mentioned above. Various control units and other components may also be arranged onto the supporting frame structure.

**[0019]** In an embodiment, the at least one propeller is arranged on a lower part of the outboard drive unit and wherein at least the lower part of the outboard drive unit is arranged to allow pivoting from side to side for steering of the marine vessel.

**[0020]** In a further aspect the invention concerns a marine vessel comprising a drive arrangement for propulsion of the marine vessel, the drive arrangement comprising: an outboard drive unit provided with at least one propeller, wherein the outboard drive unit is arranged on an outside of a transom of the marine vessel and is connected via an opening in the transom to one or more further parts of the drive arrangement arranged inside the marine vessel; and a supporting carrier arranged at the opening in the transom, wherein the outboard drive unit is fastened to the supporting carrier and wherein the supporting carrier supports the outboard drive unit so as to take up thrust and steering forces from the outboard drive unit when operating the drive arrangement.

**[0021]** The marine vessel is characterized in that the drive arrangement comprises a supporting frame structure fixed to a supporting hull structure arranged on an inside of the marine vessel forward of the transom, wherein the supporting frame structure extends aftwards from the supporting hull structure to the opening in the transom, wherein the supporting carrier forms part of or is firmly fixed to the supporting frame structure.

**[0022]** In an embodiment, a hull of the marine vessel comprises at least one structural beam, wherein the supporting hull structure comprises the at least one structural beam, and wherein the supporting frame structure is fixed to the at least one structural beam. As mentioned above, the supporting hull structure may be arranged in other ways.

**[0023]** In an embodiment, the hull of the marine vessel comprises at least two structural beams, each of which forming a stringer extending in a longitudinal direction along a bottom of the marine vessel, and wherein the supporting hull structure is fixed to the at least two structural beams.

**[0024]** In an embodiment, the supporting frame structure is provided with a ring-shaped member, wherein the opening in the transom has a circular shape, and wherein the ring-shaped member is configured to fit into the circular opening.

**[0025]** In an embodiment, the drive arrangement comprises a connection arrangement for connecting the outboard drive unit to the supporting carrier, wherein the connection arrangement is configured to allow fixation of the outboard drive unit to the supporting frame structure when the supporting frame structure is installed inside the marine vessel and the outboard drive unit is located outside of the marine vessel.

**[0026]** In an embodiment, a further part of the drive arrangement is arranged onto a section of the supporting frame structure fixed to the supporting hull structure, wherein the further part of the drive arrangement is an internal combustion engine, an electric battery, an electric generator or a fuel cell system. As mentioned above there are several possibilities how to arrange the power line.

**[0027]** In an embodiment, the at least one propeller is arranged on a lower part of the outboard drive unit, wherein at least the lower part of the outboard drive unit is arranged to allow pivoting from side to side for steering of the marine vessel.

**[0028]** In an embodiment, the drive arrangement further comprises an electric motor configured to drive the propeller, wherein the electric motor is arranged in the outboard drive unit.

**[0029]** In an embodiment, the drive arrangement further comprises an electricity source for powering of the electric motor, wherein the electricity source comprises at least one of an electric battery, an electric generator or a fuel cell system, wherein the electricity source is arranged inside the marine vessel, preferably onto a section of the supporting frame structure arranged onto the supporting hull structure.

**[0030]** In an embodiment, the drive arrangement further comprises an internal combustion engine arranged inside the marine vessel, preferably onto a section of the supporting frame structure arranged onto the supporting hull structure.

**[0031]** In an embodiment, the internal combustion engine is mechanically connected to the outboard drive unit for driving of the propeller.

**[0032]** In an embodiment, the drive arrangement further comprises an electric generator, wherein the internal combustion engine is mechanically connected to the electric generator for driving of the electric generator, and wherein the electric generator is connected to an electric motor for driving of the propeller and/or to an electric battery for storage of electric energy.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0033]** With reference to the appended drawings, below follows a more detailed description of embodiments of the invention cited as examples.

**[0034]** In the drawings:

Figure 1 shows, in a partly exploded and partly schematic view, a first embodiment of a drive arrangement according to this disclosure.

Figure 2 shows the drive arrangement of figure 1 in an assembled state.

Figure 3 shows a side view of the drive arrangement of figure 1 when arranged at a transom of a marine vessel.

Figure 4 shows a perspective view of the drive arrangement according to figure 3.

Figure 5 shows the same view as figure 4 but with parts of the marine vessel made transparent.

Figure 6 shows, in a partly exploded and partly schematic view, a second embodiment of a drive arrangement according to this disclosure.

Figure 7 shows the same view as figure 6 but with parts of a marine vessel indicated.

## DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS OF THE INVENTION

**[0035]** A first embodiment of a drive arrangement 1 is shown in figures 1-5. A second embodiment of the drive arrangement 100 is shown in figures 6-7.

**[0036]** As shown in figures 1-5, the first embodiment of the drive arrangement 1 comprises an outboard drive unit 2 provided with, in this case, one propeller 3. The outboard drive unit 2 is configured to be arranged on an outside of a transom 11 of a marine vessel 10 with the propeller 3 directed away from the marine vessel 10 when installed (see e.g. figure 4). The outboard drive unit 2 is further configured to be connected via an opening 12 in the transom 11 to further parts of the drive arrangement, such as an internal combustion engine 4 or an electric battery 40, arranged inside the marine vessel 10, i.e. on the opposite side of the transom 11 in relation to the out-

board drive unit 2.

**[0037]** The propeller 3 is arranged on a lower (underwater) part 2b of the outboard drive unit 2 (see figure 1). The lower part 2b of the outboard drive unit 2 is arranged to allow pivoting from side to side for steering of the marine vessel 10. An upper part 2a of the outboard drive unit 2 is fixed to a supporting carrier 5 and thus a supporting frame structure 6 as further described below.

**[0038]** The upper part 2a of the outboard drive unit 2 may contain a mechanical transmission for transmitting driving power to the propellers 3 from a drive shaft 15 extending through the opening 12 and being connected to an internal combustion engine or electric motor located inside the marine vessel 10. As an alternative or complement to such mechanical transmission, the upper part 2a of the outboard drive unit 2 may contain an electric motor arranged for driving of the propellers 3. In such a case, an electric cable for supplying the electric motor with electric power is arranged through the opening 12 and connected to an electric power source, such as an electric battery, arranged inside the marine vessel 10.

**[0039]** The schematically indicated components 4, 40 can be seen as any suitable power source or energy converter used for powering driving of the propeller 3, for instance an internal combustion engine, an electric battery, a fuel cell or an electricity generator (driven by e.g. an internal combustion engine). There can be more than one component 4, 40 arranged in the marine vessel 10.

**[0040]** The drive arrangement 1 further comprises the supporting carrier 5 configured to be arranged at the opening 12 in the transom 11 for fastening and support of the outboard drive unit 2 so as to take up thrust and steering forces from the outboard drive unit 2 when the drive arrangement 1 is installed and used for propelling the marine vessel 10.

**[0041]** The drive arrangement 1 further comprises the supporting frame structure 6, in this case including first and second spaced-apart longitudinal supporting members 6a, 6b, configured to be fixed to a supporting hull structure 7 (see e.g. figure 4) arranged on the inside of the marine vessel 10 forward of the transom 11. In the examples shown, the supporting hull structure 7 comprise two spaced-apart longitudinal stringers arranged at a bottom 8 of a hull of the marine vessel 10. As shown in figures 3-5, the supporting frame structure 6 is further being configured to extend aft-wards from or along the supporting hull structure 7 to the opening 12 in the transom 11.

**[0042]** The supporting frame structure 6 is provided with a ring-shaped member that in this case forms the supporting carrier 5. The opening 12 in the transom is circular and the ring-shaped supporting carrier 5 is configured to fit into the circular opening 12.

**[0043]** The drive arrangement 3 further comprises a connection arrangement 9a-9e for connecting the outboard drive unit 2 to the supporting carrier 5. The connection arrangement is configured to allow fixation of (the upper part 2a of) the outboard drive unit 2 to the supporting carrier 5 when the supporting frame structure 6 is installed inside the marine vessel 10 and the outboard drive unit 10 is located outside of the marine vessel 10.

**[0044]** In the example shown in figures 1-5, the connection arrangement comprises a bolt/threaded pin 9a, sealing 9b, connection ring 9c, nuts 9d and a flange 9e arranged on the upper part 2a of the outboard drive unit 2. The ring 9c may be dividable so that it can be positioned on the outer side of the flange 9e and hold the outboard drive unit 2 in place when nuts 9d are tightened onto the bolts 9a. The sealing 9b seals around the opening 12. The connection arrangement may be designed in different ways.

**[0045]** Figures 1-7 show that each of the power source components 4 and 40, which each forms a further part of the drive arrangement 1, is arranged onto a section of the supporting frame structure 6 configured to be fixed to the supporting hull structure 7. One or more power source components 4, 40, as well as other components such as control units, various cables, hydraulic components, etc., may be arranged onto the supporting frame structure 6 during installation of the frame structure 6 inside the marine vessel 10. Then the outboard drive unit 2 can be connected to the supporting carrier 5 and to the power source 4, 40 from the outside.

**[0046]** Figures 6-7 show a second embodiment of the drive arrangement 100. Compared to the first embodiment shown in figures 1-5, the second embodiment differs mainly in the design of the supporting carrier 50 and the corresponding coupling 51 of the outboard drive unit 2, i.e. the difference lies mainly in how the outboard drive unit 2 is connected to the supporting carrier 50 and thus to the supporting frame structure 60. In this case the supporting carrier 50 is located close to the transom 11 at an inside thereof and has two cylindrical openings 52 adapted to receive two coupling pipe members 51 provided on the outboard drive unit 2. The pipe members 51 can be fixed when arranged in the cylindrical openings 52. Two circular openings 120 are arranged in the transom 11 to allow insertion of the pipe members 51 (see figure 7).

**[0047]** Component 40 is in figures 6-7 intended to represent an electric battery. A control unit 41 is also indicated. An electric motor for driving of the propellers may be arranged in the upper part 2a of the outboard drive unit 2. Electric power cables for connecting the battery 40 and the electric motor, as well as other components, can be arranged inside the coupling pipe members 51.

**[0048]** It is to be understood that the present invention is not limited to the embodiments described above and illustrated in the drawings; rather, the skilled person will recognize that many changes and modifications may be made within the scope of the appended claims.

## Claims

**1.** A drive arrangement (1, 100) for a marine vessel

(10), the drive arrangement (1, 100) comprising:

- an outboard drive unit (2) provided with at least one propeller (3), wherein the outboard drive unit (2) is configured to be arranged on an outside of a transom (11) of the marine vessel (10) and to be connected via an opening (12, 120) in the transom (11) to further parts (4, 40) of the drive arrangement arranged (1, 100) inside the marine vessel (10); and
- a supporting carrier (5, 50) configured to be arranged at the opening (12, 120) in the transom (11) for fastening and support of the outboard drive unit (2) so as to take up thrust and steering forces from the outboard drive unit (2) when the drive arrangement (1, 100) is installed and used for propelling the marine vessel (10),

**characterized in**

**that** the drive arrangement (1, 100) comprises a supporting frame structure (6, 60) configured to be fixed to a supporting hull structure (7) arranged on an inside of the marine vessel (10) forward of the transom (11), the supporting frame structure (6, 60) further being configured to extend aft-wards from or along the supporting hull structure (7) to the opening (12, 20) in the transom (11),
wherein the supporting carrier (5, 50) forms part of or is firmly fixed to the supporting frame structure (6, 60).

**2.** The drive arrangement (1, 100) according to claim 1, wherein the supporting frame structure (6, 60) comprises at least one supporting member (6a, 6b) configured to be fixed to a supporting hull structure (7) comprising a longitudinal stringer arranged in a bottom (8) of a hull of the marine vessel (10).

**3.** The drive arrangement (1) according to claim 1 or 2, wherein the supporting frame structure (6) is provided with a ring-shaped supporting carrier (5) configured to fit into a circular opening (12) in the transom (11).

**4.** The drive arrangement (1, 100) according to any of the above claims, wherein the drive arrangement (1, 100) comprises a connection arrangement (9a-9e, 51-52) for connecting the outboard drive unit (2) to the supporting carrier (5, 50), wherein the connection arrangement (9a-9e, 51-52) is configured to allow fixation of the outboard drive unit (2) to the supporting carrier (5, 50) when the supporting frame structure (6, 60) is installed inside the marine vessel (10) and the outboard drive unit (2) is located outside of the marine vessel (10).

**5.** The drive arrangement (1, 100) according to any of the above claims, wherein a further part (4, 40) of the drive arrangement (1, 100) is arranged onto a section of the supporting frame structure (6, 60) configured to be fixed to the supporting hull structure (7), wherein the further part (4, 40) of the drive arrangement (1, 100) is an internal combustion engine, an electric battery, an electric generator or a fuel cell system.

**6.** The drive arrangement (1, 100) according to any of the above claims, wherein the at least one propeller (3) is arranged on a lower part (2b) of the outboard drive unit (2) and wherein at least the lower part (2b) of the outboard drive unit (2) is arranged to allow pivoting from side to side for steering of the marine vessel (10).

**7.** A marine vessel (10) comprising a drive arrangement (1, 100) for propulsion of the marine vessel, the drive arrangement (1, 100) comprising:

- an outboard drive unit (2) provided with at least one propeller (3), wherein the outboard drive unit (2) is arranged on an outside of a transom (11) of the marine vessel (10) and is connected via an opening (12, 120) in the transom (11) to one or more further parts (4, 40) of the drive arrangement (1, 100) arranged inside the marine vessel (10); and
- a supporting carrier (5, 50) arranged at the opening (12, 120) in the transom (11), wherein the outboard drive unit (2) is fastened to the supporting carrier (5, 50) and wherein the supporting carrier (5, 50) supports the outboard drive unit (2) so as to take up thrust and steering forces from the outboard drive unit (2) when operating the drive arrangement (1, 100),

**characterized in**
**that** the drive arrangement (1, 100) comprises a supporting frame structure (6, 60) fixed to a supporting hull structure (7) arranged on an inside of the marine vessel (10) forward of the transom (11), wherein the supporting frame structure (6, 60) extends aft-wards from or along the supporting hull structure (7) to the opening (12, 120) in the transom (11), wherein the supporting carrier (5, 50) forms part of or is firmly fixed to the supporting frame structure (6, 60).

**8.** The marine vessel (10) according to claim 7, wherein a hull of the marine vessel (10) comprises at least one structural beam (7), wherein the supporting hull structure comprises the at least one structural beam (7), and wherein the supporting frame structure (6, 60) is fixed to the at least one structural beam (7).

**9.** The marine vessel (10) according to claim 8, wherein

the hull of the marine vessel (10) comprises at least two structural beams (7), each of which forming a stringer extending in a longitudinal direction along a bottom (8) of the marine vessel (10), and wherein the supporting frame structure (6, 60) is fixed to the at least two structural beams (7).

**10.** The marine vessel (10) according to any of claims 7-9, wherein the supporting frame structure (6) is provided with a ring-shaped member, wherein the opening (12) in the transom (11) has a circular shape, and wherein the ring-shaped member is configured to fit into the circular opening (12).

**11.** The marine vessel (10) according to any of claims 7-10, wherein the drive arrangement (1, 100) comprises a connection arrangement (9a-9e, 51-52) for connecting the outboard drive unit (2) to the supporting carrier (5, 50), wherein the connection arrangement (9a-9e, 51-52) is configured to allow fixation of the outboard drive unit (2) to the supporting frame structure (6, 60) when the supporting frame structure (6, 60) is installed inside the marine vessel (10) and the outboard drive unit (2) is located outside of the marine vessel (10).

**12.** The marine vessel (10) according to any of claims 7-11, wherein a further part (4, 40) of the drive arrangement (1, 100) is arranged onto a section of the supporting frame structure (6, 60) fixed to the supporting hull structure, wherein the further part (4, 40) of the drive arrangement (1, 100) is an internal combustion engine, an electric battery, an electric generator or a fuel cell system.

**13.** The marine vessel (10) according to any of claims 7-12, wherein the at least one propeller (3) is arranged on a lower part (2b) of the outboard drive unit (2) and wherein at least the lower part (2b) of the outboard drive unit (2) is arranged to allow pivoting from side to side for steering of the marine vessel (10).

**14.** The marine vessel (10) according to any of claims 7-13, wherein the drive arrangement (1, 100) further comprises an electric motor configured to drive the propeller (3), wherein the electric motor is arranged in the outboard drive unit (2).

**15.** The marine vessel (10) according to claim 14, wherein the drive arrangement (1, 100) further comprises an electricity source for powering of the electric motor, wherein the electricity source comprises at least one of an electric battery, an electric generator or a fuel cell system, wherein the electricity source is arranged inside the marine vessel (10), preferably onto a section of the supporting frame structure (6, 60) arranged onto the supporting hull structure (7).

**16.** The marine vessel (10) according to any of claims 7-15, wherein the drive arrangement (1, 100) further comprises an internal combustion engine arranged inside the marine vessel (10), preferably onto a section of the supporting frame structure (6, 60) arranged onto the supporting hull structure (7).

**17.** Method for installing a drive arrangement (1, 100) according any of claims 1-6 in a marine vessel (10), the method comprising:

- fixing the supporting frame structure (6, 60) to a supporting hull structure (7) arranged on an inside of the marine vessel (10) forward of the transom (11);
- connecting the outboard drive unit (2) to the supporting carrier (5, 50) from an outside of the marine vessel (10).

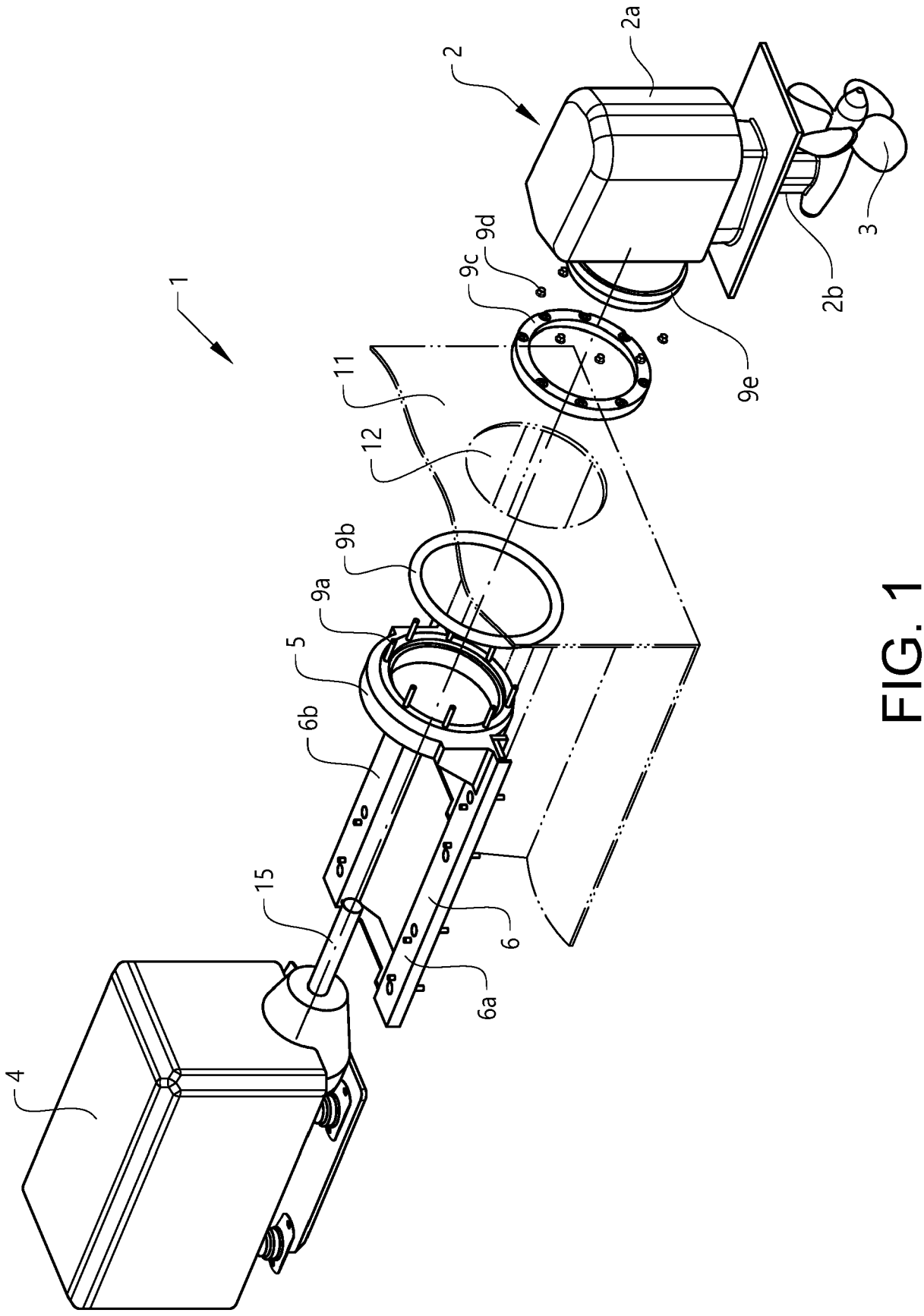


FIG. 1

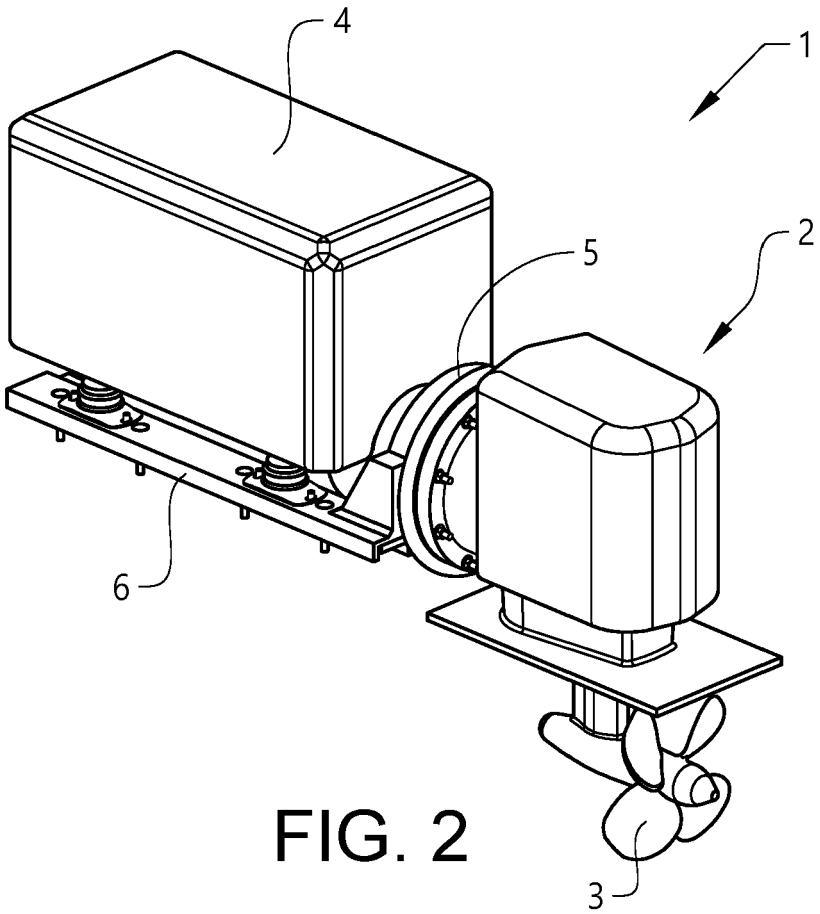


FIG. 2

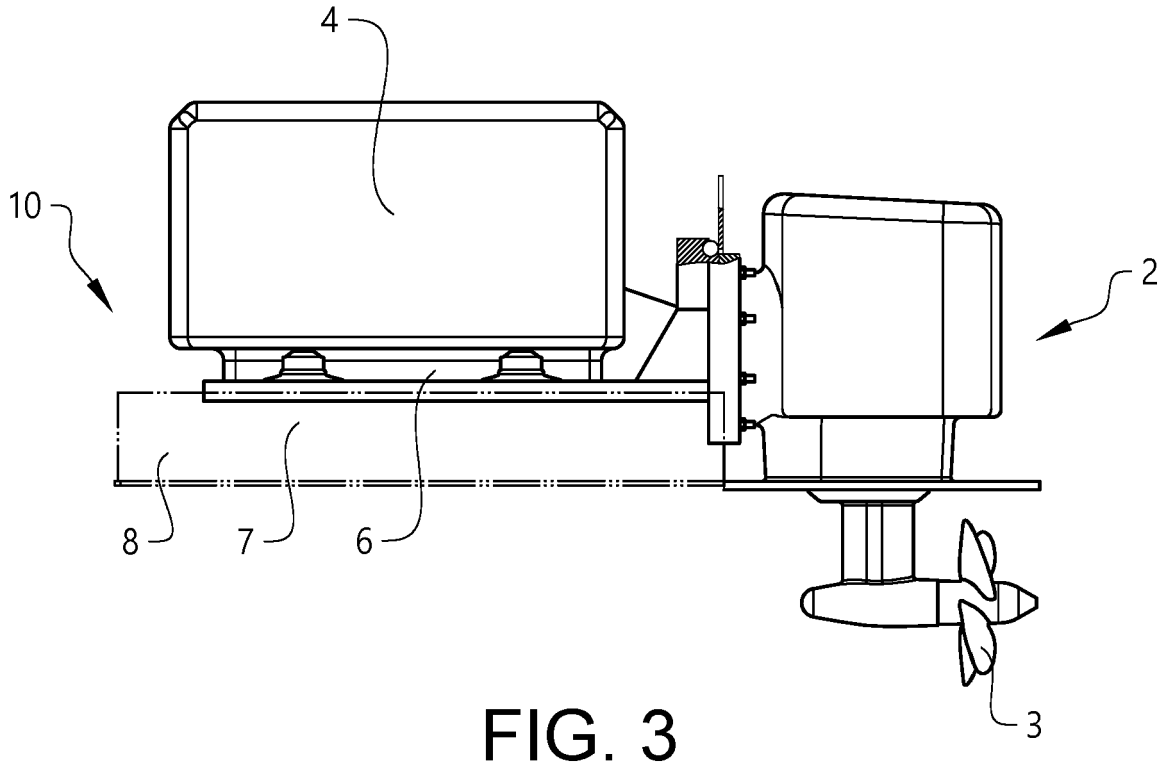


FIG. 3

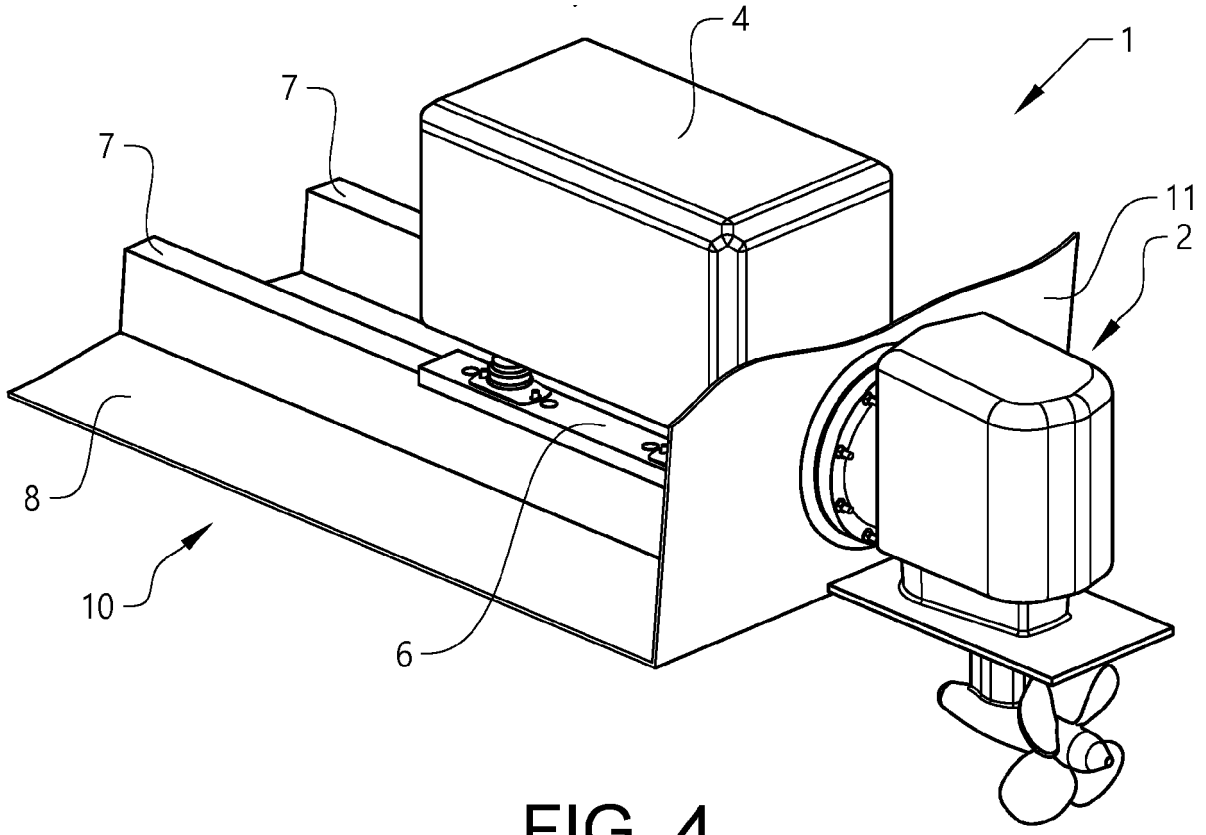


FIG. 4

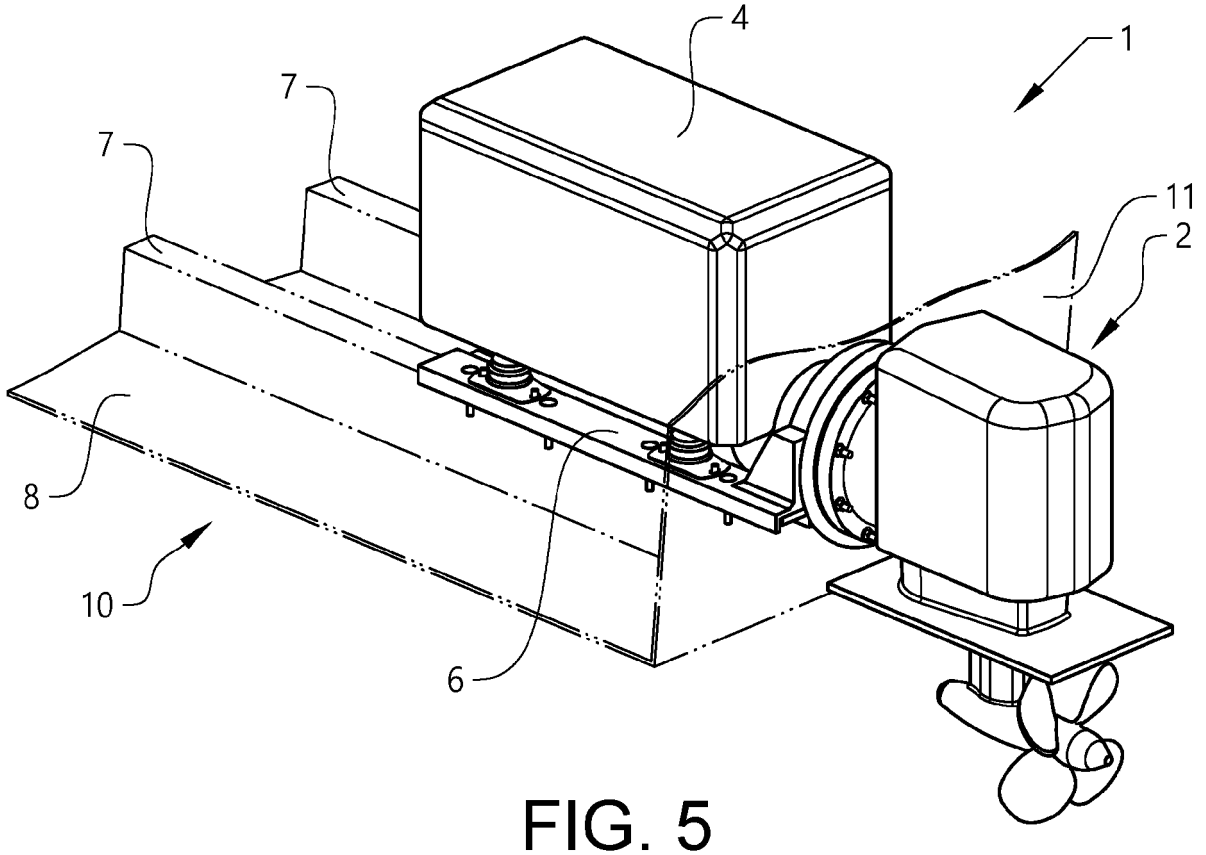


FIG. 5

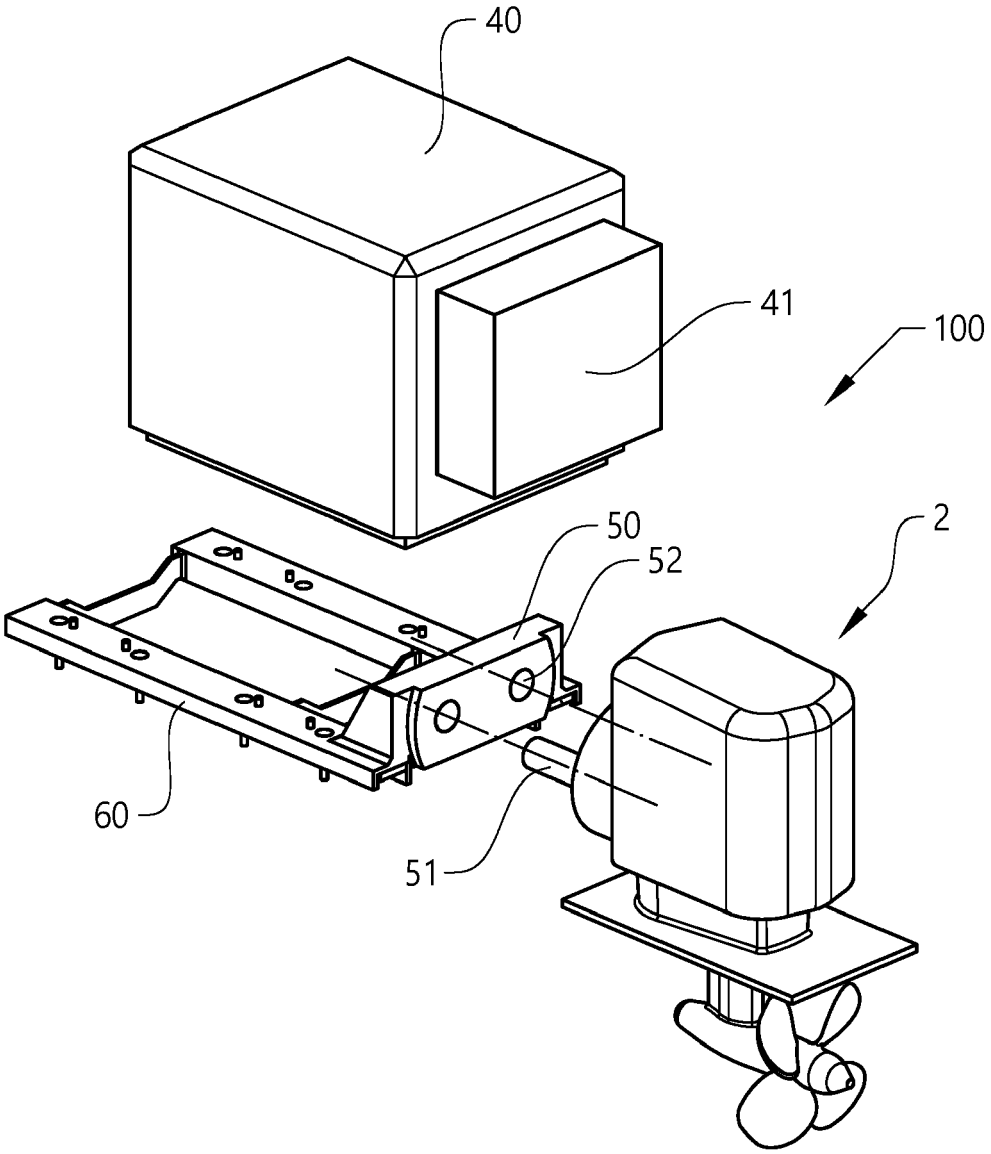


FIG. 6

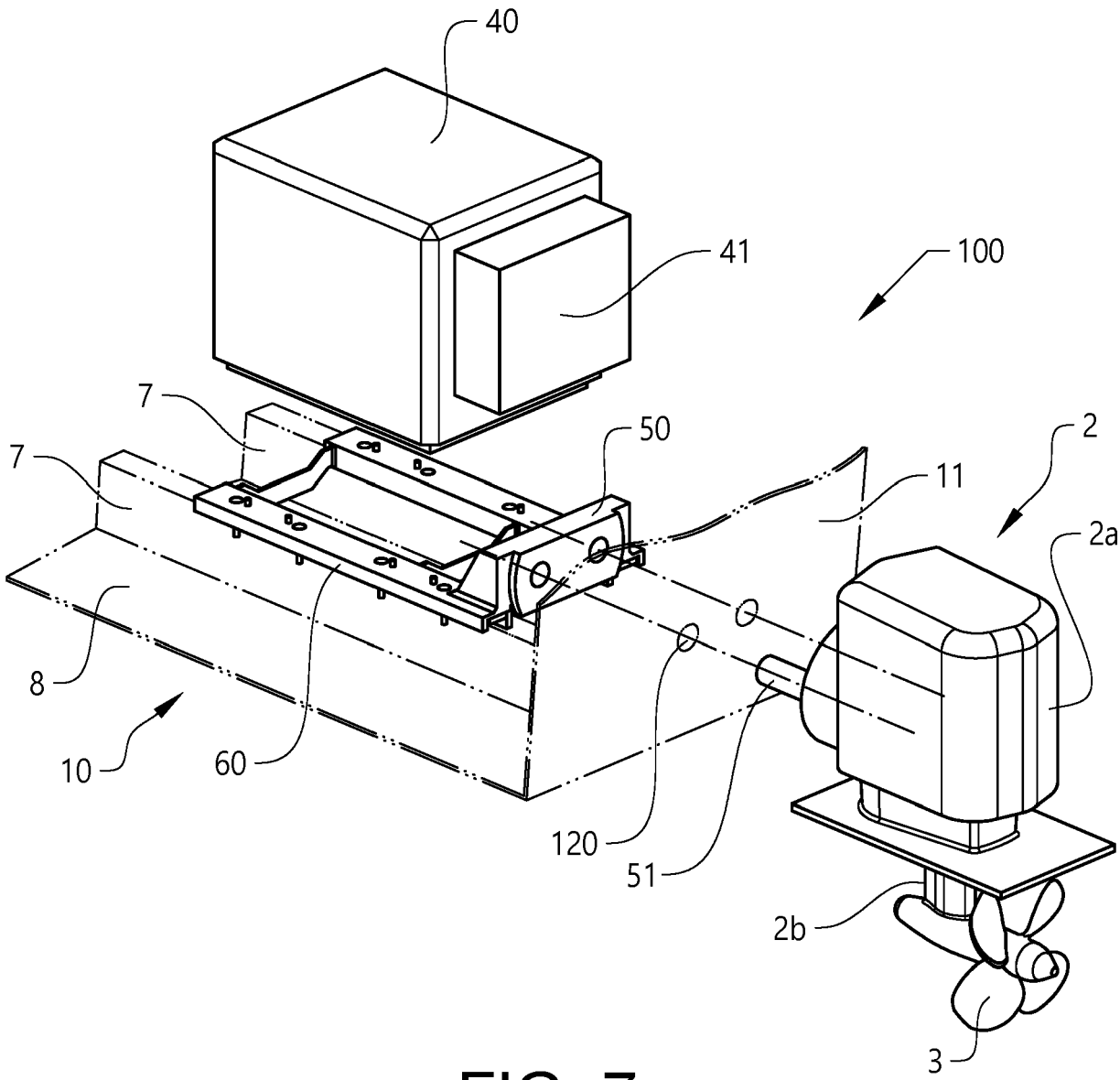


FIG. 7

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