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(54) Watercraft.

(57) The invention relates to a drivable watercraft (1) comprising a drive boat accommodating portion (18) defining a docking area opening reward at a stern portion of the watercraft and adapted to accommodate power drive means, specifically a water jet propulsion unit such as a jet propulsioned boat (2) therein. Such a watercraft is improved in that a seat area (12,13,14) is provided at least in front of the drive boat accommodating portion of the driven water craft and a bottom plate arrangement is provided within said docking area ensuring a smooth even flow of water through a water intake opening (20) of the power drive means received in said docking area.

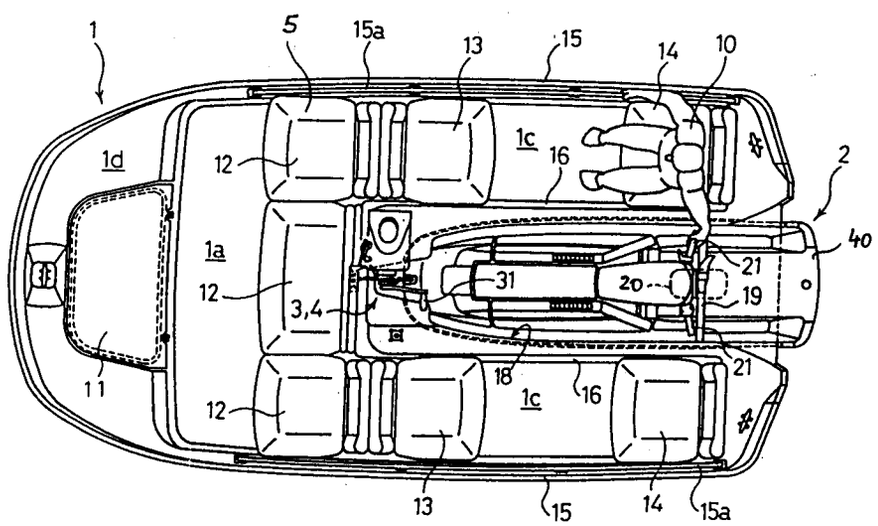

Fig. 2

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The present invention relates to a drivable watercraft comprising a drive boat accommodating portion defining a docking area opening rearward at a stern portion of the watercraft and adapted to accommodate power drive means, specifically a water jet propulsion unit such as a jet propulsion boat therein, serving as a floating base for a driven boat for various recreation activities and water sports.

Nowadays, small boats such as small jet propulsion boats, each equipped with an engine for planing over water are widely used. These jet propulsion boats plane over water at high speeds and are suitable for enjoying various sporting movements. On the other hand, normally such jet propulsion boats are relatively small and, therefore, unsuited to carry baggage or the like on board. Moreover, such jet boats or jet bikes only provide small or no space for passengers and it is difficult to use such boats as a drifting platform for fishing or the like.

Accordingly, there is a need to provide another drivable watercraft or driven boat which may serve as a baggage boat, for example, kept in tow and usable as a floating base in a drifting condition providing some more space, easily serving as a drifting platform for fishing or drifting on the water and, moreover, also usable as a docking means for the jet propulsion drive boat.

Previously, the driving jet boat and the drivable or driven watercraft used as a floating base or as a baggage boat on the longer journeys were both frequently connected only through a rope and the driving jet propulsion boat was adapted to pull the baggage driven boat or watercraft by means of said rope, resulting in a problem that the driven boat cannot be moved along the same path as the propulsion boat implying also the risk that the driven boat might collide with the jet propulsion drive boat when same is turned abruptly or brought to a stop. Moreover, it was difficult to prevent the so-called "jack knife phenomenom" from occurring which is known from trailer trucks on land when they are turned abruptly or brought to a sudden stop.

Accordingly, it is already known to drive such a driven boat or driven watercraft by pushing same forwards through the separable jet propulsion drive boat fitted in a cavity formed on said driven boat from the rear.

A conventional driven boat provided with a push boat accommodating portion adapted to accommodate a jet propulsion drive boat is disclosed in Japanese Utility Model Application Sho 63-119198 providing a drivable water craft with a central docking area formed by a cavity opened rearward at its stern portion, the bottom portion thereof comprising guard rails as well as a recessed water inflow opening enabling water to be sucked through the water intake opening of the jet propulsion drive unit of the jet propulsion drive boat docked to the driven water craft. In that case, however, the relatively loose connection in between both drive and driven boats result in a reduced manoeuverability and, moreover, the efficiency of the jet propulsion unit of the drive boat docked to the driven boat is prone to be impaired by means of inadvertently introducing air into the water sucking area of the jet propulsion system of the docked driving boat. Moreover, usually vortices are sequentially generated in the area of the water intake port of the jet propulsion system of the docked driving boat affecting the performance of the propulsion propellor and, thus, affecting the performance of the drive unit.

In order to provide a more convenient drivable watercraft driven by a jet propulsion drive boat, a multi-component watercraft assembly is disclosed in Japanese Patent Application Hei 2-28088 comprising a U-shaped receipt dock portion adapted to accommodate a jet propulsion boat therein and comprising a separable rear portion connectable to the U-shaped dock element with the jet propulsion drive boat completely surrounded through said U-shaped floating driven boat body and the rear end body associated thereto.

In that case, again the space available on the driven U-shaped boat body is relatively limited and insufficient to provide seat areas which could also allow the operation of the jet propulsion drive boat from an area of the driven U-shaped driven dock boat body. Moreover, the fitting cavity of the driven boat body does not provide any reliable receipt structure for accommodating the jet propulsion drive boat. Thus, difficulties arise in operating the assembly under high speed, high performance operating conditions of the drive unit of the jet propulsion drive boat.

Accordingly, the present invention contemplates providing an improved structure of a drivable watercraft, specifically designed to accommodate a jet propulsion drive boat by means of a fitting cavity forming a docking area which opens rearward at the stern portion of said driven watercraft adapted to accommodate a water jet propulsion unit, specifically a jet propulsion drive boat therein. In that case, the driven watercraft could also be utilized as a floating base for the water jet propulsion drive boat and the like.

So far, a water jet propulsion boat to be used as a drive boat for another driven watercraft is mainly used as a leisure boat and is designed to comprise a duct which extends longitudinally through the hull of the boat. A front end of this duct is opened through the hull bottom at its longitudinally middle portion constituting a water intake port

whereas the rear end of the duct is opened at the stern constituting the water jet outlet of the jet propulsion drive unit having a propulsion propeller installed in said duct.

Due to the rotation of the propulsion propeller, water is sucked from below the water intake port through the duct and is injected rearward of the hull through a water injection outlet in order to propel the water jet propulsion boat.

As comprised in the art indicated above, such a water jet propulsion boat sometimes is used in conjunction with a driven or drivable watercraft which forms a floating base for the departure and arrival of the water jet propulsion boat for fishing or sunbathing etc. In that case, it is common that the driven watercraft is moved to a desired offshore location or the like using the jet propulsion boat fitted in a fitting cavity formed at the stern portion of the drivable watercraft as a jet propulsion drive means. By driving the water jet propulsion drive boat forward while in a docked condition accommodated in the docking area of the driven boat, the driven watercraft can be moved to a desired spot.

As indicated above, up until now, the performance and design of the driven watercraft, itself, were considered to be not as convenient as desired and, moreover, it was found that in a docking condition the jet propulsion drive boat can only be operated under considerable reduced efficiency of its jet propulsion unit, resulting from detrimental conditions of feeding water to the jet propulsion duct through the water intake opening of the drive unit.

Accordingly, it is an objective of the present invention to provide a drivable watercraft as indicated above providing increased convenience to the users thereof and to enable the operation of a jet propulsion drive unit, specifically a jet propulsion drive boat accommodated in a docking area therein, leaving the propulsion performance of the jet propulsion unit or drive boat used for driving the watercraft unimpaired, preventing vortices from entering a water intake port of the jet propulsion drive unit or minimizing adverse effects thereof on the drive systems of the driving boat docked to the driven watercraft.

In order to perform the above objective, the present invention comprises a drivable watercraft having a drive boat accommodating portion which defines a docking area opening rearward at a stern portion of the watercraft and adapted to accommodate a power drive means, specifically a water jet propulsion unit such as a jet propulsion boat therein. Moreover, means for positioning the power drive means, such as a jet propulsion drive boat, within said docking area is provided. Furthermore, the afore-indicated watercraft is improved in that a seat area is provided extending at least either in front of the drive boat accommodating portion or at least along one side of the docking area and in that a bottom plate arrangement is provided within said docking area, enabling a smooth and even flow of water through a water intake opening of the power drive means received in said docking area.

In this way, a rear area can be established in front of the docking area, whereas the pair of rearward extension of the drive boat accommodating portion may serve for different purposes, such as storage compartments, etc. On the other hand, the bow and front portion of the watercraft could also be used as a storage, whereas one or both side portions extending rearwards to define the docking area (drive boat accommodating portion) are designed to form a seat area, respectively.

In expanding the seat area to extend along the docking area as well, an operator's seat can be provided, at least on one side of the drive boat accommodating portion, enabling the drive boat to be easily operated by a driver and the water craft may provide an appropriate basis for passengers, luggage and the like, enabling a lot of various activities to be performed. For example, the drive boat accommodating portion or, more precisely, the docking area, can be used as a children's play lot or can serve for a couple of different other purposes. The design of the watercraft according to the present invention, specifically the performance of the bottom plate arrangement assuring a smooth and even flow of water through a water inflow area of said bottom plate arrangement to a water intake opening of a power drive means docked to said docking area, allows the drive boat to propel the driven watercraft with smaller propelling resistance enabling the drivable watercraft to be manoeuvered without considerable loss of propelling performance of a power drive means such as a water jet propulsion unit. Preferably, the power drive means is a water jet propulsion drive boat which can be used separated from the water craft which then serves as an undriven floating or drifting platform, or which, alternatively, can be used as a power drive source of the watercraft receiving the water jet propulsion drive boat within the cavity forming the docking area of the watercraft. In this way, it is possible to enjoy not only a drive boat, but also the driven watercraft in various ways offshore.

According to a preferred embodiment of the present invention, the seat area comprises a drive boat operator's seat established at least on one side of the drive boat accommodating portion which, in turn, preferably is designed to establish the docking area coaxially with respect to a longitudinal axis of the watercraft, allowing the seat area to extend along both sides of said docking area. Accordingly, the seat area preferably forms a U-shaped area in plane view with seats all along the

periphery of the docking area of the watercraft. Preferably, at least some of the seats can also be developed to form a bed area and, for example, the front seat area ahead of the docking area of the watercraft can provide a full flat seat for sunbathing or the like for making the passengers' stay increasingly pleasant and enjoyable.

According to yet another preferred embodiment of the present invention, the seats are seat cushioned thereon and are supported to be tiltable with appropriate rests being provided in order to support swivelled seats and a plurality of seat cushions can be linked one with another by means of hinges. According to a further preferred embodiment of the present invention, integral seat supporting sheet metal structures are adapted to work as a stopper means for the seats in order to prevent them from being slid along the deck of the watercraft.

According to yet another preferred embodiment of the present invention, the drive boat accommodating portion is adapted to extend generally along the entire periphery of the drive boat docked to the watercraft except for the stern portion of the drive boat with the docking area providing a fitting cavity, the bottom side thereof is substantially closed by the bottom plate arrangement, leaving an unoccupied area only adapted to communicate to a water intake opening of the power drive means such as the jet propulsion drive unit of the drive boat.

According to yet another preferred embodiment of the present invention, the bottom plate arrangement of the watercraft defines a water inflow opening adapted to be communicated to a water intake opening of the jet propulsion power drive means of a jet propulsion drive boat or the docking area is adapted to accommodate another power drive means such as an outboard marine engine from above therein.

In the latter case, the watercraft is drivable also without a separable jet boat or the like but may include a power drive means such as an outboard marine engine on its own. In that case, the opposed side walls of the docking area or drive boat receiving cavity can be provided with supporting boards adapted to support the outboard marine engine with its propelling device extending through the water inflow opening of the bottom plate.

According to yet another preferred embodiment of the present invention, the rear edge of the bottom plate arrangement defining a water inflow area to be communicated to a water intake opening of the water jet propulsion drive system of a jet propulsion drive boat docked to the watercraft, is disposed forwardly spaced apart from a front edge of the water intake opening of the jet propulsion drive system of the drive boat. Alternatively, in the case that the bottom plate arrangement defines a water inflow opening, then the size of said water inflow opening is designed such that its front edge is forwardly spaced apart from the front end of the water intake port of the jet propulsion drive system of the jet propulsion drive boat docked to the docking area of the watercraft.

The afore-indicated preferred embodiment is particularly advantageous in that in this way, a smooth inflow of water into the suction duct of the jet propulsion drive unit, specifically to the water intake opening thereof, can be assured, substantially suppressing vortices from arising which could affect the performance of the propulsion propeller of the jet propulsion drive unit. Thus, this preferred arrangement is effective in diffusing or weakening the vortices which are generated sequentially at the rear end edge of the bottom plate arrangement or the front edge of the water inflow opening, respectively, and the vortices will disappear until they reach the water intake port of the jet propulsion type system and will not enter into the suction duct of the drive unit. Thus, the performance of the water jet propulsion boat forming the power drive means of the watercraft when in a docked condition can be maintained substantially unaffected to assure a high level of drive operation and manoeuverability applied to the watercraft.

In order to lend support to the afore-mentioned effects maintaining the performance of the jet propulsion drive unit of a drive boat docked to the watercraft substantially unaffected, a close fitting receipt structure in between the docking area and the associated front portion of a water jet driving boat is desirable in order to prevent air from being sucked into the suction duct of the jet propulsion drive system. Accordingly, a preferred embodiment of the present invention implies a rear wall of the watercraft partially defining said docking area to be shaped closely similar to the shape of at least the front portion of a bottom plate of the jet propulsion drive boat, resulting in a closely sealed fitting of the water intake port of the jet propulsion unit above the associated water inflow opening or such an area defined through the bottom plate arrangement structure of the watercraft.

For this reason, according to yet another preferred embodiment of the present invention, means also are provided to hold the bow and the stern of the driving jet boat docked to the watercraft downwardly, enabling the bottom plate around the water intake opening of the jet propulsion drive boat to be put closely on the bottom plate of the driven watercraft and preventing air from being sucked into the suction duct of the jet propulsion drive unit through clearances between the bottom plate of the drive boat and the bottom plate structure of the driven watercraft. Preferably, an upper portion of

the rear wall of the watercraft forms a counter-shaped receipt structure or cavity to accommodate the bow of the jet drive boat therein, whereas the stern of the drive boat is held downwards by a rear holding means such as belts or a ladder fastened to the rear of the watercraft to hold the stern of the drive boat down near the water inflow opening of the watercraft.

As the watercraft's rear wall is shaped closely similar to the bottom wass of the drive boat, or at least to the front portion of said bottom wall, another preferred effect is obtained in that docking of the drive boat to the watercraft is facilitated and the rear wall is effective to serve as a guide considerably assisting the docking manoeuver. The latter effect is particularly important if, for example, many passengers or another heavy load are present at the stern of the watercraft pushing said portion downwardly. In this case, normally difficulties in docking the drive boat to the docking area are experienced as, then, the rear wall would be heavily inclined vis-a-vis the substantially horizontal dock-in movement of the driving boat. This problem is completely overcome by the present similarity in the shapes of the rear wall (watercraft) and front bottom wall (drive boat 2).

According to yet another preferred embodiment of the present invention, said close fitting of the bottom area of the drive boat to the bottom area of the cavity of the driven watercraft adapted to accommodate the drive boat therein is assisted by means of dents or recesses provided at the bottom plate of the driven watercraft engaged by projecting strips or other kinds of projections rising from the bottom plate of the jet propulsion drive boat.

Through the afore-indicated measures the main purposes of the present invention are supported and carried along, namely, to maintain a highly efficient drive action of a drive system of a separable jet propulsion drive boat forming a power source of the driven watercraft on the one hand and assuring comfortable use of the watercraft on the other, enabling easy docking of the drive boat to the watercraft as well.

Moreover, the close similarity of the shape of the drive boat receipt structure of the watercraft to the shape of the bow portion of the drive boat, specifically the shape of the rear wall of the water closely adapted to the shape of the bottom plate (front portion) of the drive boat result in another advantageous effect, namely, an increase of the volume of the bow portion of the watercraft. Said increased volume (compared to a conventional vertical rear wall) leads to an increased buoyancy and floating power of the watercraft.

Other preferred embodiments of the present invention are laid down in the further subclaims.

Further objectives, features and advantages of the present invention will become more apparent from the following description of specific embodiments thereof in conjunction with the accompanying drawings, wherein the following items are shown:

- Fig. 1: A watercraft according to a first embodiment of the invention in side view with some portions partly broken away and a drive boat attached thereto as substantially indicated in dotted lines,
- Fig. 2: A plane view of the watercraft with the drive boat in docking condition substantially according to figure 1,
- Fig. 3: A back view of the watercraft with the drive boat attached according to figures 1 and 2,
- Fig. 4: An enlarged section of a plane view of a coupling portion between the drive boat and the driven watercraft according to figures 1 to 4,
- Fig.5: A cross-sectional view taken along the line V-V of figure 4,
- Fig. 6; A cross-sectional view taken along the line VI-VI of figure 4,
- Fig. 7: A plane view corresponding to the view of figure 2 with the drive boat being removed,
- Fig. 8: A detailed perspective view of an area around a water inflow opening of the watercraft's bottom plate as shown in figure 7,
- Fig. 9: A view corresponding to figure 2 with the seats shown therein developed,
- Fig. 10: A side view of the watercraft as shown in figure 9,
- Fig. 11: A side view of the watercraft corresponding to figure 10 with a pole mounted therein,
- Fig. 12: A pole mounting portion of the watercraft of figure 11 in enlarged scale,
- Fig. 13: A plane view of the watercraft as shown in figure 11,
- Fig. 14: A back view of the watercraft as shown in figure 13 with the pole removed therefrom,
- Fig. 15: A horizontal cross-sectional view of a net attaching portion as shown in figure 14 in enlarged scale,
- Fig. 16: A back view of a watercraft according to another embodiment of the present invention disclosing elements of a drive boat docking area of the watercraft,
- Fig. 17: A partial cross-sectional side view of

a watercraft with a jet propulsion drive boat accommodated according to another embodiment of the present invention,

Fig. 18: A plane view of the watercraft/drive boat assembly according to figure 17,

Fig. 19: A back view of the watercraft/drive boat assembly according to figures 17 and 18,

Fig. 20: A plane view of the watercraft according to figures 17 to 19 with the jet propulsion drive boat removed,

Fig. 21: A partial cross-sectional side view of a watercraft with a jet propulsion drive boat docked thereto according to another embodiment of the present invention,

Fig. 22: A plane view of the watercraft/drive boat assembly according to figure 21,

Fig. 23: A partially enlarged view of the drive boat accommodating portion of the watercraft according to figure 21,

Fig. 24: A cross-sectional view taken along the line 24-24 in figure 23,

Fig. 25: A plane view of the watercraft according to figure 22 with the water jet propulsion drive boat removed,

Fig. 26: A cross-sectional view taken along the line 26-26 of figure 25,

Fig. 27: A partial cross-sectional side view of a drive boat accommodating rear portion of a watercraft with a jet propulsion drive boat accommodated according to another embodiment of the present invention,

Fig. 28: A cross-sectional view taken along the line 28-28 of figure 27,

Fig. 29: A plane view of a watercraft/jet drive boat assembly according to yet another embodiment of the present invention,

Fig. 30: A cross-sectional view taken along the line 30-30 of figure 29, similar to figure 24,

Fig. 31: A cross-sectional view taken along the line 31-31 of figure 29,

Fig. 32: A cross-sectional view taken along the line 32-32 of figure 29,

Fig. 33: A partial cross-sectional side view of a rear portion of a watercraft similar to figure 23 with a driver of the jet drive boat in the driving position,

Fig. 34: A plane view of the watercraft according to figure 2, showing another usage of the drive boat accommodating portion,

Fig. 35: A back view of the watercraft as shown in figure 34,

Fig. 36: A partial sectional view of joining portions of lids shown in figure 35, bridging the docking area of the watercraft,

Fig. 37: A plane view of the watercraft as shown in figure 7 with an outboard marine engine used as a drive means and mounted on the drive boat accommodating portion of the watercraft,

Fig. 38: A side view of the watercraft as shown in figure 37,

Fig. 39: A back view of the watercraft as shown in figures 37 and 38,

Fig. 40: An exploded perspective view of a beam mounting portion for the outboard marine engine as shown in figures 37 to 39,

Fig. 41: A perspective rear view of a watercraft with an outboard marine assembly structure according to yet another embodiment of the present invention,

Fig. 42: A plane view of the watercraft as shown in figure 29 with a marine outboard motor assembled thereto on the drive boat accommodating portion but used as a replacement drive means of the watercraft,

Fig. 43: A partial cross-sectional side view of the watercraft as shown in figure 42 but with a jet drive bike entering the docking area of the watercraft,

Fig. 44: A back view of a watercraft/drive boat assembly similar to figure 3 according to yet another embodiment of the present invention,

Fig. 45: A plane view of the watercraft/jet propulsion drive boat assembly of figure 44,

Fig. 46: A back view of a watercraft/jet propulsion drive boat assembly similar to figures 4 or 44 according to yet another embodiment of the present invention, and

Fig. 47: A plane view of the watercraft/drive boat assembly according to figure 46.

Referring first to figures 1 to 15, a driven watercraft 1 is shown powered by a jet propulsion drive boat 2 constructed in accordance with an embodiment of the present invention. The driven watercraft 1, in its plane view, is provided with a U-shaped floor, comprising a fore floor 1a and side floors 1c, respectively. Moreover, the drivable watercraft 1 comprises a drive boat accommodat-

ing portion 18 defining a fitting cavity or docking area 18a for the water jet propulsion drive boat 2 opened rearward between both side floors 1c at the middle of the width of the hull 32 of the watercraft 1, i.e., coaxially with respect to a longitudinal axis of the watercraft 1, with bulwarks 15 and vertical walls 16 formed outside and inside of both bulwarks 15 and 16, respectively. Each bulwark 15 is provided with a handrail 15a and a bow floor 1d is formed in front of the fore floor 1a to receive a container 11 at the bow portion 45. As specifically shown in figures 1 to 3, the watercraft 1 comprises a seat area 5 including fore seats 12 disposed on the fore floor 1a and side seats 13,14 disposed on the side floors 1c extending alongside the drive boat accommodating portion 18 at both sides of the docking area 18a. At least one of these side seats 14 can preferably be used as a drive boat operator's seat as shown in figure 2. Moreover, the drive boat accommodating portion 18 provides a coupling means 4 for coupling the drive boat 2 to the watercraft 1 at its front end portion.

As shown in figures 1 to 3, the drive boat 2, designed to be a water jet propulsion boat, is received in the drive boat accommodating portion 18, specifically the fitting cavity (docking area) 18a thereof, coupled by the coupling means 4 at its front end portion and, moreover, a fastening belt 19 is fixed to the rear portion of the watercraft 1 and the drive boat accommodating portion 18 such that the drive boat 2 can be fixed and pushed downwardly in a docked condition accommodated through the push boat accommodating portion 18 fastening said fastening belt 19 with a fastener 19a. This measure is specifically important to prebias the drive boat 2 in a docked condition to the water craft 1 downwardly in order to closely push a bottom plate 25 of the drive boat 2 onto a bottom plate 9 of the watercraft 1 in order to closely approach a water intake opening 27 of a jet propulsion drive unit 28 of the drive boat 2 to a water inflow opening 20, provided in the bottom plate 9 of the docking area 18a of the watercraft 1 in order to establish a highly efficient watercraft drive system as described in greater detail below (see also figures 7 and 8). The drive boat accommodating portion 18, defining the docking area or fitting cavity 18a adapted to accommodate the drive boat 2 therein, is established to be formed generally along the entire periphery of the drive boat 2 disposed in a docked condition to the watercraft 1 as shown in figures 1 to 3. Only the stern portion 40 of the drive boat 2 remains free of any surrounding portions of the watercraft 1 and an arrangement is chosen such that an operator 10, sitting on the seat 14, can operate the drive boat 2 by means of an operating handle 21 of the drive boat 2 equipped in a docking condition of the drive boat 2 coupled to the watercraft 1 as indicated.

As already indicated above, the jet propulsion drive unit of the drive boat 2 is expected to efficiently power the driven watercraft 1 and, accordingly, it is desirable to firmly receive and couple the drive boat 2 to the docking area 18a of the watercraft 1 exerting a certain vertically oriented force to the drive boat in order to keep it in close contact with the bottom plate arrangement of the watercraft 1 as explained in greater detail in the following description. In view of the front end coupling means 4, the present embodiment comprises a rope connection in between the drive boat 2 and the driven watercraft 1 using a winch 3 to exert pulling forces to a winch rope 30 which is hooked to a metal fitting 2a at the front end of the drive boat 2. As will be apparent from the further description, different coupling means can also be used, avoiding a winch or the like.

In the present embodiment, however, a winch 3 is disposed by its base 30 at the front end portion of the drive boat accommodating portion 18. A winch hook 33a at the end of the winch rope 33 is hooked to the metal fitting 2a at the front end of the drive boat 2 and the rope 33, itself, is led to the winch 3 through a pulley 41 disposed at a fixed portion 17 of the watercraft 1. As shown in further figures 4 to 6, the drive boat 2 can be pulled into the docking area or fitting cavity 18a of the drive boat accommodating 18 by winding up the rope 33 with a winch handle 31. A front end of the docking area cavity 18a forms a counter fitting shaped similar to the shape of the bow of the drive boat 2 in order to firmly receive the drive boat 2 enabling a downwardly oriented vertical force to be exerted to push the bottom plate of the drive boat in close contact with the bottom plate of the docking area or fitting cavity 18. As shown in figure 6, the peripheral portion, i.e. the bow of the drive boat 2, is fitted in and pushed against the associated wall elements defining the cavity 18a of the drive boat accommodating portion 18 and also a cushion member 23 can be disposed at the docking area 18a in order to snugly receive the drive boat 2.

As already indicated, in this case the drive boat 2 is a water jet propulsion boat comprising a jet propulsion drive unit which is adapted to suck in water through a water intake port provided in the bottom plate of the drive boat 2 and injected by means of a propulsion propeller from the stern in a predetermined rearward direction through a deflector as is conventional in the art, but also shown in some greater detail in further figures of other embodiments of the present invention explained below.

As shown in greater detail in figures 7 and 8 the docking area or fitting cavity 18a defined through the drive boat accommodating portion 18

comprises a bottom plate 9 connecting the pair of rearwardly extending portions 46,47 (fig. 7) of the watercraft 1 formed by the side floors 1a and 1c, said bottom plate 9 defining a water inflow opening 20 corresponding to the position of a water intake port 27 of the jet propulsion drive unit 28 of the drive boat 2. The water inflow opening 20, in this embodiment, is preferably provided with a packing 20a along its periphery portion in order to prevent air from being sucked into the jet propulsion drive unit of the drive boat 2 as explained later on.

Figures 9 and 10 show another usage of the watercraft 1 explained hereinbefore with the drive boat 2 in a docking condition received in the docking area 18a surrounded by the U-shaped seat area 5 specifically adapted for the offshore use of the watercraft 1, with the floor seat 12 and side seats 13, 14 along the docking area 18a being developed to be used as a bed. Although the seat 14 on the right side of the watercraft 1 again is used as a operator's seat also the seats 12, 13 and 14 as shown on the upper half of figure 9 may be developed similarly to the seats 12, 13 and 14 as shown on the lower half of the plane view of figure 9.

Figures 11 through 13 show another usage of the watercraft 1 with a pole holder 51 being provided at the front side of the drive boat accommodating portion 18 adapted to receive a lower end portion of a pole 50 of a beach umbrella 22 fastened to the pole holder 51 by a handclip 52 so that shade may be provided for passengers on the seats 12 and 13 while the watercraft 1 is lying at anchor or is on an offshore drift or ride.

Another embodiment of the watercraft 1 is shown in figures 13 through 15 providing a rear closure of the normally open rear side of the docking area 18a defined by the drive boat accommodating portion 18 disposing a net 6 across said rear end opening of the drive boat accommodating fitting cavity 18a so that a play lot for children can be established through this docking area 18a. Preferably the net 6 is attached only by hooking hooks 61 provided at its periphery in holes 1f of a stern plate 1e and the bottom plate 9 enabling the net 6 to be easily assembled or detached. As the bottom plate 9 of the drive boat accommodating portion defining the fitting cavity or docking area 18a is positioned lower than the waterline 90, in this way, some water is present in the docking area 18a and it is possible to utilize the drive boat accommodating portion 18 also as a bathing or swimming playpool depending on the design of the watercraft 1.

A somewhat different embodiment of a watercraft 1 according to the present invention is shown in figure 16 which is a back view thereof showing the docking area 18a unoccupied.

The opposite side walls 16 of said watercraft 1 also comprise a supporting structure for the drive boat fastening belt 19 as well as supporting elements 78 for accommodating a separate drive means such as an outboard marine engine the propelling unit thereof can extend through the water inflow opening 20. For further details of such a different drive means of the watercraft 1, reference is made to the description below relating to figure 37 and follow-up figures, respectively.

In order to facilitate safe receipt of the drive boat within the "parking lot", i.e. the fitting cavity or docking area 18a of the watercraft 1, the cushion member 23, as already shown in figure 6, is attached to the front end portion of the fitting cavity 18a. Reference numeral 24 denotes the counter-shaped receipt portion of the bow 49 of the driving boat 2. Moreover, further cushion members or bumpers 23, made of rubber, are provided at both sides of the rear opening of the docking area 18a in order to facilitate entry of the driving boat 2 into said area. In order to further facilitate docking the drive boat 2 to the watercraft 1, handgrips 37 are provided at both sides of the rear end opening of the docking area 18a as also shown in figure 43. In this way, a driver on the drive boat 2 can easily move the drive boat 2 towards the docking area 18a of the driven watercraft 1.

In order to explain in greater detail another important aspect of the present invention, namely the close fitting of the drive boat 2 within the docking area 18a of the driven watercraft 1 in order to maintain the high efficiency of the jet propulsion drive system of the jet propulsion drive boat 2, reference is made in the following to another embodiment of the present invention as shown in figures 17 to 20, respectively. The general structure of these embodiments substantially corresponds to those of the watercraft/drive boat assembly shown in figure 1, however, in the present case some amendments and modifications were performed in order to improve the close fit of the drive boat 2 within the docking area 18a of the driven watercraft 1 specifically in order to provide a close airtight contact in between a bottom plate 25 of the drive boat 2 and a rear wall 26 of the fitting cavity 18a as well as to the bottom plate arrangement 48 of said cavity 18a of the watercraft 1. In this way, an unaffected smooth and even flow of water through the water inflow opening 20 of the bottom plate arrangement 48 of the watercraft 1 to a water intake opening 27 of the jet propulsion drive unit 28 of the drive boat 2 and through a propulsion duct 29 to an injection outlet 34 of the jet propulsion drive unit 28 is assured.

Referring to figures 17 to 20, the water jet propulsion drive boat 2 is shown in its docking position with the arrow Fr indicating the forward

propelling direction of the drive boat 2. As is also the case, in view of the afore-mentioned other embodiments of the present invention, the jet propulsion drive boat 2 comprises a hull 35 made of synthetic resin and a handle support portion 36, supporting a steering handlebar 21 of the jet propulsion drive boat 2 is disposed on the top surface of a middle portion of the hull 35. As is conventional for jet propulsion boats or bikes, there is a seat 38 established by the hull 35 and foot rest floors 39 are provided at both sides of the seat 38 on the rear portion thereof, enabling a rider in a straddling seat position to operate the steering handlebar 21, putting his feet on the foot rest floors 39.

The jet propulsion drive boat 2 comprises the jet propulsion drive unit 28 disposed in the rear portion of the hull 35 and comprising the suction or propulsion duct 29 which extends longitudinally, providing a substantially circular cross-section and being bent generally roof-shaped in side view, the front end thereof opens at a longitudinal middle portion of the bottom plate 25 of the hull bottom, forming the water intake opening 27 disposed closely above the water inflow opening 20 of the watercraft 1. On the other hand, the rear end of the propulsion duct 29 opens at a stern 40 of the hull 35, establishing the water injection outlet 34.

Reference numeral 42 denotes an engine for driving a propelling shaft 33 extending rearward from the engine 42. The rear end of the propeller shaft 43 substantially is positioned in line with the longitudinal action of the suction duct 29 at its longitudinal middle portion thereof and a propulsion propeller 44 is supported by said rear end of the propeller shaft 43. As is conventional, the propulsion propeller 44, driven through the propeller shaft 43, serves to suck water into the suction or propulsion duct 29 through the water intake port 27 as indicated by arrow A in figures 17 and 18. Then, this water will be injected rearward of the hull 35 through the water injection outlet 34 as indicated by arrow B in figures 17 and 18. In this way, the water jet propulsion drive boat 2 can be propelled conventionally.

In compliance with the basic material structure of the drive boat 2, the driven watercraft 1 also comprises a hull 32, made of synthetic resin as well, substantially composed of a bow portion 45, left and right side portions 46,47 formed integrally with said bow portion 45 and extending rearwards therefrom, and a reinforcement bottom plate arrangement 48, connecting both side portions 46,47 together at their lower ends and, in turn, composed of an upper plate 55 integral with the rear wall 26 and a lower plate 56 integral with the bottom plate 9. As is apparent from figure 17 and other figures such as figures 1, 10, 11, 21, 23, 27, and 33, the rear wall 26 joins the bottom plate 9 of the driven watercraft 1 smoothly connecting said pair of rearwardly extending side portions 46,47 of the drive boat accommodating portion 18 to form the bottom plate arrangement 48 allowing the water to flow smoothly through the water intake port 27 of the jet propulsion drive unit 28. Said water intake port 27 is disposed spaced apart rearwardly of the rear end edge 53 of the bottom plate arrangement 48 forming the bottom hull of the watercraft 1. Of course, said bottom plate arrangement 48 could also be established by the bottom plate 9 above, extending from the bow to the stern of the driven watercraft 1. Accordingly, the bottom plate arrangement 48 which connects the pair of rearwardly extending side portion, 46,47, extends smoothly integral from the bottom plate 9 of the driven watercraft 1 resulting in an even flow of water towards the water inflow opening 20 of the watercraft 1 and a high efficiency of a jet propulsion drive unit 28 of the jet propulsion drive boat 2 is maintained even in a docking condition of same.

The fitting cavity or docking area 18a, defined through the drive boat accommodating portion 18, opens upward and rearward and is designed such that the bow portion 495 of the hull 35 is separably accommodated in said docking area 18a when the water jet propulsion drive boat 2 is moved forward to be fitted therein. In the present embodiment, the holding means for fixedly positioning the water jet propulsion drive boat 2 as accommodated in the fitting cavity or docking area 18a while pushing the drive watercraft 1 forward and, moreover, urging the drive boat 2 downward to establish close contact in between the bottom plate 25 of the drive boat 2 and the bottom plate arrangement 48 or bottom plate 9 of the driven watercraft 1 comprises a pair of left and right fastening belts 19 made of rubber or other resin material with one end of each fastening belt 19 being fastened on the extension of the bottom plate arrangement 48 forming the hull bottom of the docking area 18a of the watercraft 1, for example fixed by screws, whereas the other end of each belt 19 is releasably connected with each other through a buckle fastener 19a on the seat 5.

When the water jet propulsion drive boat 2 is advanced in the fitted state as indicated, for example, in figures 17 to 19, the driven watercraft 1 is pushed and advanced to be moved to the desired location by the jet propulsion drive boat 1 which forms the power drive unit for the driven watercraft 1.

As indicated above, the rear wall 26 of the watercraft 1 is shaped corresponding to a bow portion 49 and a front area of the bottom plate 25 of the drive boat 2. This also ensures superior docking behaviour of the drive boat 2 as the rear wall 25 of the watercraft 1 serves as a guide snugly

accommodating the front bottom area of the drive boat 2, specifically in cases of some misalignment between the watercraft and drive boat, caused, for example, by a considerable longitudinal inclination of the watercraft due to a heavy load acting on the stern thereof, occurring when a plurality of passengers are present on that rear end of the watercraft 1.

As shown in figures 17 to 20, the bottom plate arrangement 48 of the docking area 18a comprises a rectangular cutout 52 at its rear end forming a water inflow area to communicate to the water intake opening 27 of the jet propulsion drive unit 28 of the drive boat 2 being in a docking condition accommodated in the docking area 18a. In order to assure a highly efficient drive operation of the jet propulsion drive unit of the drive boat 2 unaffected by turbulences or the like, the position or relationship in between the cutout 52 and the water intake opening 27 is selected to be such that a rear end edge 53 of the bottom plate 9, i.e. the edge portion of the cutout 31, is positioned forwardly spaced apart from the water intake opening 27 when the drive boat 2 is in a docking position. As shown in figures 17 to 20, the offset between said rear end edge 53 and the front portion of the water intake opening 27 amounts to a distance 1.

According to this arrangement, turbulence and vortices 54, as created downstream of the rear end edge 53 of the cutout 52 of the bottom plate 9 are diffused or weakened to disappear until they reach the water intake port 27 and, thus, said turbulences substantially disappear or are spread and do not enter into the water intake opening 27 and the suction duct 29 of the jet propulsion unit 28. Accordingly, any inconvenience in that the performance of the propulsion propeller 44 disposed within the suction duct 29 could be impaired by said turbulences or vortices 33 is excluded. As a result, a high efficiency of the jet propulsion unit 28 may be maintained in the docking condition of the drive boat 2.

In the present embodiment, it is desirable that the offset 1 amounts to approximately D x (25 to 50) wherein D means the thickness of the bottom plate arrangement 48 (or the bottom plate 9, if used alone) which amounts to approximately 1 cm. Considering additionally the longitudinal dimension L of the water intake opening 27, the distance L should amount to approximately 1>2L.

Moreover, the distribution of turbulences 54 can further be improved by providing the rear end edge 53 of the cutout 52 or the rear end of the bottom plate 9, in general, with a curved shape or certain radius in order to avoid said rear end edge 53 inducing turbulences resulting from a rough sharp cut end thereof.

As shown in greater detail in figure 24 for another embodiment to be described later, the bottom plate arrangement 48 defining the bottom of the docking area 18a can be composed of an upper plate 55 and a lower plate 56 bonded together in layers with adhesive or the like. The front portion of the upper plate 55 is formed integrally with the rear wall 26 of the driven watercraft 1, whereas the left and right side portions of the upper plate 55 are formed integrally with respect to the vertical side walls 16 of the fitting cavity or docking area 18a on the left and right side portions 46,47 forming the drive boat accommodating portion 18. Moreover, the front portion of the lower plate 56 is formed integrally with the front portion of the bottom wall 9 ahead of the rear wall 26, whereas the left and right portions of the lower plate 56 are formed integrally with the respective bottom plates of the left and right side portions 46,47.

As already indicated above, the forward portion of the docking area or fitting cavity 18a comprises the rear wall 26, the shape of which closely corresponds to the bow portion 49 of the bottom plate 25 of the water jet propulsion drive boat 2. Moreover, the rear wall 26 is designed to provide a bow receipt portion 24 forming an engaging cavity at the front end of the docking area 18a enabling a bow tip 57 of the drive boat to be engaged and, accordingly, to be positioned vertically and laterally. Generally, the forward portion of the docking area 18a, including the rear wall 26 of the driven watercraft 1, is designed arcuately concave corresponding to the hull bottom, specifically the bottom plate 25 of the drive jet boat 2. This design of the rear wall 26, the shape of which corresponds as a counter-shape to that of the front portion of the drive boat's bottom plate 25, results in a concave shape of said rear wall 26 increasing the volume of the bow portion of the watercraft 1 and, consequently, adds to an increased buoyancy and floating power of the watercraft 1.

The upper plate 55 and the lower plate 56 gradually separate vertically from each other toward their front end in the front area of the fitting cavity or docking area 18a in order to assure a high strength of the bonded reinforced structure between the bow portion 45 and the bottom plate arrangement 48 of the docking area or accommodating cavity 18a.

As indicated in figure 19, the hull bottom plate 25 of the water jet propulsion drive boat 2 comprises a projection 58 slightly projecting downward from its rear portion at the middle of the width of the stern 40 of the drive boat 2 fitted in the cutout 52. The lower end surfaces of the reinforced bottom plate arrangement 48 and the projection 58 are designed to form a smooth transition area in the longitudinal and lateral direction in order to keep

the water resistance low while propelling the watercraft/drive boat assembly. When the jet propulsion drive boat 2 assumes its docking position accommodated in the docking area 18a of the driven watercraft, the bow of the drive boat 2 engages the front portion of the drive boat accommodating portion 18, i.e. the forward end portion of the docking area 18a, and the projection 58 engages automatically the cutout 52 so that the water jet propulsion drive boat 1 is reliably positioned in a predetermined position on the driven watercraft 1.

As shown in figures 17 to 20, there is a cavity 59 corresponding to the fore floor 1a of figure 2, extending laterally on the top face of the bow portion 45 and, again, three fore seats 12 are laterally arranged along said cavity 59. Moreover, another cavity 60, corresponding to the side floors 1c of figure 2, extend longitudinally on the top face of each side portion 46,47 supporting side seats 13,14 facing each other, respectively, one of which forms the operators seat as indicated in connection with the embodiment of figure 2 adapted to ease the operation of the water jet propulsion drive boat 2. 15a, again, denotes a handrail.

In this embodiment, the coupling structure for reliably coupling the drive boat 2 to the watercraft 1 at the bow tip 57 of the jet propulsion drive boat 2 is different from the rope connection of the first embodiment as indicated in figure 1. Of course, the engaging receipt portion 24 at the driven watercraft adapted to accommodate the bow tip 57 of the drive boat 2 is effective to keep the hull bottom plate 25 of the drive boat 2 in close contact with the bottom plate arrangement 48 of the docking area 18a of the driven watercraft in order to assure good driving performance of the jet propulsion drive unit 28. On the other hand, it is also possible to eliminate the engaging cavity 24 fitting only the forward portion of the hull bottom of the hull 35 of the jet propulsion drive boat 2 in the fitting cavity or docking area 18a of the drive boat accommodating portion 18 of the driven watercraft.

In the following, further embodiments of the present invention are explained, referring to the accompanying drawings, only explaining those structures of these embodiments which are different from those afore-described, whereas the structures common to said embodiments are only indicated by assigning common reference numerals thereto.

Another embodiment of the present invention is shown in figures 21 to 26. Figure 21 substantially corresponds to figures 1 and 17 of preceding embodiments. In both cases, the steering handlebar 21 of the jet propulsion drive boat 2 is supported on the swinging end of a swinging arm 62 supported and adapted to be swung vertically with respect to the handle supporting portion 36. Instead of a seat 5, the drive boat 2 is provided with a foot rest floor 63 enabling a rider in a position standing on this foot rest floor 63 to operate the water jet propulsion drive boat 2, gripping the steering handlebar 21 and swinging the swinging arm 62 vertically.

Different from the preceding embodiments, a ladder 64 is swingably provided at the stern of the driven watercraft 1. In more detail, there is a supporting piece 65 (see figure 23) projecting at the rear end of each side portion 46,47, swingably supporting one end side of the ladder 64 for swinging vertically through a pivot shaft 66. Moreover, a ratchet device 67 is provided as a locking means in order to prevent the downward swinging of the ladder 64 while automatically permitting its swinging upwardly. The ratchet device 67 (figure 23) comprises a gear 68 formed at the projected end of the supporting piece 65 and an engaging pawl 69 pivotably supported on the ladder 64 and disengagably engaging the gear 68.

Figures 21 to 23 show the ladder 64 in its rest position, swung up out of the water, and in this position, the ladder 64 is not in use. However, in said position, the ladder 64 may be used to form a seat for the driver operating the drive boat 2, and, moreover, one projecting engagement portion 70 of the ladder 64 is in pressing contact against the stern 40 of the water jet propulsion drive boat 2 positioned in a docking position. Thus, the engagement portion 70 of the ladder 64 keeps the jet propulsion drive boat 2 in its docking condition fitted in the docking area 18a applying a forward thrust force to the drive boat 2. Accordingly, the ladder 64 and the ratchet device 67 are also effective as a holding means similar to the fastening belts 19 in the other embodiments.

In order to pull the jet propulsion drive boat 2 out of the fitting cavity or docking area 18a defined by means of the drive boat accommodating portion 18, the only need that arises is to disengage the engaging pole 69 from the gear 68, to swing down the ladder 64 and to open the accommodating docking area 18a rearward as indicated in figure 25.

As shown in figure 23, a stopper 70a projects from one end side of the ladder 64 to strike against the supporting piece 65 when the ladder 64 is swung down at a definite angle so that a further swing down movement of the ladder 64 can be prevented. Such a lowered position of the ladder 64 is convenient in order to allow swimmers to climb aboard the driven watercraft 1 through the ladder 64.

In the present case, the design of the water inflow area of the bottom plate 9 corresponding to the water intake opening 27 of the jet propulsion

drive unit 28 is different from those of the embodiment according to figure 17 as specifically apparent from figures 23 and 25. The reinforced bottom plate arrangement 48 comprising the upper plate 55 and the lower plate 56 (or extended bottom plate 9 above) defines a rectangular water inflow opening 20 for communicating the water intake port 27 of the jet propulsion drive unit 28 to the body of water under the bottom area of the watercraft 1. The lateral width of said water inflow opening 20 is slightly larger than the lateral width of the water intake port 27 and, again, the front end edge (71) of the water inflow opening 20 is positioned forwardly spaced apart from the water intake port 27, leaving a distance 1.

In this way, even if many turbulences or vortices 54 are created sequentially rearward of said front edge 71 when the driven watercraft 1 is propelled by the water jet propulsion drive boat 2, said turbulences or vortices 54 are diffused or spread to be vanished and disappearing until they reach the water intake port 27 of the drive unit 28 reliably preventing said turbulences 54 from entering the area of the propulsion propeller 44 within the suction duct 29, respectively. In order to assist the afore-mentioned effects, the front end edge 71 is smoothly curved. The same applies to the rear end edge of the water inflow opening 20.

As shown in figure 24, the reinforced bottom plate arrangement 48 comprising the upper plate 55 and the lower plate 56, which defines the hull bottom of the docking area 18a connecting the extended longitudinal side portions 46,47, respectively, implies a pair of grooves or dents 72 which extend longitudinally spaced apart along the left and right sides of the water inflow opening 20. On the other hand, the hull bottom, specifically the bottom plate 25 of the drive boat 2 comprises corresponding linear projections or strips 73 fitted in the grooves 72 in order to properly guide the jet propulsion guide boat 2 when the drive boat 2 is docked to the driven watercraft 1 fitted in the fitting cavity or docking area 18a. For example, when the bow 49 of the jet propulsion drive boat 2 is fitted in the docking area 18a the linear projections 73 automatically engage the grooves 72 and, accordingly, the jet propulsion drive boat 2 is automatically brought into a proper lateral position surrounded by the drive boat accommodating portion 18.

As indicated by dotted lines in figure 25 and more clearly shown in the sectional view of figure 26, the driven watercraft 1 has a plurality of handheld grip portions 74 disposed along its left and right sides and adapted to be used for manually carrying the driven watercraft 1.

Another embodiment of the present invention is shown in figures 27 and 28, referring to important details of a preferred embodiment of the bottom plate arrangement 48 adapted to minimize turbulences arising ahead of a water intake opening 27 of the water jet propulsion unit 28, providing a smooth but reinforced hull bottom of the driven watercraft 1 adapted to accommodate the drive boat 2 within the fitting cavity 18a. This embodiment discloses the outer surface of the bottom plate arrangement composed of the upper wall 55 and being integral with the rear wall 26 of the docking area 18a and the lower plate 56 being integral with the bottom plate 9 at the front portion of the bottom hull of the driven watercraft 1 to be shaped generally concave in a cross-sectional lateral view. The hull bottom or bottom plate 25 of the jet propulsion drive boat 2 being fitted on this reinforced bottom plate arrangement 48 thus providing a guide arrangement for the jet propulsion drive boat 2 which, as shown in figure 28, is reliably laterally positioned relative to the driven watercraft 1.

As shown in figures 27 and 28, the bottom plate arrangement 48 defines a water inflow opening 20 formed therethrough and the lower face of the front end edge 71 at the opening edge of this water inflow opening 20 is inclined such that it may gradually approach the bottom plate 25 of the water jet propulsion drive boat 2 toward the rear. Thus, turbulences and vortices 54 are restrained from being generated from behind the front end edge 71 when the drive boat 2 is operated in a driving condition.

Moreover, as is apparent from Figure 27, also the rear end edge 75 at the opening edge of the water inflow opening 20 is inclined so that it may gradually approach the bottom plate 25 of the hull of the driving jet boat 2 toward the front thereof intending to reduce the water flow resistance at the rear end edge 65 as well.

As indicated by a two dotted chain lines in Figure 27, the rear end edge 75 may be offset somewhat forward or rearward of the rear end of the water intake port 27 of the jet propulsion drive unit 28. Similarly, the afore-indicated receipt and water inflow structure may be designed such that the fitting cavity or docking area 18a can be displaced somewhat from the longitudinal center line leftward or rightward of the hull 32 of the driven watercraft 1.

The afore-indicated embodiments are designed to ensure high performance of the jet propulsion drive unit 28 for propelling the watercraft/driving boat assembly. When the jet propulsioned drive boat 2 is docked to the driven watercraft 1 accommodated in the docking area 18a intending to drive the watercraft 1 through the jet propulsion drive boat 2, the rear end edge 53 of a reinforced bottom plate arrangement 48 or of a bottom plate 9 alone

defining the hull bottom of the docking area 18a (see figure 20) is disposed to be further offset from a water intake port 27 of the jet propulsion unit 28 of the docked drive boat 2.

Accordingly, even in case the propelling drive movement of the driven watercraft 1 results in many vortices and turbulences 54 being sequentially created on the rear of said rear end edge 53, these turbulences 54 are distributed or diffused to be vanished until they reach the water intake port 27 and, accordingly, are prevented from entering the suction duct 29 of the drive unit 28. Alternatively, the bottom plate arrangement 48 (or the bottom plate 9 alone) defines a water inflow opening 20 adapted to communicate to the water inlet port 27 of the docked drive boat 2. In that case, the front end edge 71 of said water inflow opening 20 is disposed to be further spaced apart from the front edge of the water intake port 27 resulting in the same effects as described above.

Further embodiments of the present invention are now shortly explained with respect to the accompanying drawings.

Figure 29 shows another embodiment which substantially corresponds to those of Figure 20 introducing some further features with respect to the design of the seat area in as far as the cavity 59 providing a front seat area of the driven watercraft 1 is designed to comprise several support elements 76 adapted to support one or several cushions 77 as, for example, shown in the embodiment in Figure 42. Moreover, in this way an enlarged seat area can be provided around the docking area 18a employing full flat seats as well as. In order to facilitate providing continuous seating areas, several seat cushions 77 are joined together by means of hinges 95.

Incidentally, it is also possible to design the driven watercraft 1 in such a manner that there is only a front seat portion provided comprising front seats 12 ahead of the drive boat accommodating portion 18 whereas the extended side portions 46 and 47 or the side floors lc of designed to exclusively contain storage or luggage compartments without any seats provided alongside the docking 18a of the driven watercraft 1.

Moreover, as also shown in Figure 29, the opposite vertical walls 16 comprise a support structure 78 adapted to support another power drive means such as a marine outboard engine above the water inflow opening 20 as specially indicated in Figure 41. Finally, in order to ease manoevouring the drive boat 2 into the docking area 18a of the driven watercraft 1, the upper ends of the drive boat accommodating portion 18 are designed to support skid plates 79 at the opposite upper end enabling a driver on the driving boat 2 to grasp them to move the driving boat 2 into the docking area 18a of the driven watercraft 1. Preferably, said skid plates as shown in great detail in Figure 30 are made of soft and rugged plastic having a further inclined upper surface in order to facilitate grasping through the driver from behind (see also Figure 43). Moreover, figure 30, which is a cross-sectional view along line 30-30 in Figure 29, indicates the support structure 78 for mounting an outboard marine engine 80 as drive means of the driven watercraft and provided in conjunction with a drive boat 2 comprising a board 87 with spaced pairs of projections 88 to accommodate an outboard engine mounting plate 86 therebetween. Simultaneously, they serve as a guide of opposite gunnels 81 of the driving boat 2.

Figures 31 and 32 again are cross-sectional views of certain details of the seat and seat cushion receipt structures of the embodiment according to Figure 29, respectively. In order to keep a seat 12 in a position as shown in Figure 29, a U-profiled seat support structure 82 of the hull 32 is provided engaged by means of a seat support element 83 laminated to the seat 13 and engaging the U-shaped profile 82 from above (Figure 31) or being supported by a projecting U-shaped profile fitted thereon as shown in Figure 32.

Another modification of the embodiment already explained above with respect to Figure 23 is shown in Figure 33 wherein again the ladder 64 is provided to hold the drive boat 2 downward. In that case, the driver can also seat on the upwardly swung end portion of the ladder 64 in order to grasp the handlebar 27 to operate the jet propulsion driving boat 2.

In the following some further modifications of the driven watercraft 1 or its drive equipment are explained returning to a structure of the driven watercraft 1 as shown in Figures 1 and 9, respectively.

Figures 34 to 36 shows still another usage of such a driven watercraft 1 enabling to cover the docking area 18a with a plurality of lids 84 from above mounted on the vertical side walls 16 on both sides thereof. The lids 84 are connected to one another through hinges 85 so that the lids can be stored in their folded state. In this way, lids 84 can be used as a table or as another leisure area for using the driven watercraft 1.

As already indicated with respect to Figures 16 and 30, the driven watercraft can also be powered by a separable outboard marine engine 80. Figures 37 to 40 show such another usage and equipment of the driven watercraft 1 with a beam 8 being mounted between the vertical side walls 16 on both sides supporting said outboard marine engine 80. More specifically, each vehicle wall 16 is provided with a dent 16a to receive the end portion of the beam A fitted therein and fixed by holding member

16c and a bolt 16d. In this way, the outboard marine engine 80, i.e. the engine drive shaft thereof, is lowered to extend through the water inflow opening 20 until a propeller 86 at the lower end thereof is positioned beneath the hull bottom. With such a structure, the driven boat 1 is prepared to be self-propelled without using a separate drive boat 2.

A similar structure for powering the driven watercraft 1 by an outboard marine engine is shown in Figure 41. Some other features of this embodiment were already explained pointing to Figure 16 above. In this case, the outboard marine engine 80 comprises a plate 86 to form a supporting end receipt structure prepared to engage the support structure 78 at both vertical walls 16 defining a rear part of the docking area 18a. Said support structure 78 implies a supporting board 87 and a guide projections 88, respectively. A similar receipt structure for supporting an outboard marine engine was already shown in Figure 30 showing the plate 86 slidably received in between the projections 88. Moreover, at least one of the side walls 16 comprises a removable drain plug 90.

Figure 42 discloses the outboard marine engine 80 in its assembled condition supported by the plate 86 which, in turn, is guided inbetween the supporting projections 89 at both opposite vertical walls 16.

So far, specifically with respect to the seat and seat cushion arrangements, the embodiment of Figure 42 corresponds to those of Figure 29 showing the seat area in a developed state of full flat seats. Again seat cushions 77 are connected by hinges.

A similar arrangement with respect to foldable seat cushions 77 which can be developed to full flat seats in the front seat area is shown in some detail in Figure 43. The cavities 59 to define the front seat portion may in addition provide space below serving as a storage space, etc. Moreover, as already indicated in figure 42 and explained in other figures already, the stern of the driven watercraft 1 comprises grips 37 at both sides of the rear opening of the docking area 18a enabling a driver on the drive boat to use them for manoeuvering the drive boat into the docking area 18a of the driven watercraft 1.

Figures 44 and 45 show another example of the driven motor craft 1 with the vertical side walls 16 of the drive boat accommodating portion 18 being depressed outward so that the lower portion of the drive boat accommodating portion 18 or fitting cavity 18a is formed wider than its upper portion such that the inside portions of the side seats 14 at both sides of the docking area 18a may be projected inwards to overlap to a certain extent said fitting cavity or docking area 18a from above. In this way, the driven watercraft 1 can also be provided with a drive boat accommodating portion 18 even when the width of the driven watercraft 1 is normally insufficient in view of the space required for the drive boat 2.

Finally, still another example for the design of the driven boat 1 is shown in Figures 46 and 47 comprising an offshift of the drive boat accommodating docking area 18a sidewards of a longitudinal center axis of the driven watercraft 1. Accordingly, the docking area constituted by the fitting cavity 18a opened sternward is formed on one side with respect to the width of the driven water craft 1 and a side seat 14 to be used as the operator's seat is formed on the other side. Such a structure can be advantageously applied providing a driven watercraft 1 with a drive boat accommodating cavity 18a even when the width of the driven watercraft 1 is yet more insufficient relative to the dimensions of the driving boat 2.

Again, it should be emphasised that a seat area is not necessarily provided along the docking area 18a or at both sides thereof but that area could also serve as storage space for luggage compartments or a combined seat area/storage space assembly could be provided. In that case, at least the front portion of the watercraft's deck area ahead of the drive boat accommodating portion is designed to establish a seat area for the convenient usage of the driven watercraft 1 irrespective of being powered by a separate drive boat 2 or used as a drifting platform. Otherwise, in case a seat area is established alongside the docking area, the front portion of the watercraft may serve as a storage area exclusively or as a combined seat/storage area, respectively.

Claims

1. Drivable watercraft comprising a drive boat accommodating portion defining a docking area opening rearward at a stern portion of the water craft adapted to accommodate a power drive means, specifically a water jet propulsion unit such as a jet propulsion boat therein,

characterized in that

a seat area is provided extending at least either in front of the drive boat accommodating portion (18) or along one side of the docking area (18a), and a bottom plate arrangement (48) is provided within said docking area (18a) assuring a smooth even flow of water through a water intake opening (24) of the power drive means (2) received in said docking area (18a).

2. A watercraft as claimed in claim 1**, character-**

ized in that the power drive means is a water jet propulsion boat (2).

3. A watercraft as claimed in claims 1 or 2, **characterized in that** said seat area comprises a drive boat operators seat (14) established at least on one side of said drive boat accommodating portion (18).

4. A watercraft as claimed in at least one of the preceding claims 1 to 3, **characterized in that** said drive boat accommodating portion (18) is formed coaxially with respect to a longitudinal axis of the water craft (1) and the seat area extends along both sides of the docking area.

5. A watercraft as claimed in at least one of the preceding claims 1 to 4, **characterized in that** the seat area, in plane view, is designed to provide a U-shaped area with seats (12, 13, 14) at the front side and along both longitudinal sides of said docking area (18a).

6. A watercraft as claimed in at least one of the preceding claims 1 to 5, **characterized in that** the drive boat accommodating portion (18) is adapted to extend generally along the entire periphery of the drive boat (2) with the exception of the stern portion (40) thereof and said docking area (18a) provides a fitting cavity substantially closed at the bottom side by the bottom plate arrangement (48) leaving unoccupied an area adapted to communicate to a water intake opening (27) of the power drive means.

7. A watercraft as claimed in claim 6, **characterized in** that said bottom plate arrangement (48) defines a water inflow opening (20) adapted to be communicated to a water intake opening (27) of a jet propulsion power drive means (28) of a jet propulsion drive boat (2) or to accommodate another power drive means such as an outboat marine engine (80) from above.

8. A watercraft as claimed in at least one of the preceding claims 1 to 7, **characterized in that** a rear edge of the bottom plate arrangement (48) defining a water inflow area (52) to be communicated to a water intake opening (27) of the water jet propulsion drive unit (28) of the jet propulsion boat (2) docked to the watercraft (1) is disposed forwardly spaced apart from a front edge of the water intake opening (27) of the jet propulsion drive unit (28) of the drive boat (2).

9. A watercraft as claimed in at least one of the preceding claims 1 to 8, **characterized in that** said water inflow opening (20) of the bottom plate arrangement (48) adapted to communicate to the water inlet port (27) of the water jet propulsion drive unit (28) of the jet propulsion drive boat (2) comprises a front edge (71) which is disposed forwardly spaced apart from the front end of the water intake port (27) of the jet propulsion drive unit (28) of the jet propulsion drive boat (2) docked to the drive boat accommodating portion (18) of the water craft (1).

10. A watercraft as claimed in at least one of the preceding claims 1 to 9, **characterized by** a rear wall (26) partially defining said docking area (18a), the shape of said rear wall (26) being similar to the shape of at least a front portion of the bottom plate (25) of the jet propulsion drive boat (2).

11. A watercraft as claimed in claim 10, **characterized in that** the rear wall (26) joins smoothly to the bottom plate (9) to form a reinforced bottom plate arrangement (48) connecting a pair of rearwardly extending sections (46, 47) of the drive boat accommodating portion (18), said reinforced bottom plate arrangement (48) allows water to flow smoothly through the water intake port (27) disposed spaced apart rearwardly from the edge of the bottom plate arrangement (48), defining a water inflow area or opening (20) of the jet propulsion drive unit (28).

12. A watercraft as claimed in at least one of the preceding claims 1 to 11, **characterized in that** a bow (49) and a stern (40) of the jet propulsion drive boat (2) are supported to be biased downwardly in order to put the bottom plate (25) of the drive boat (2) around its water intake opening (27) of the water jet propulsion unit (28) in close contact on the bottom plate arrangement (48) of the watercraft (1), thus avoiding air from entering into the water intake duct (29) of the jet propulsion drive unit (28) of the driving boat (2) through a clearance between the bottom plates of the drive boat (2) and the watercraft (1).

13. A watercraft as claimed in claim 12, **characterized in that** the bottom plate arrangement (48) of the watercraft (1) comprises at least a dent (72) in order to receive a projection (73) of the jet propulsion drive boat (2) so that the bottom plate (25) around a water intake opening (27) of the drive boat (2) is put

closely on the bottom plate arrangement (48) and an associated water inflow opening (20) or water suction area (52) of the watercraft (1).

14. A watercraft as claimed in at least one of the preceding claims 1 to 13, **characterized in that** the docking area (18a) comprises bumper means (23) in order to snugly accommodate the docked jet propulsion drive boat (2).

15. A watercraft as claimed in at least one of the preceding claims 1 to 14, **characterized in that** the docking area (18a) comprises support means (78) in order to receive an outboard marine engine (80) wherein a propelling drive means (85) thereof extends through the water inflow opening (20) of the bottom plate arrangement (48) of the watercraft (1).

16. A watercraft as claimed in at least one of the preceding claims 1 to 15, **characterized in that** a ladder (64) is provided at the stern portion which is adapted to hold the docked drive boat (2) downward and enables a driver to sit on the ladder (64) to operate the docked drive boat (2).

17. A watercraft as claimed in at least one of the preceding claims 1 to 16, **characterized in that** the docking area (18a) is closeable at the stern portion thereof in order to provide a play lot for the users of the watercraft (1).

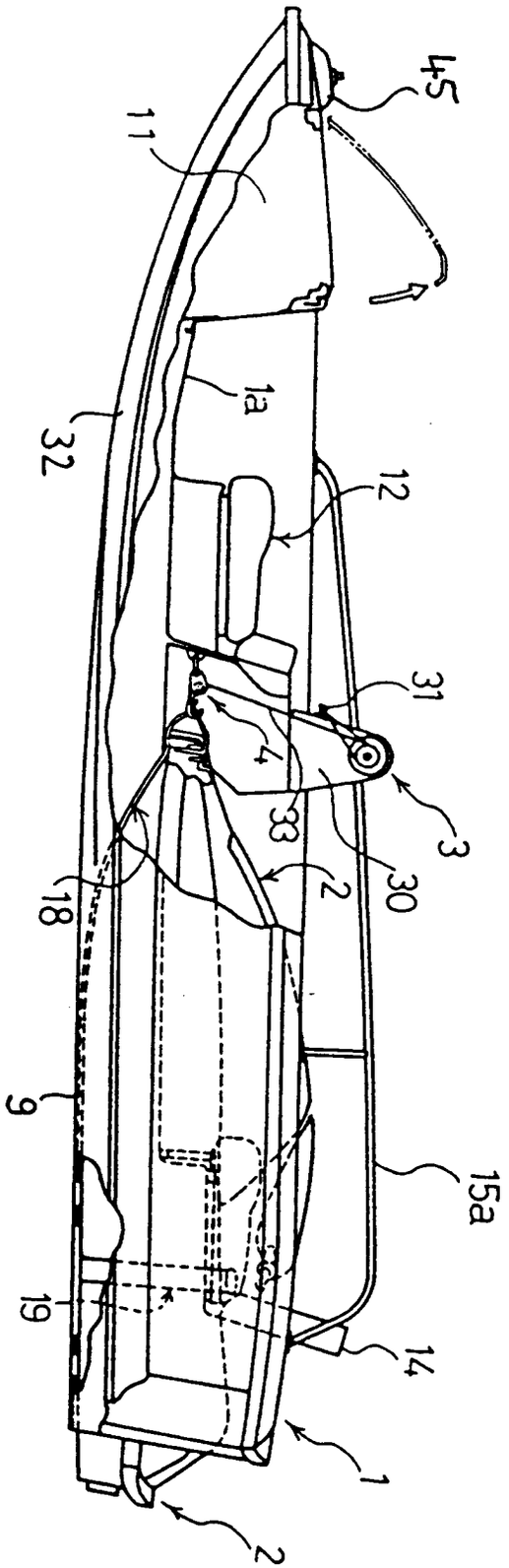

Fig. 1

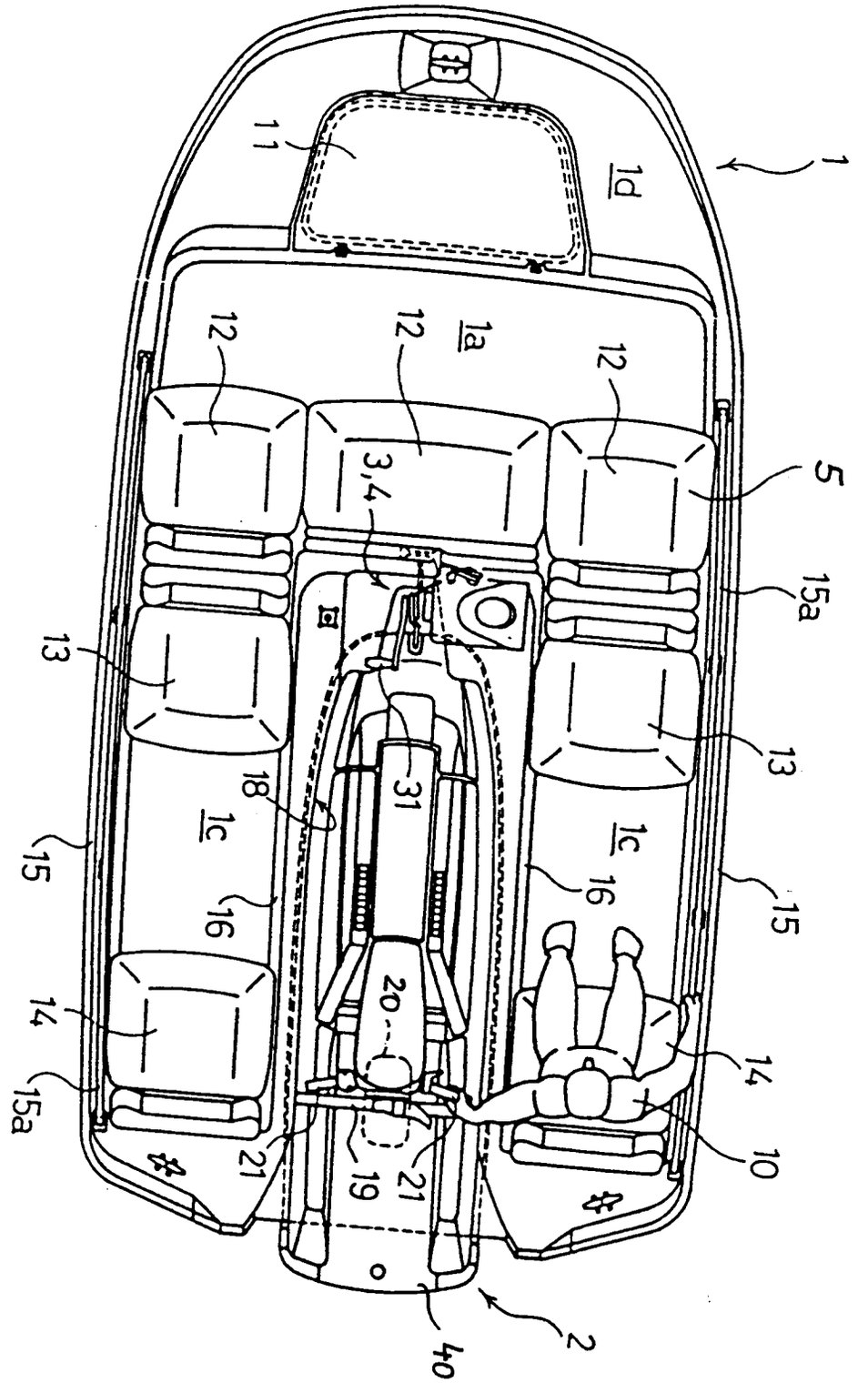
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Fig. 2

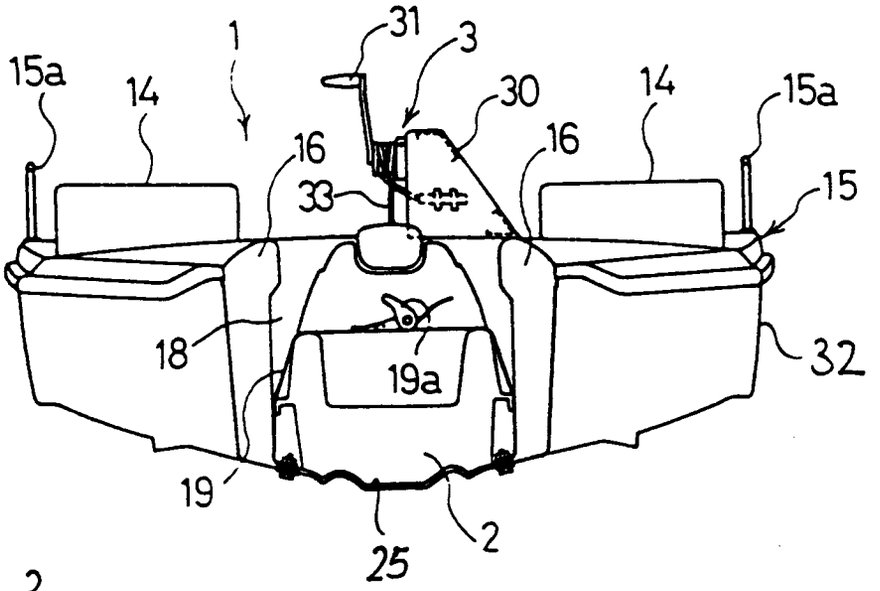
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Fig. 3

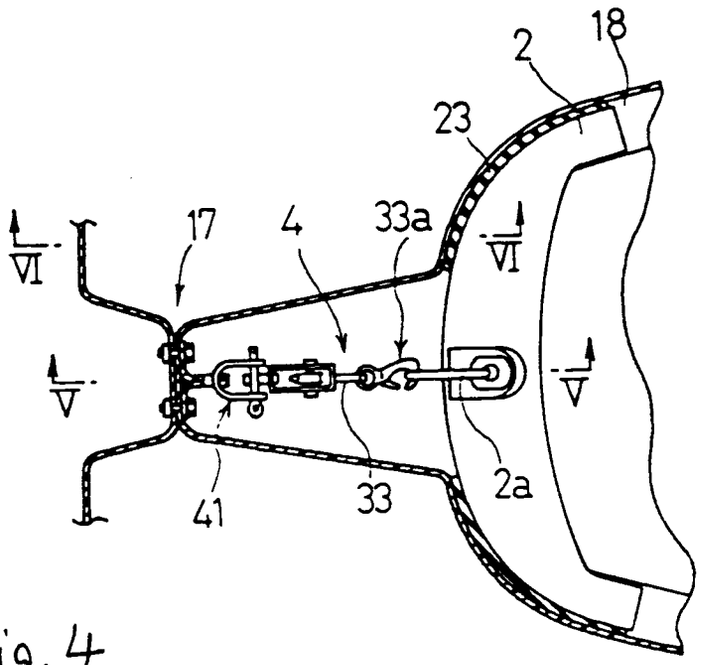
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Fig. 4

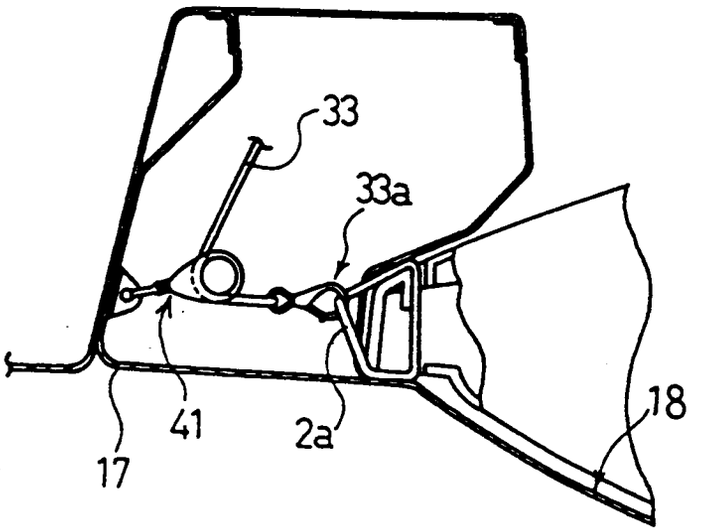


Fig. 5

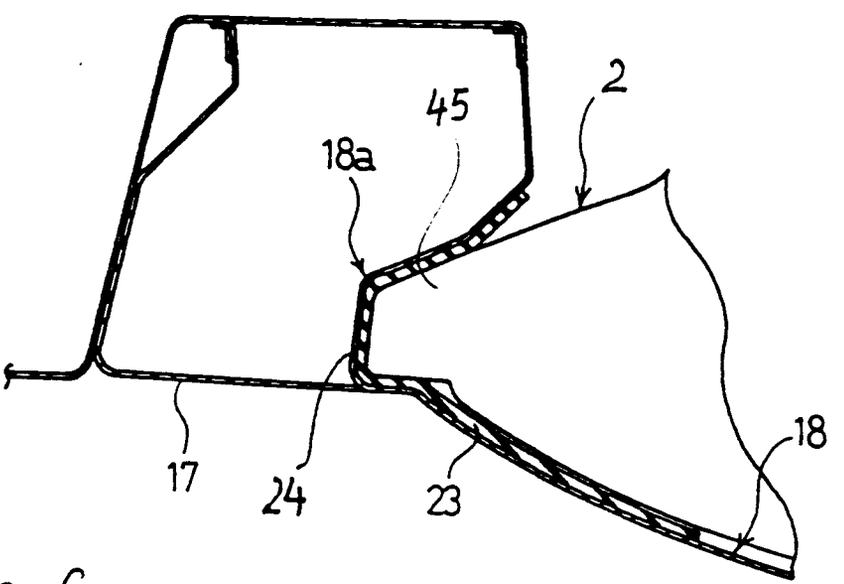
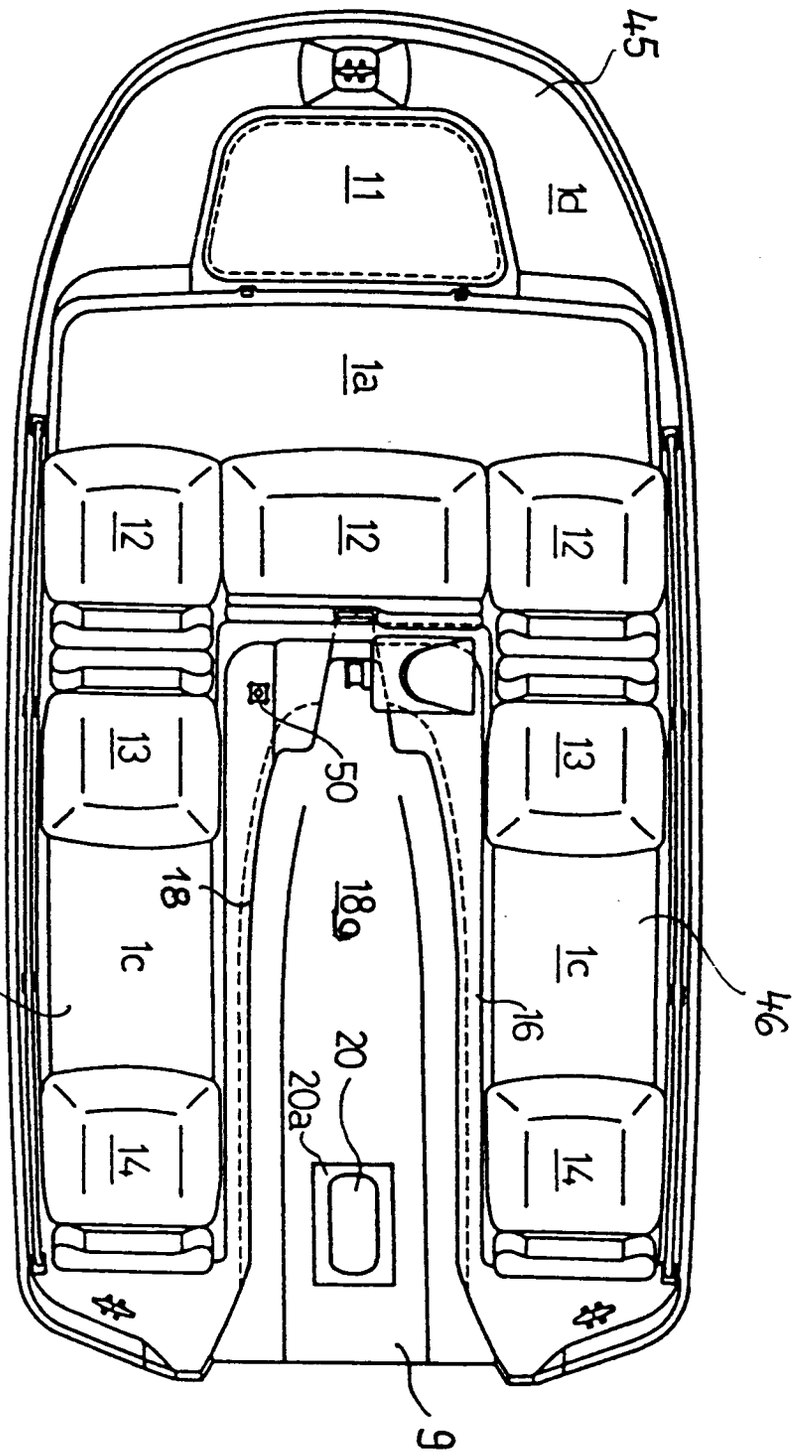


Fig. 6

Fig. 7



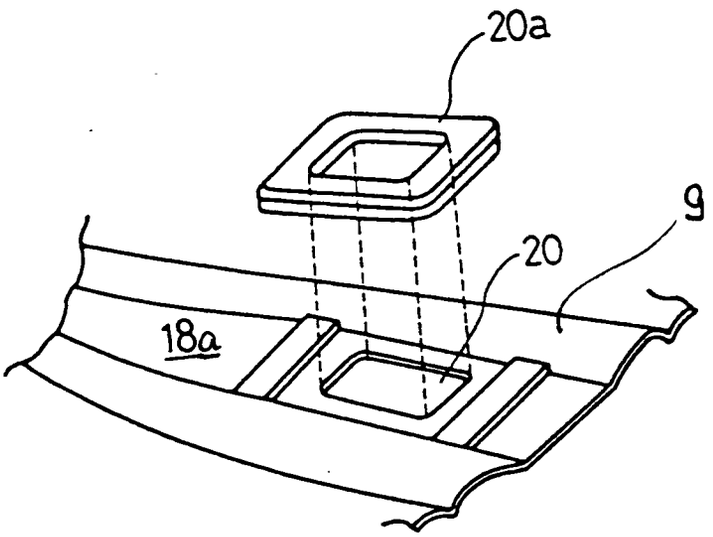
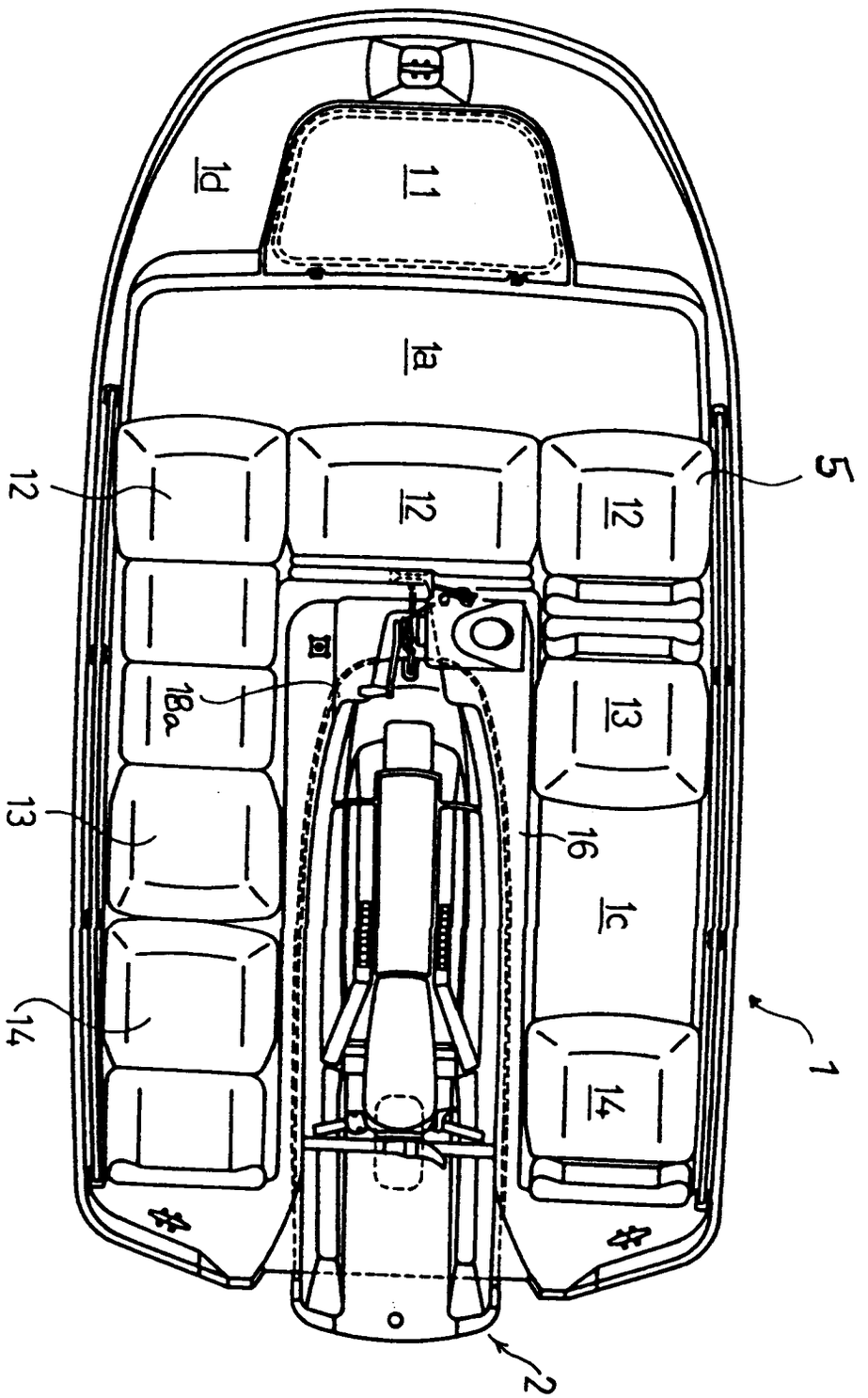


Fig. 8

Fig. 9



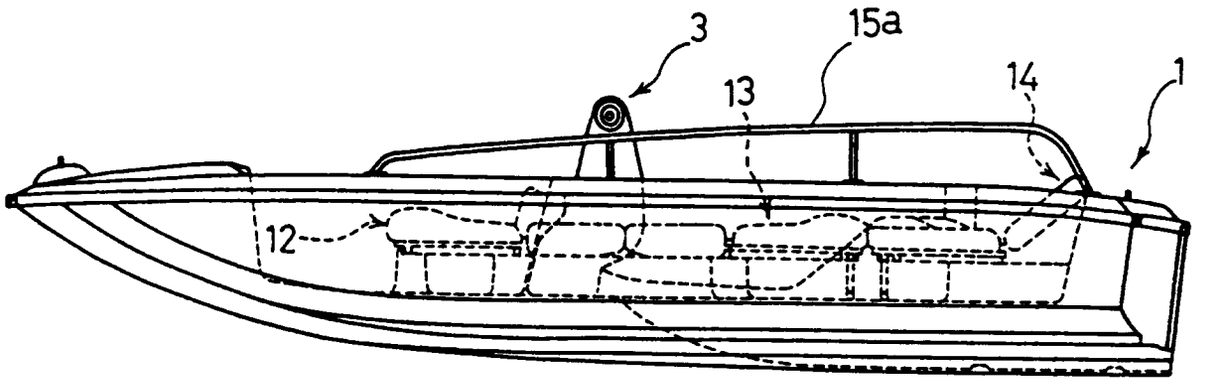


Fig. 10

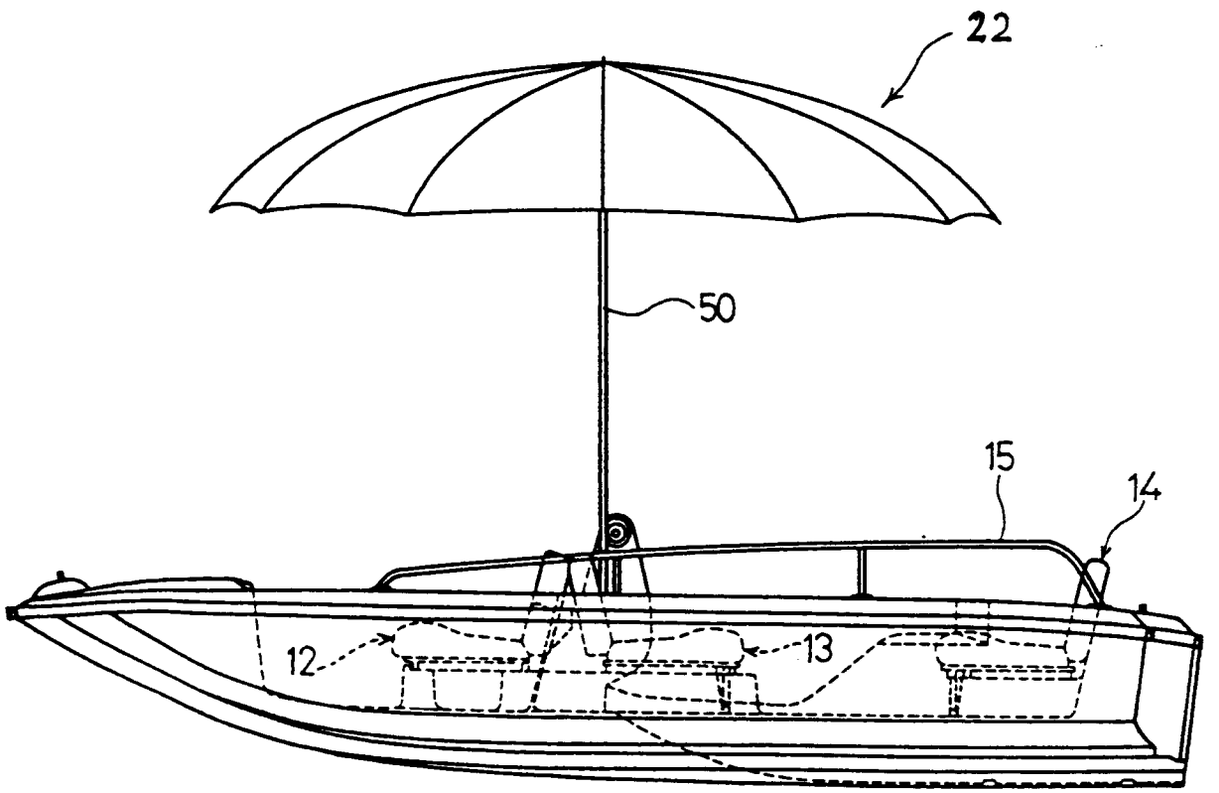


Fig. 11

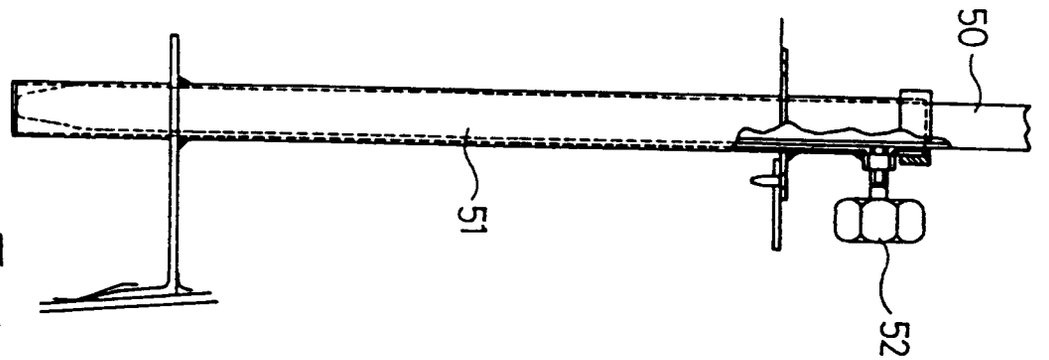
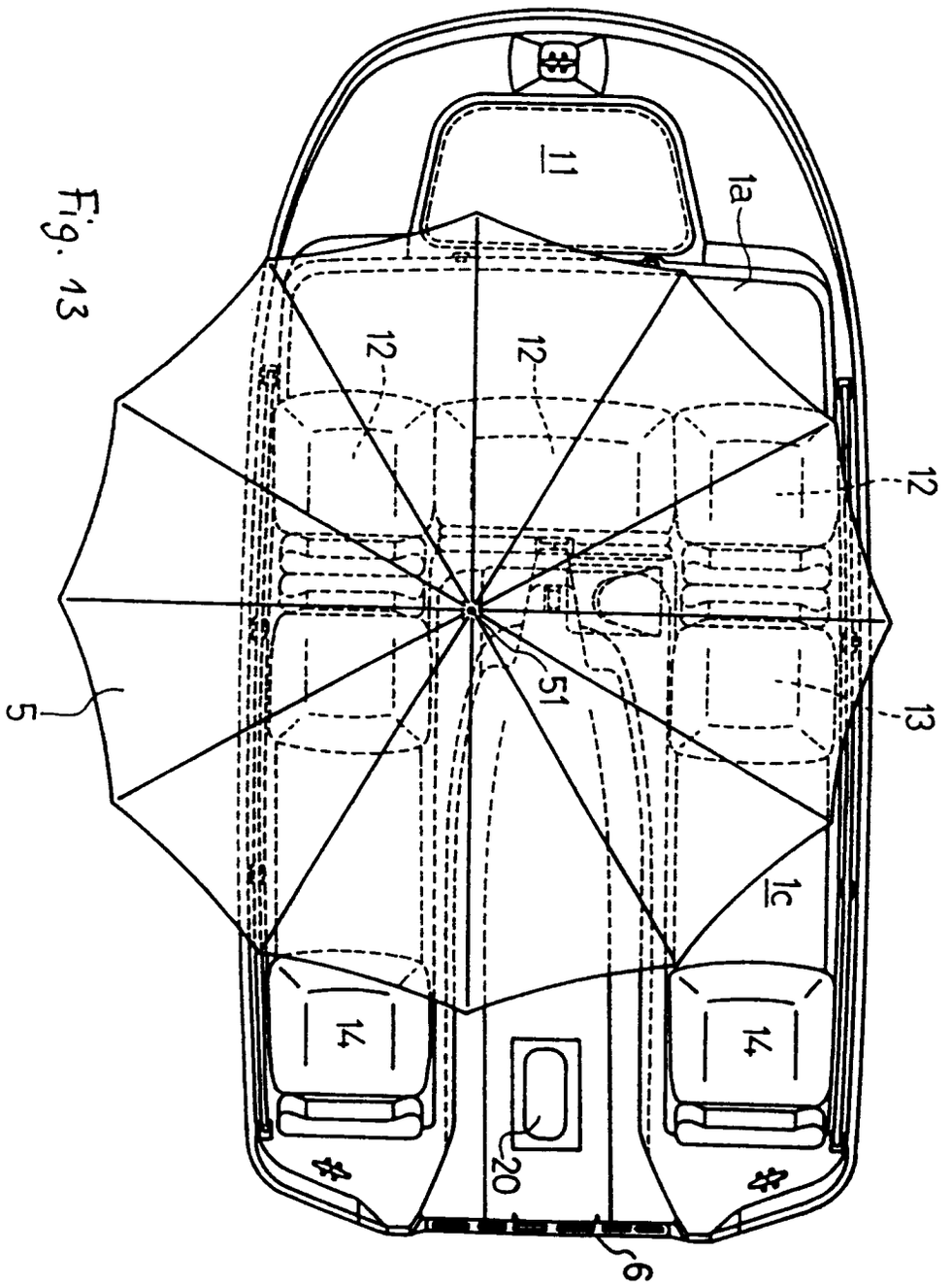


Fig. 12



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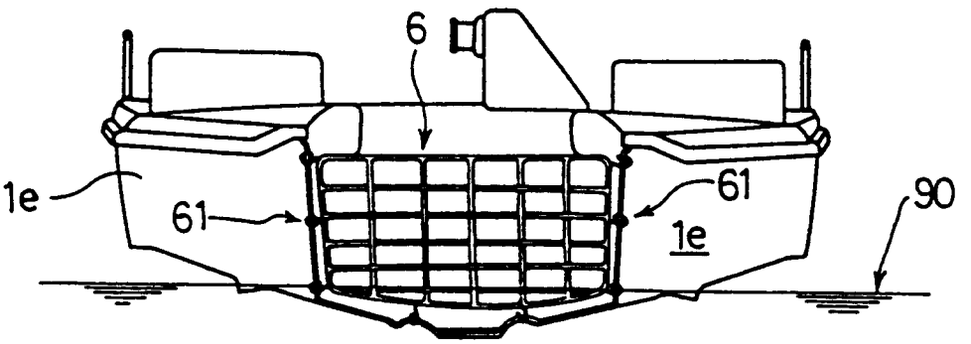


Fig. 14

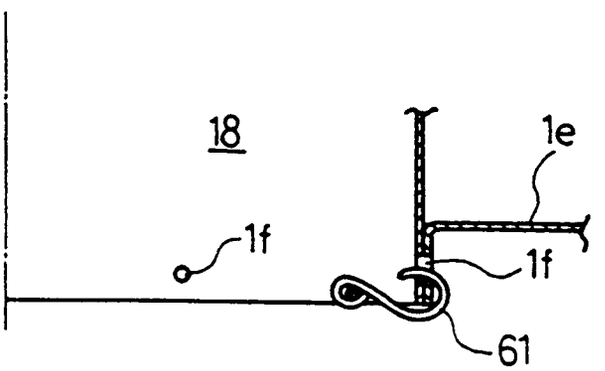
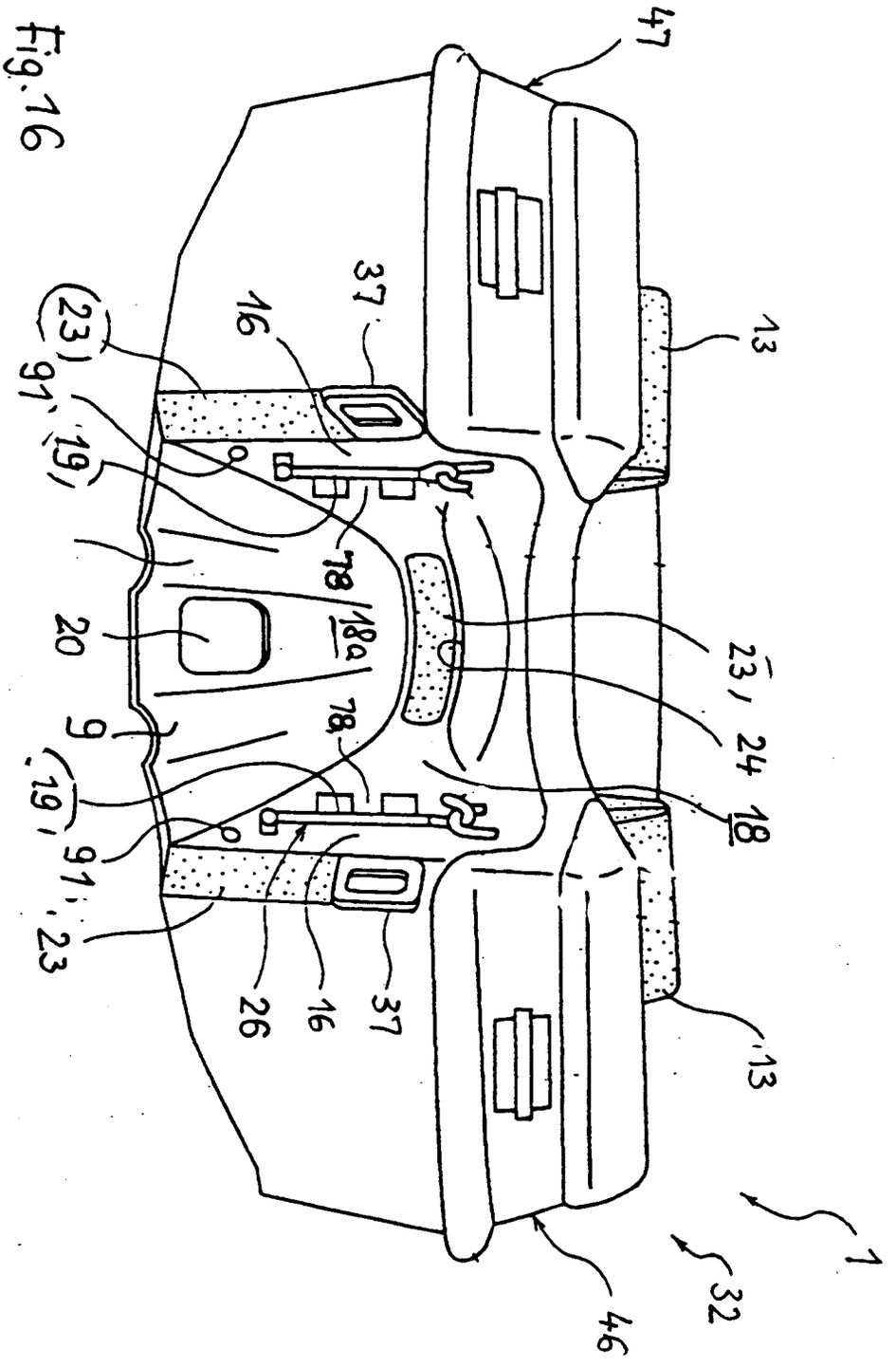


Fig. 15

Fig.16



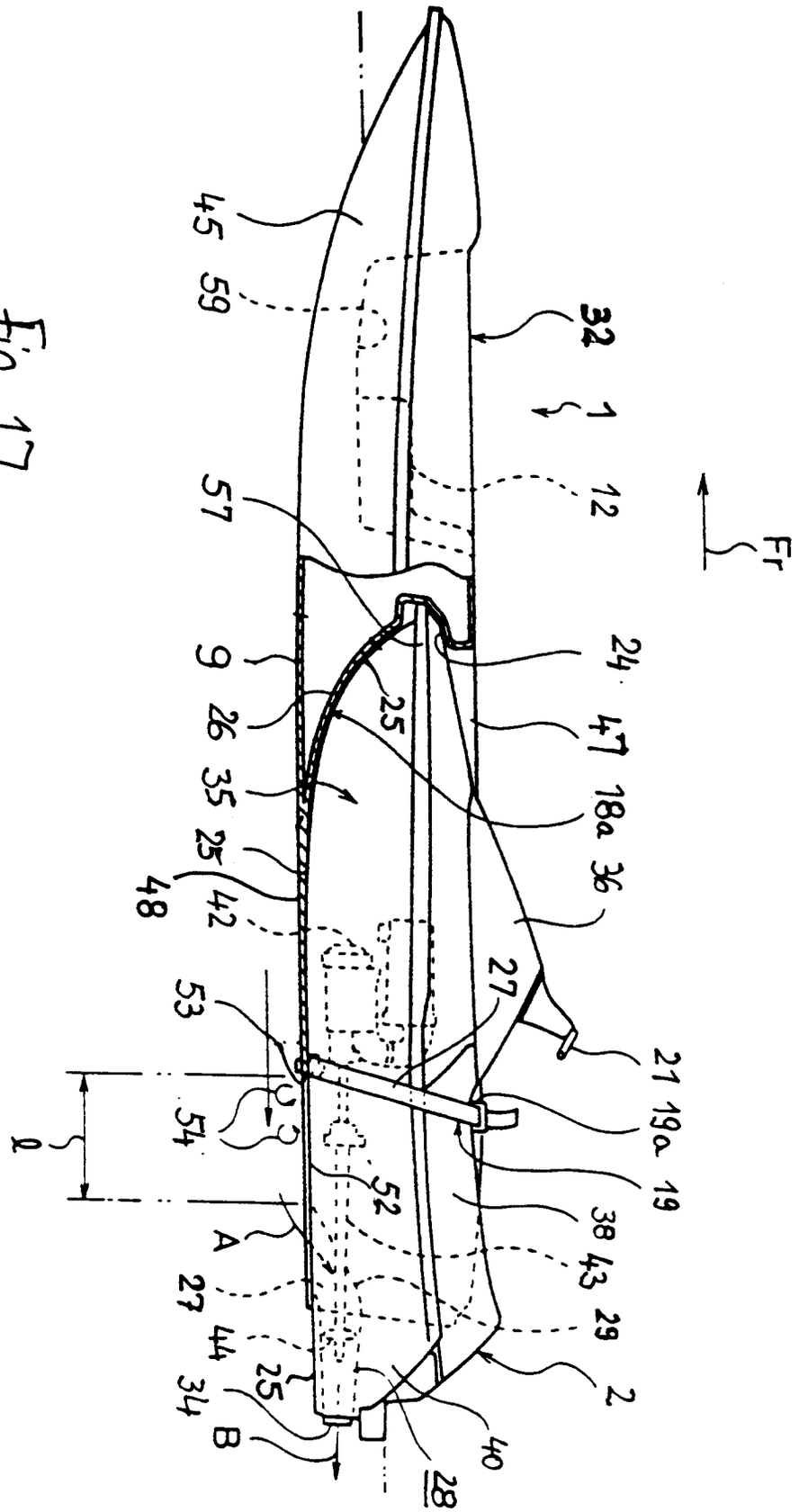

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Fig. 17

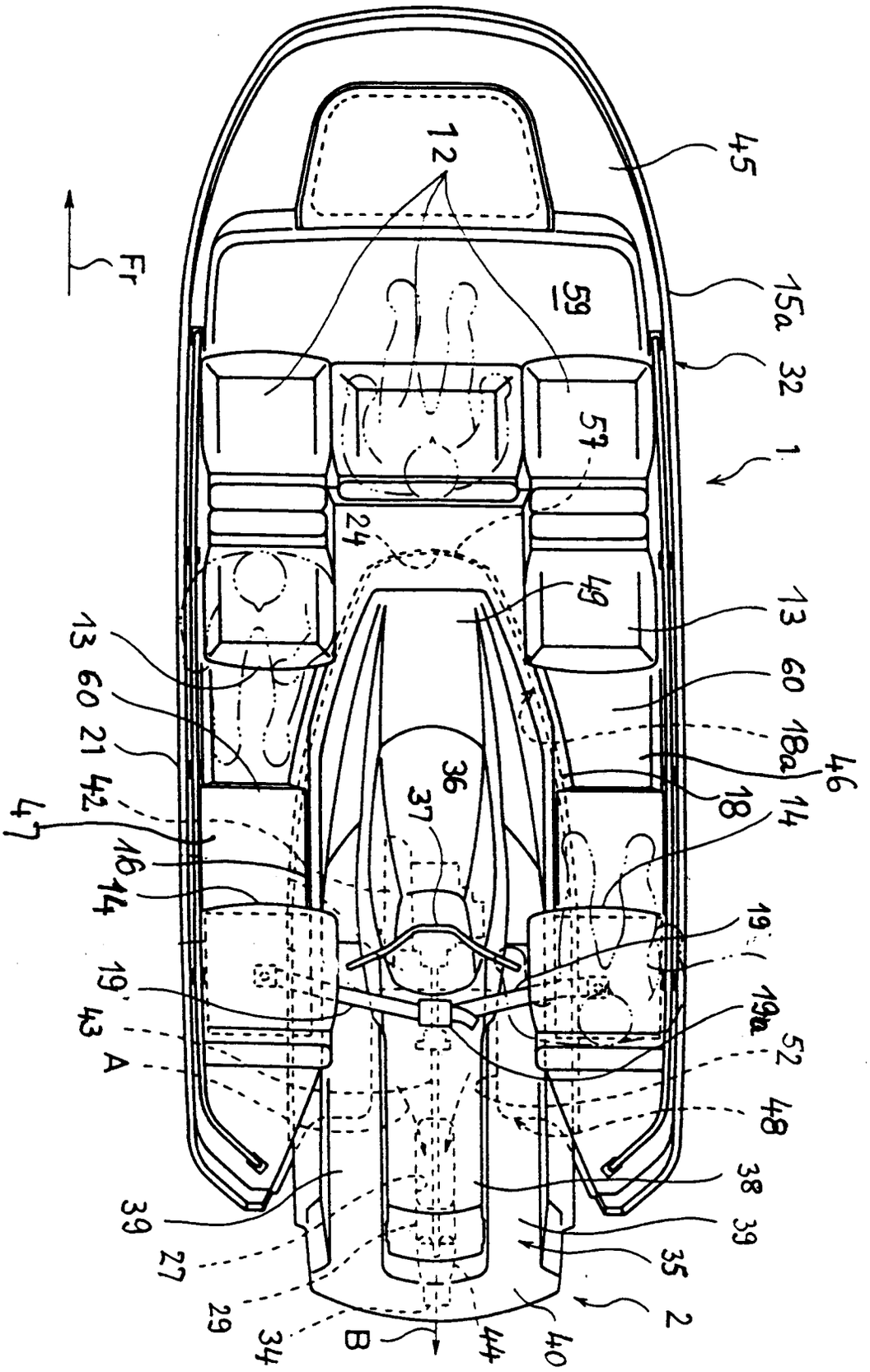
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Fig. 18

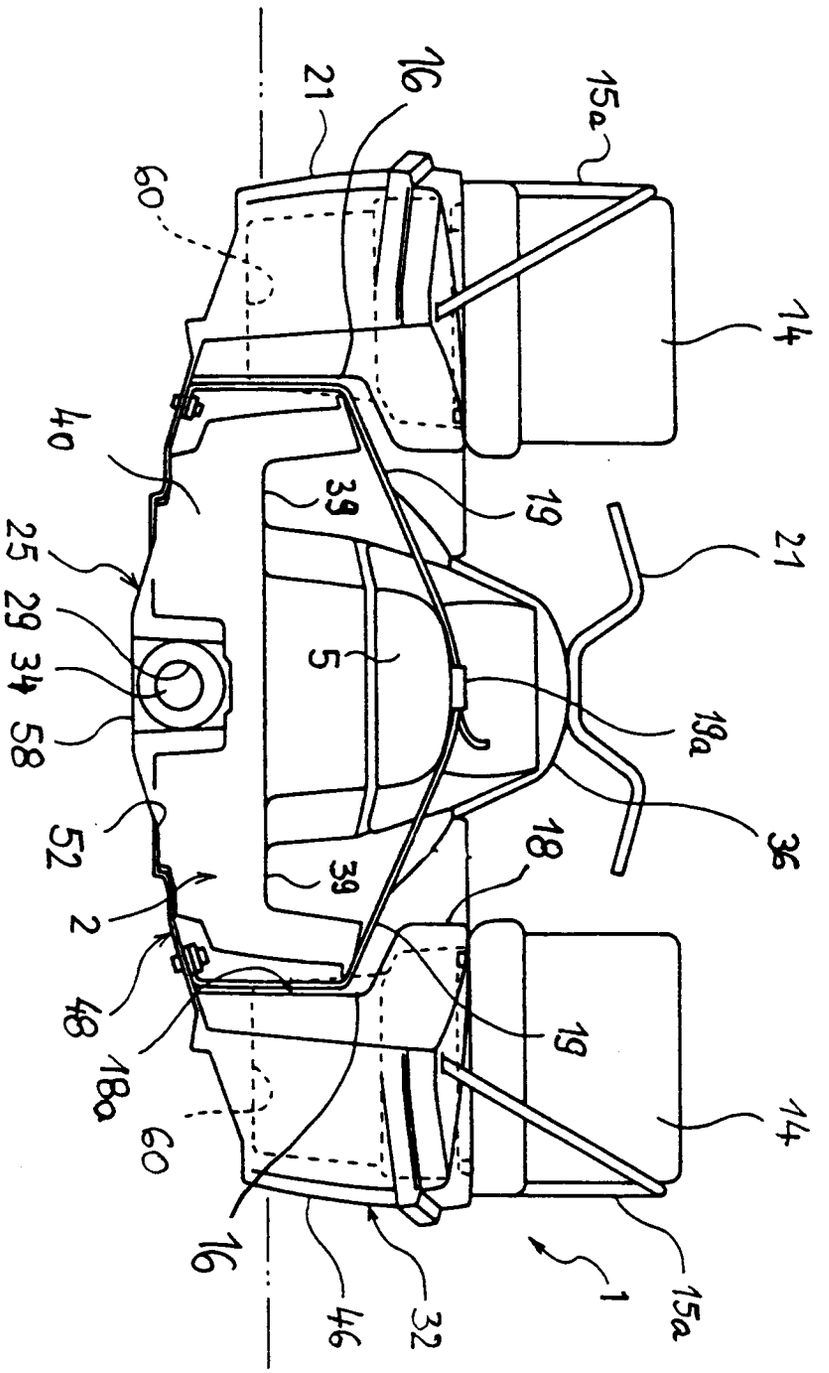
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Fig. 19

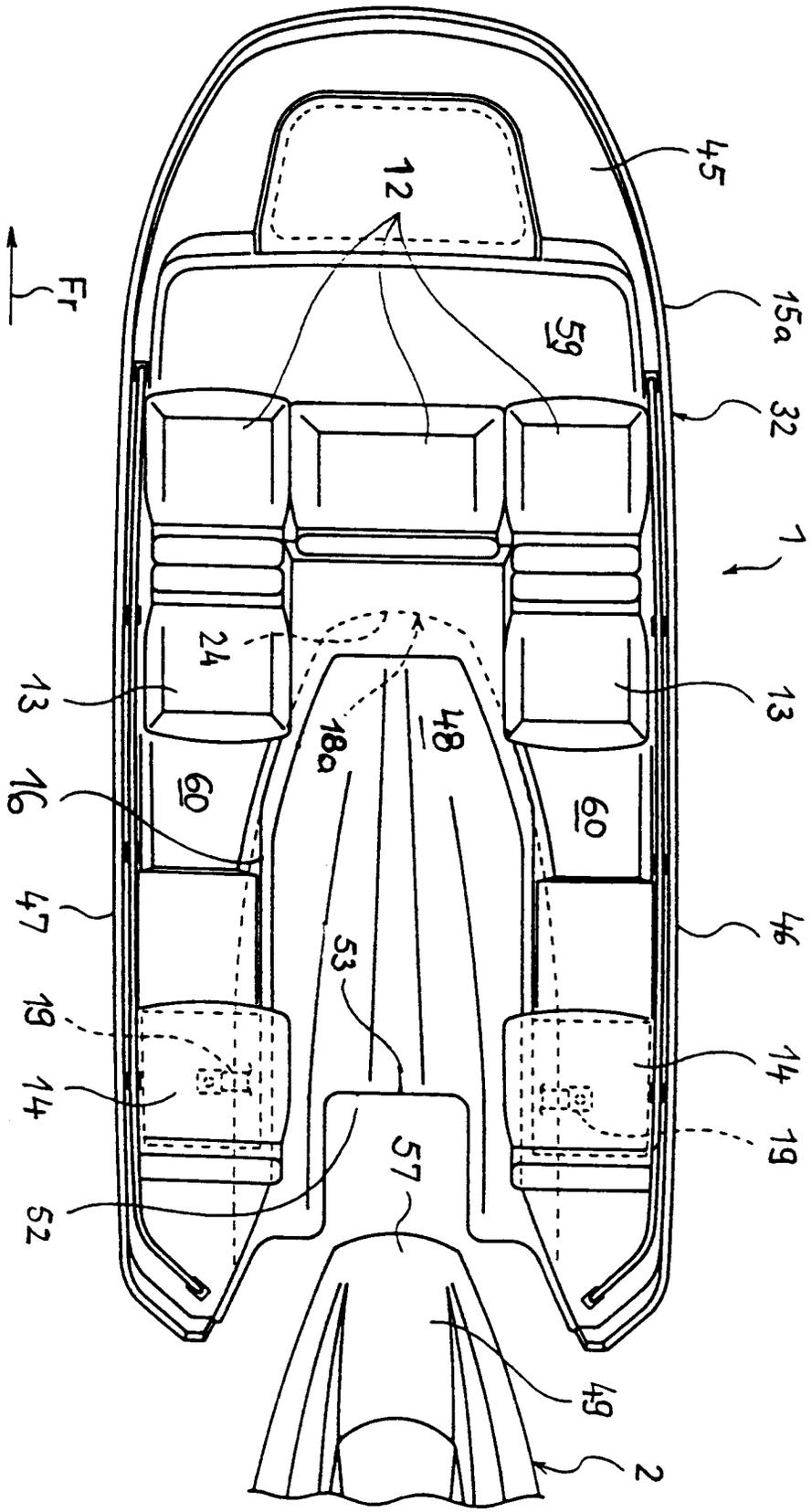
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Fig. 20

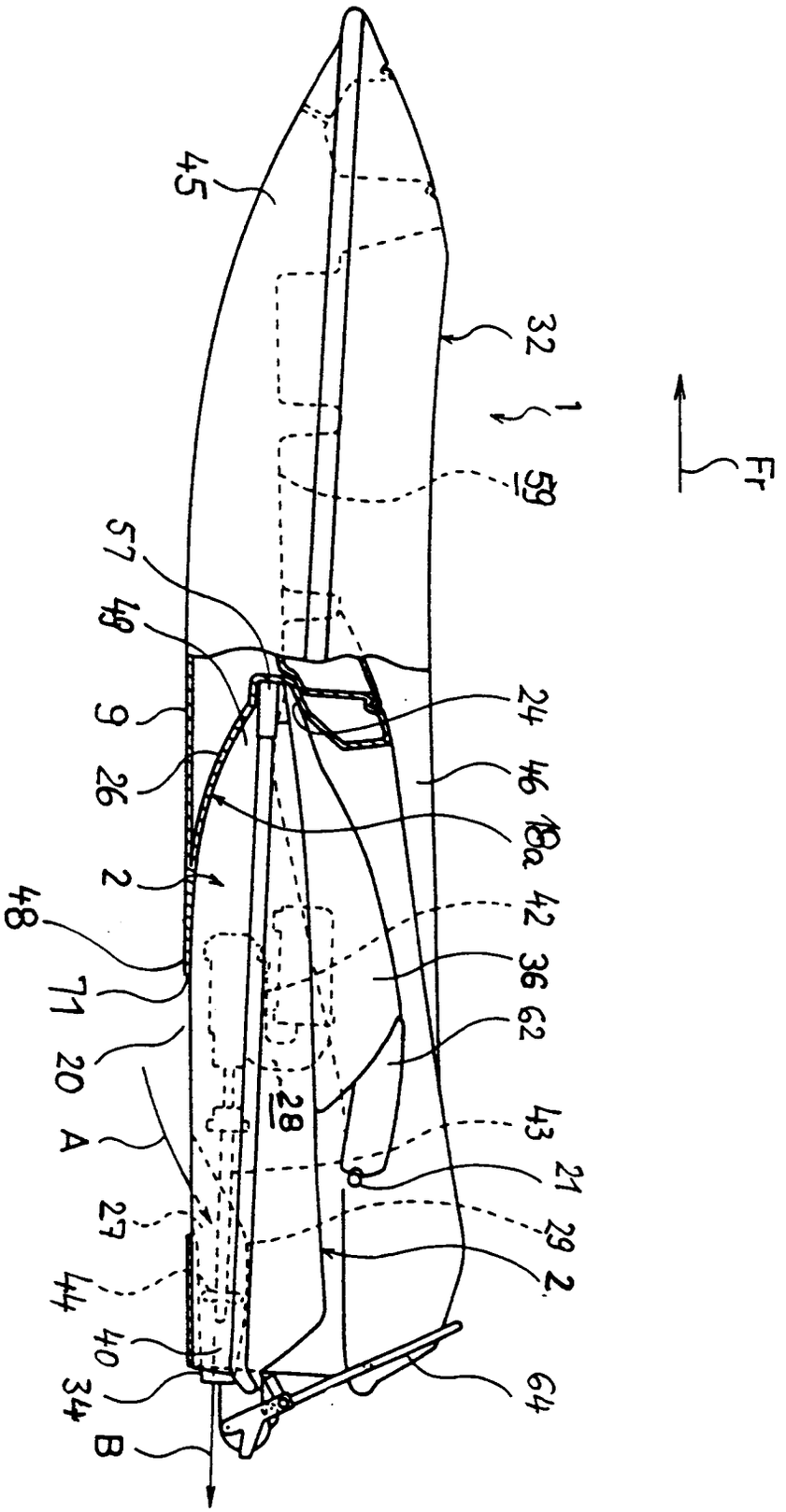
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Fig. 21

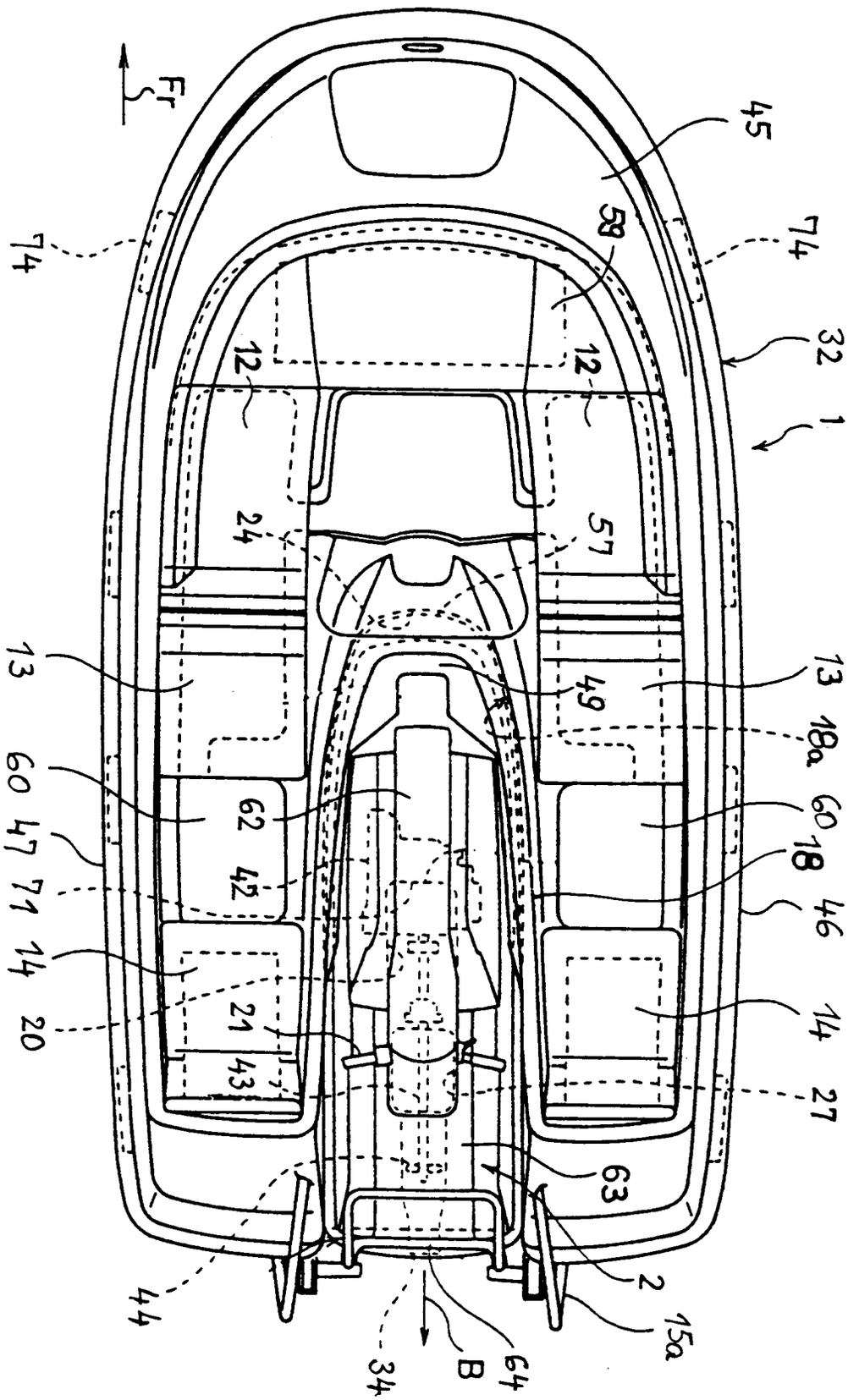
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Fig. 22

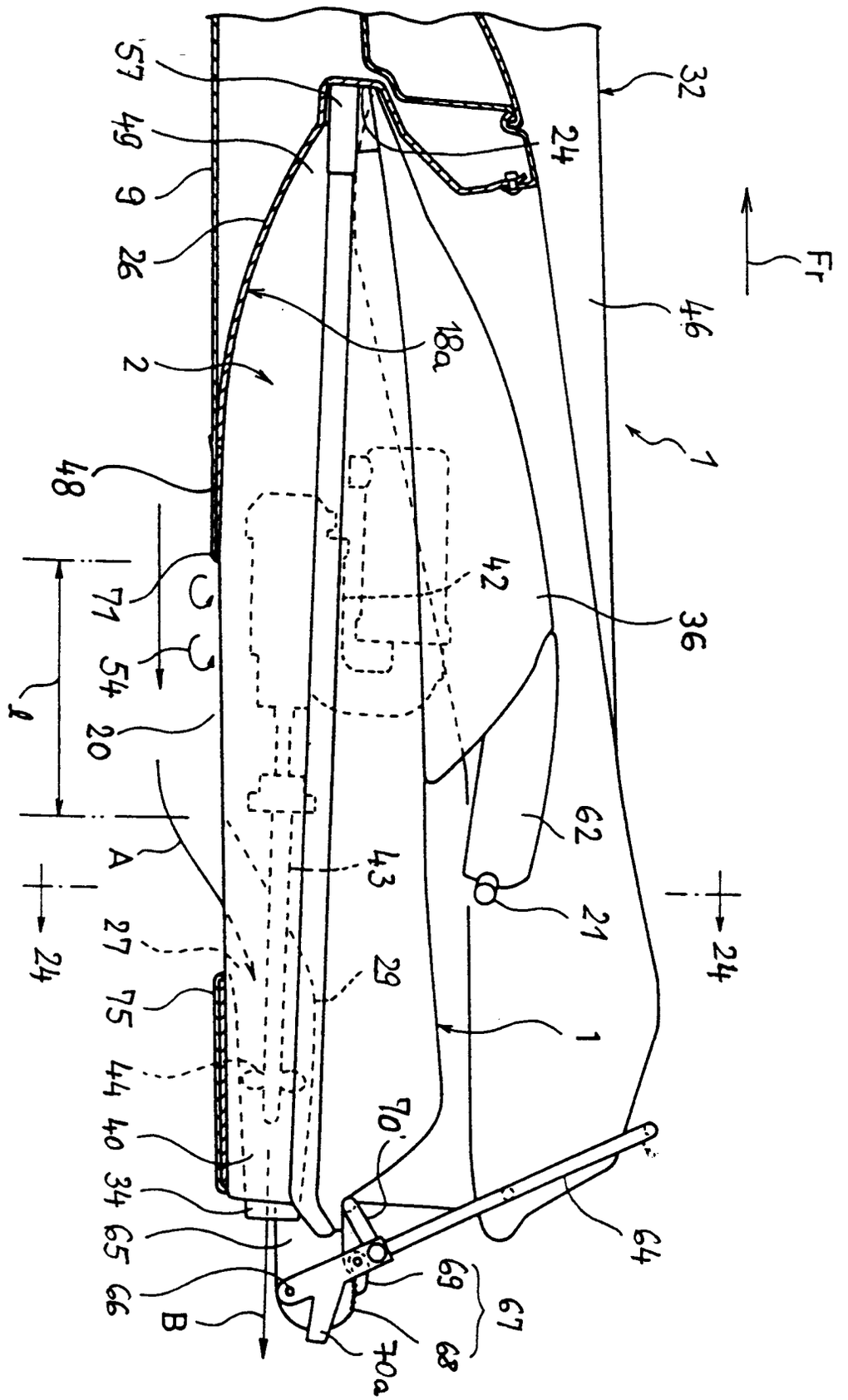
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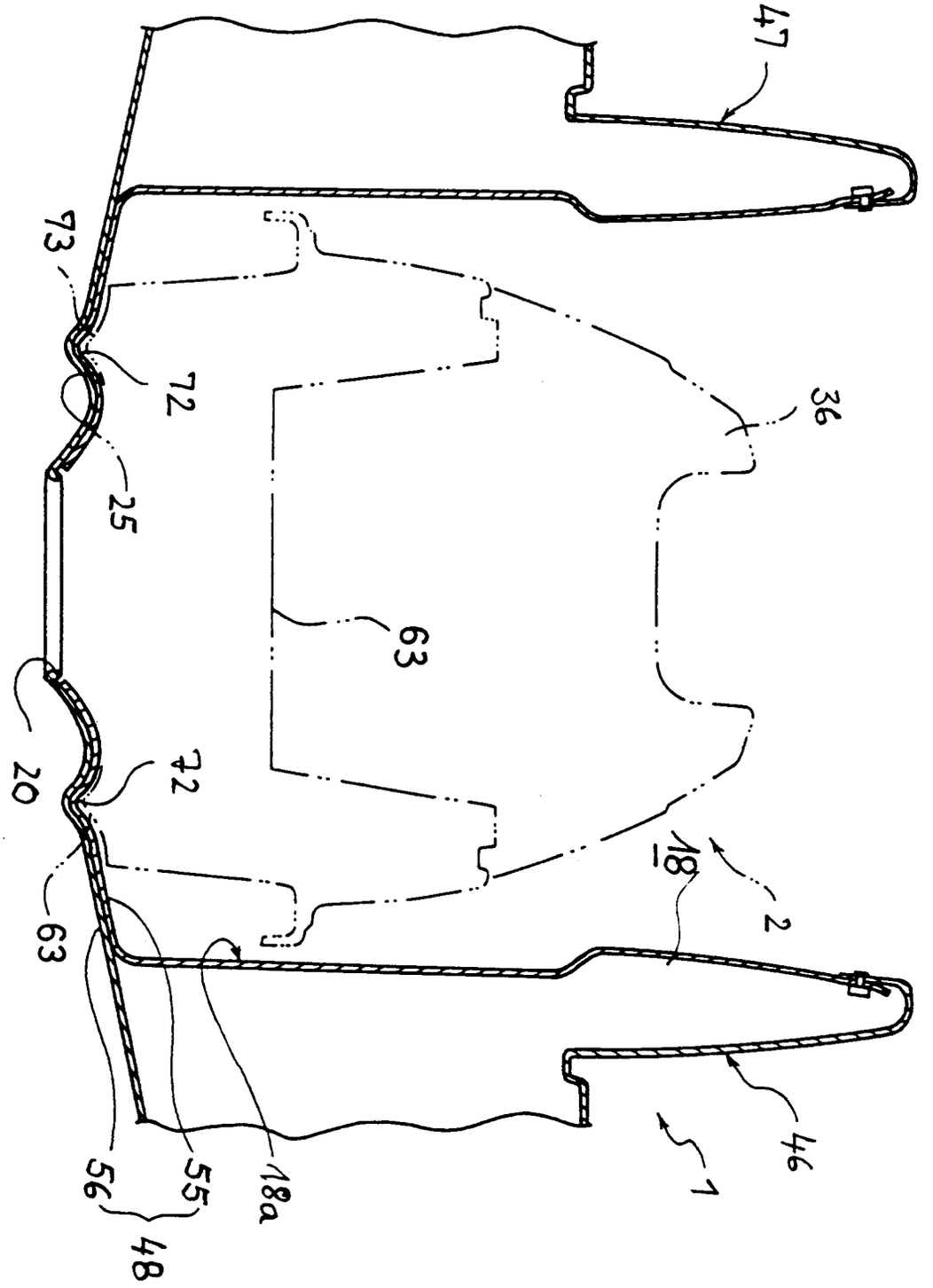
Fig. 23

Fig. 24



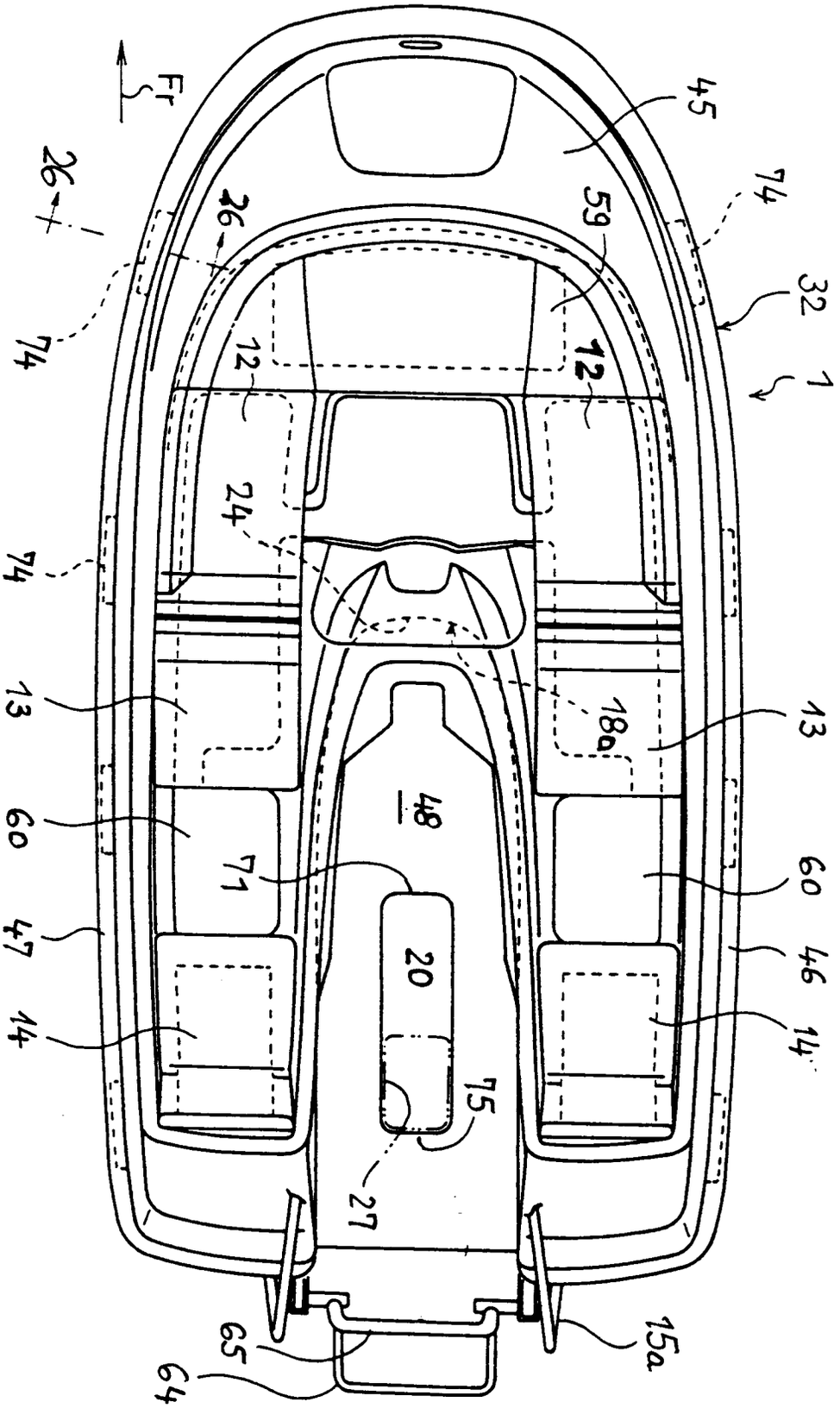


Fig. 25

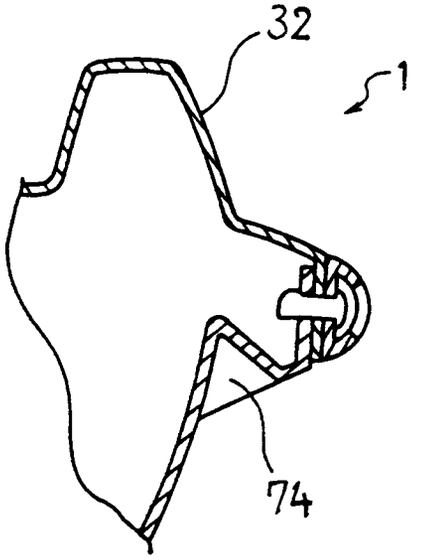
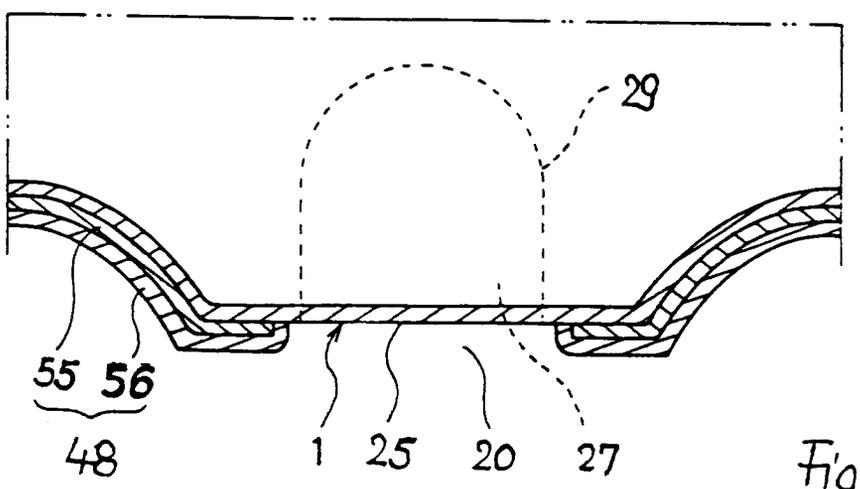


Fig. 26



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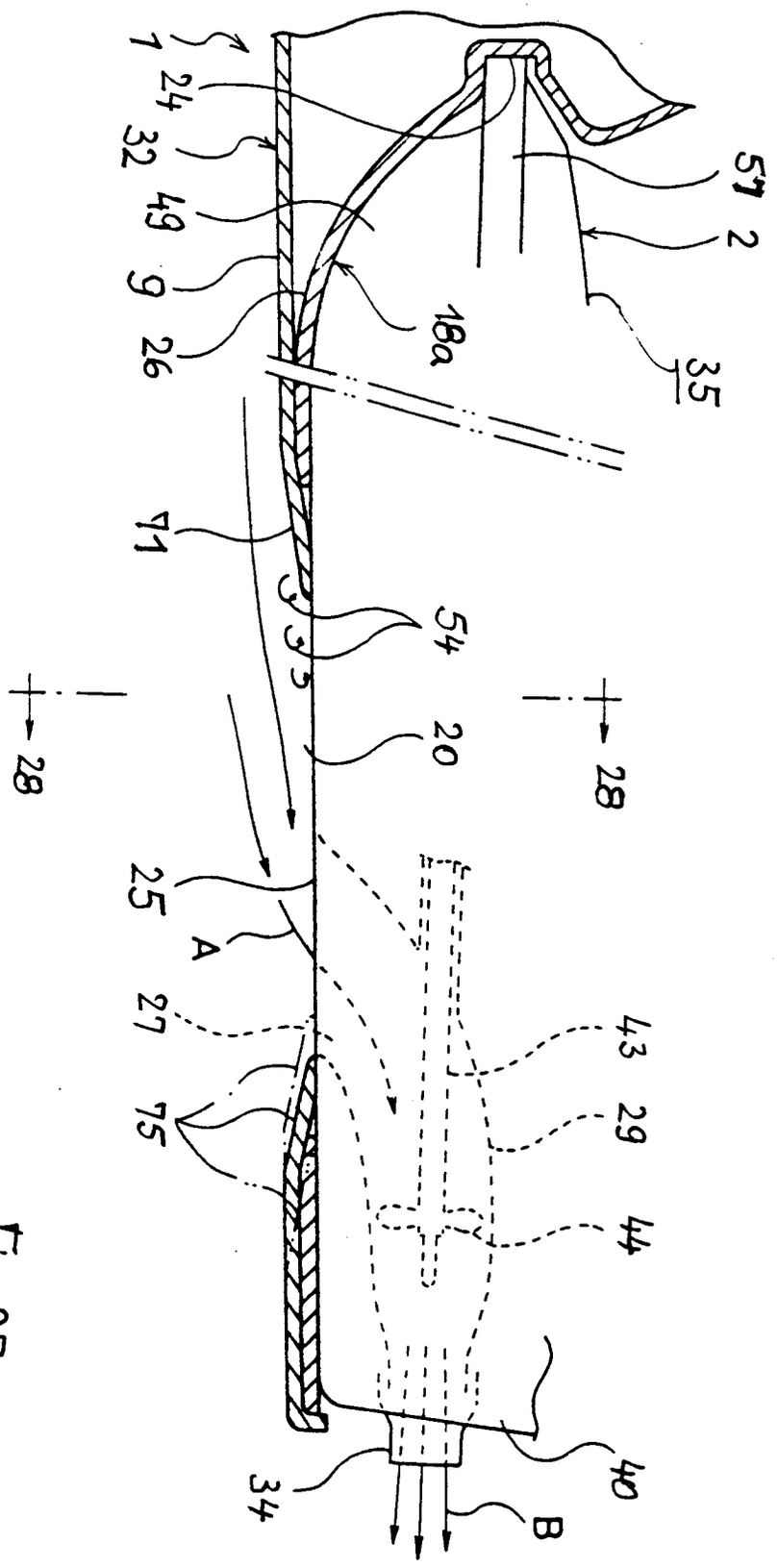

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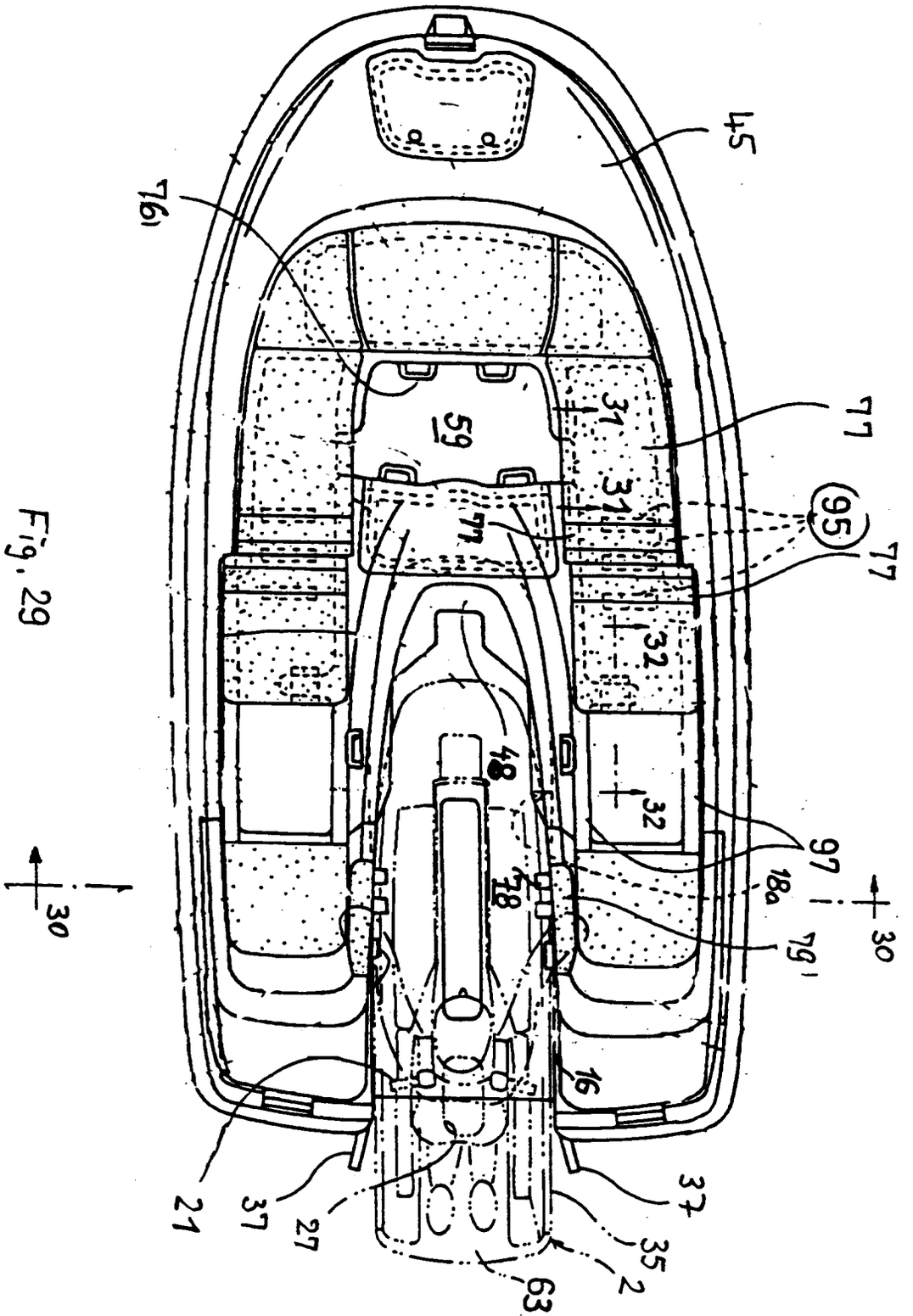

Fig. 29

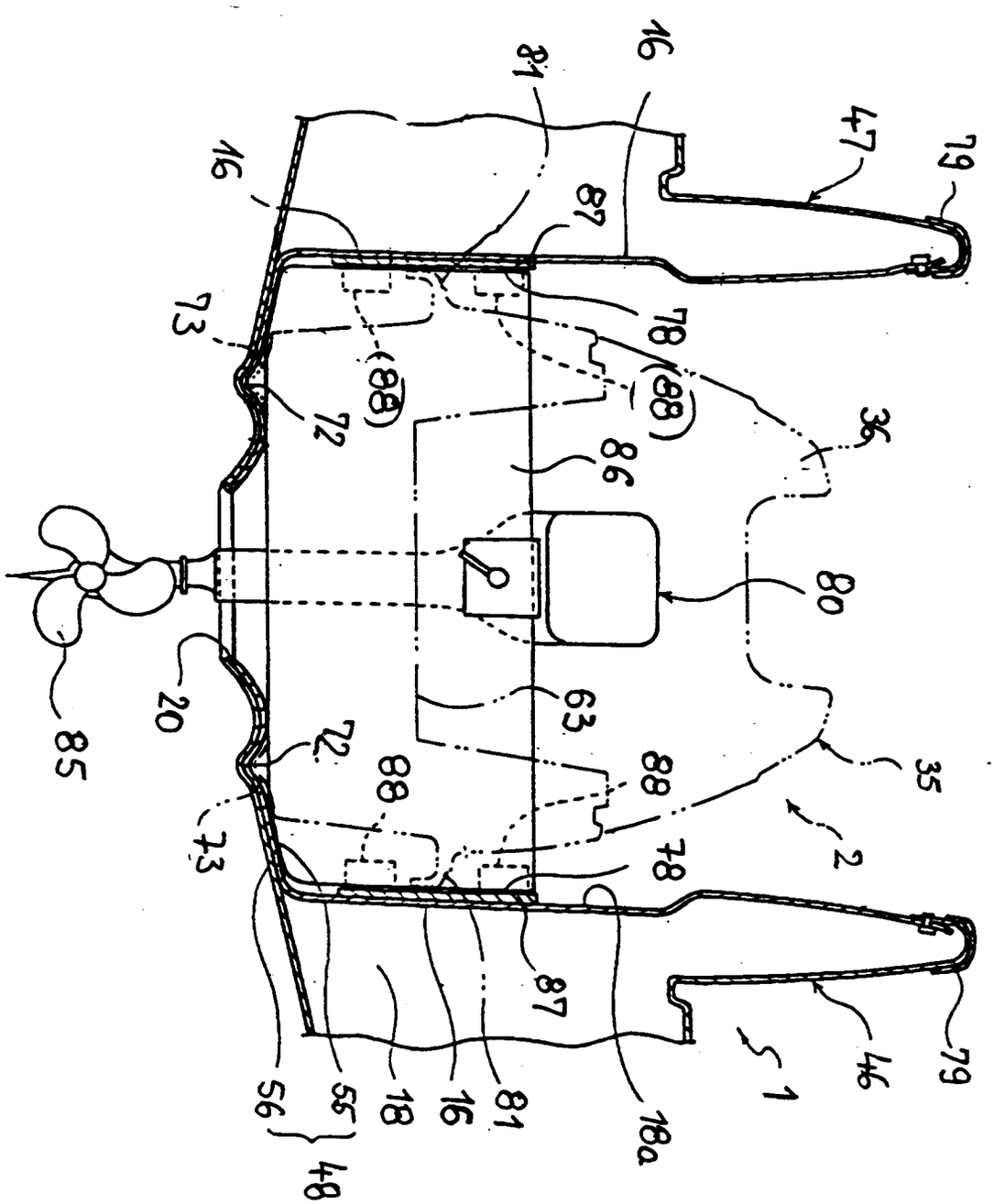
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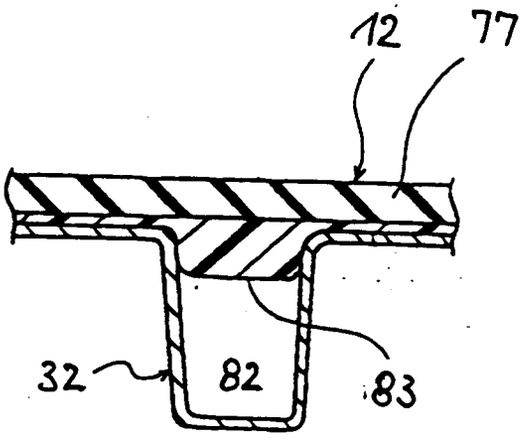
Fig. 30



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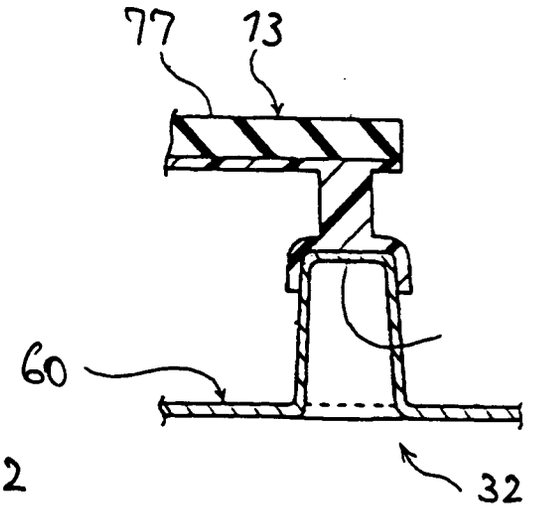

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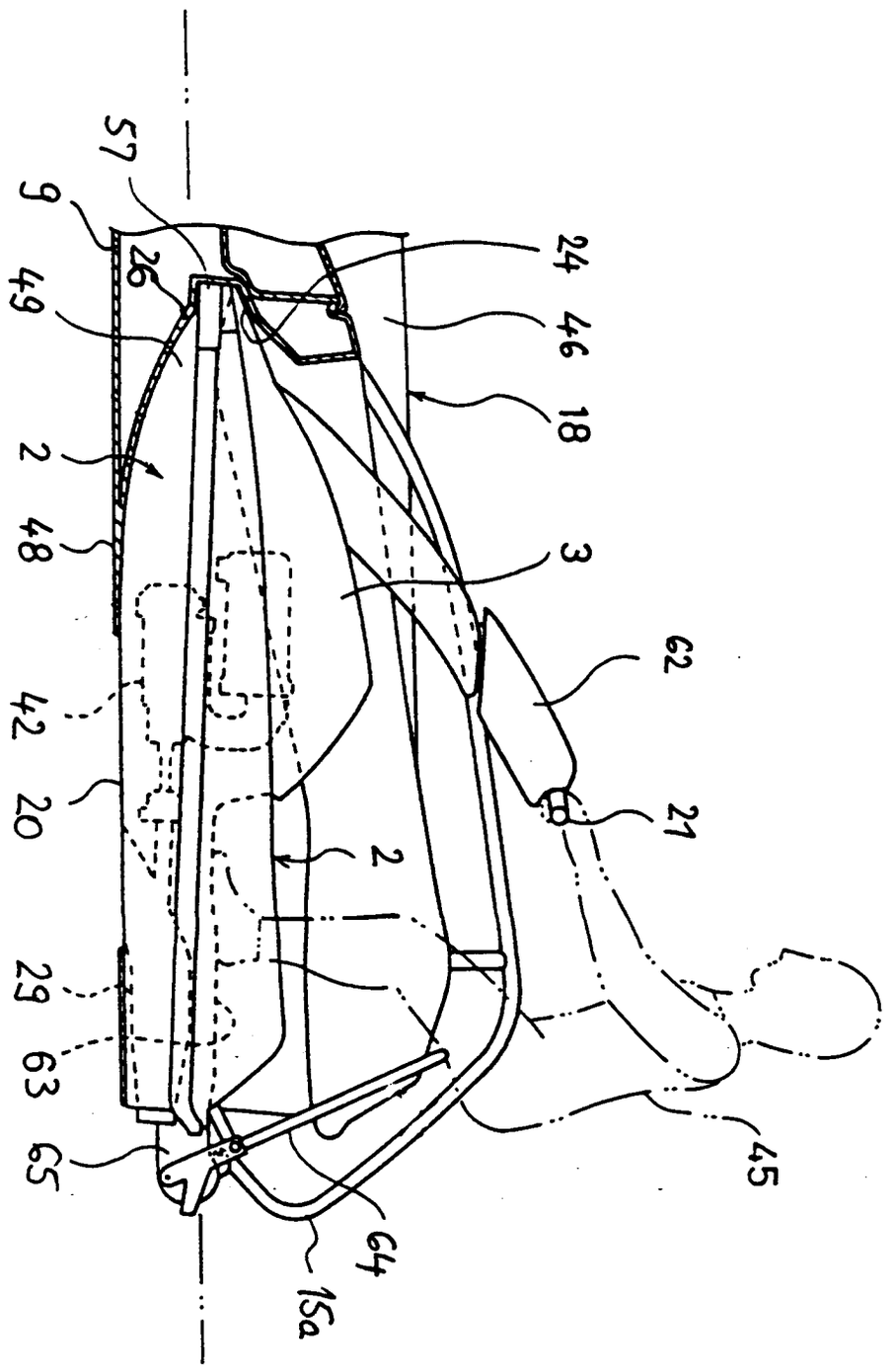
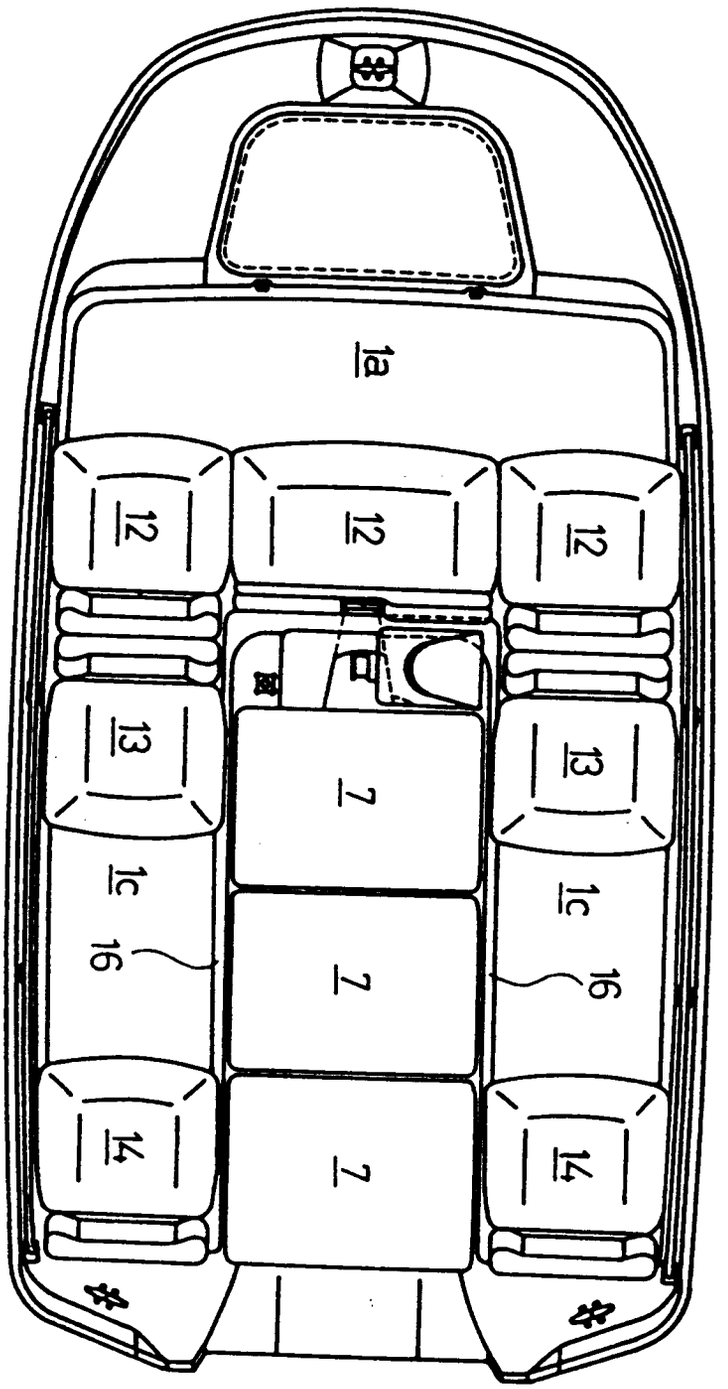


Fig. 33

Fig. 34



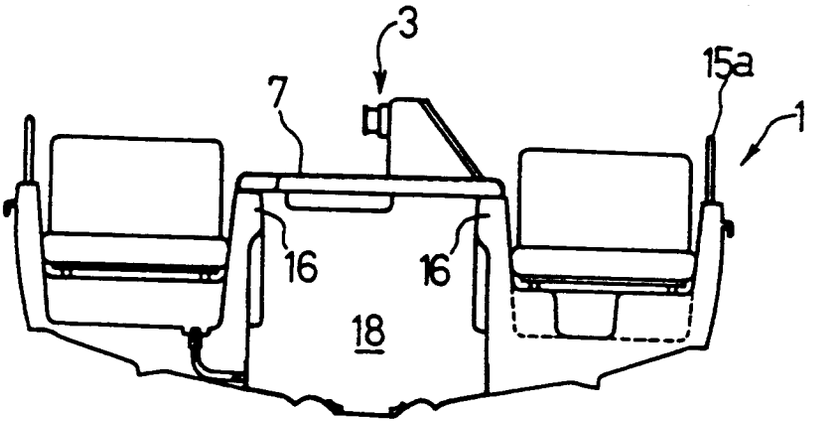


Fig. 35

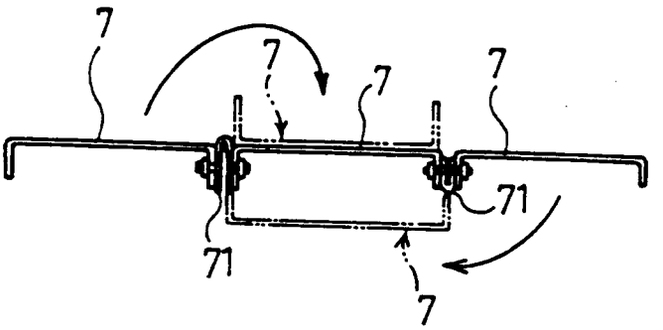


Fig. 36

Fig. 37

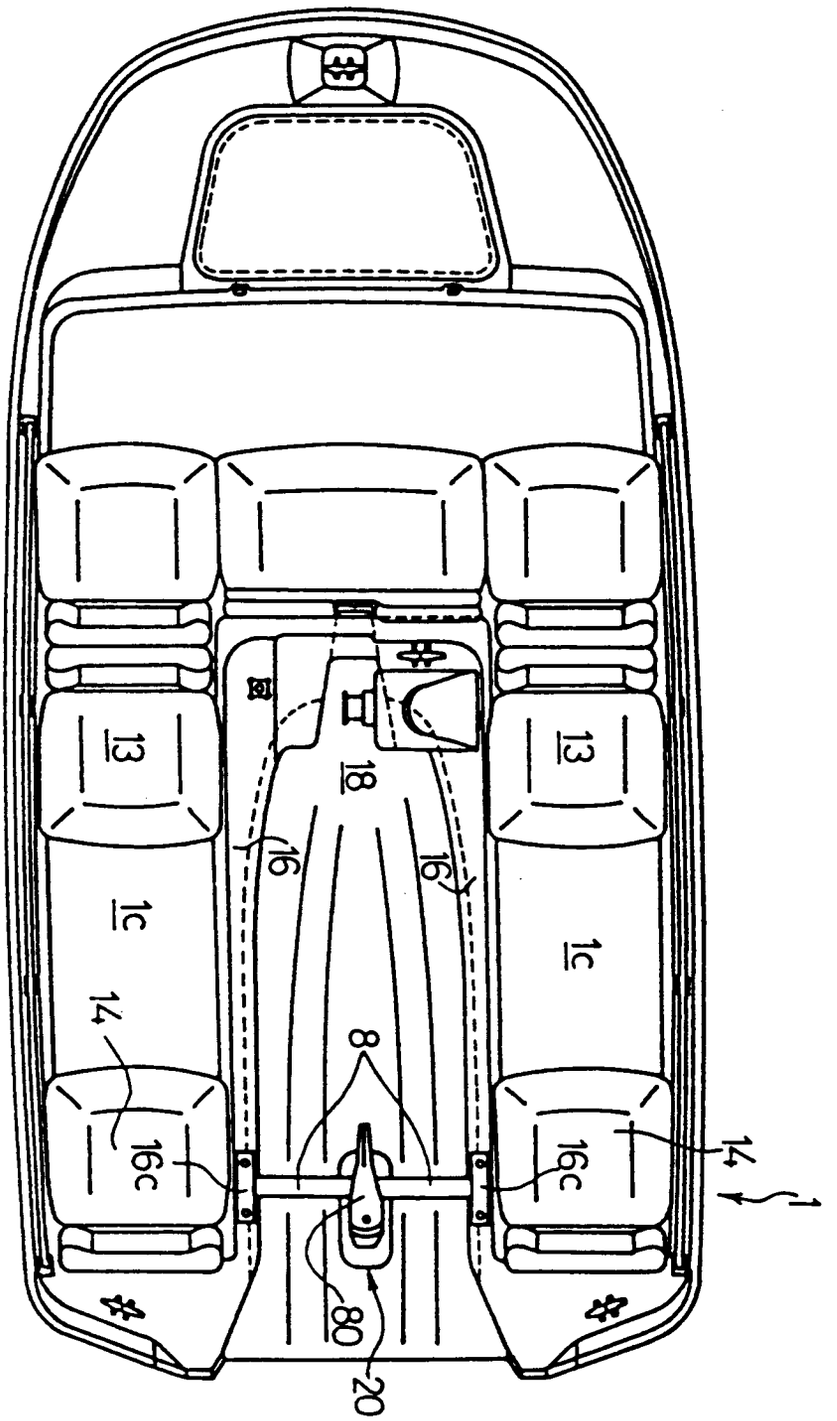
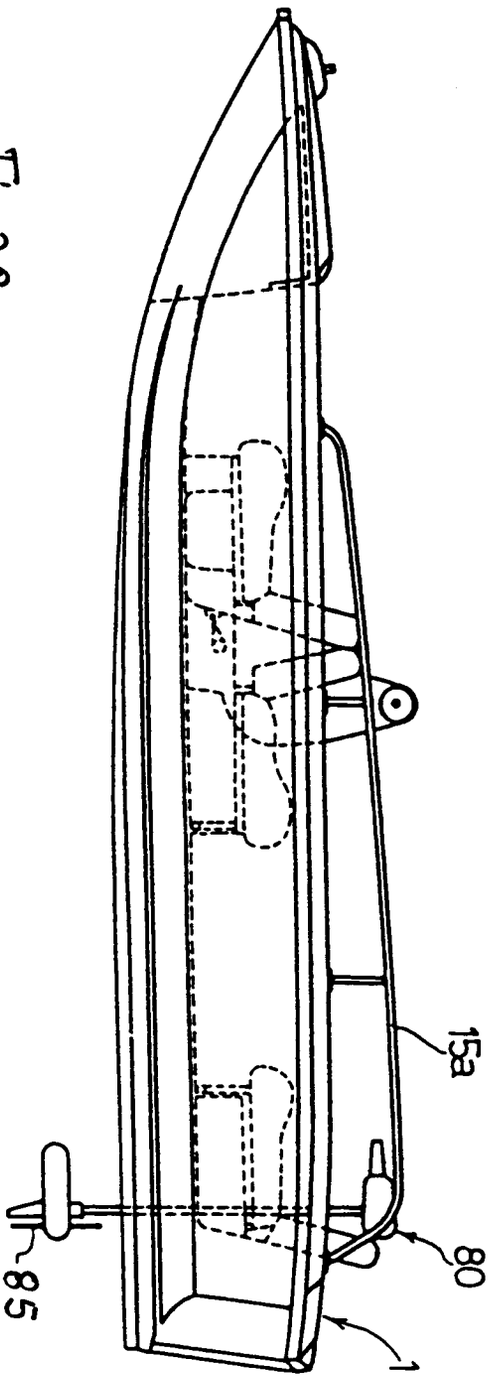


Fig.38



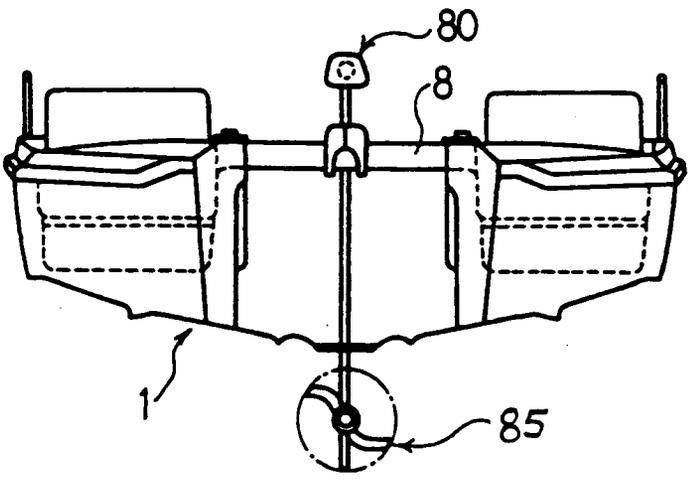
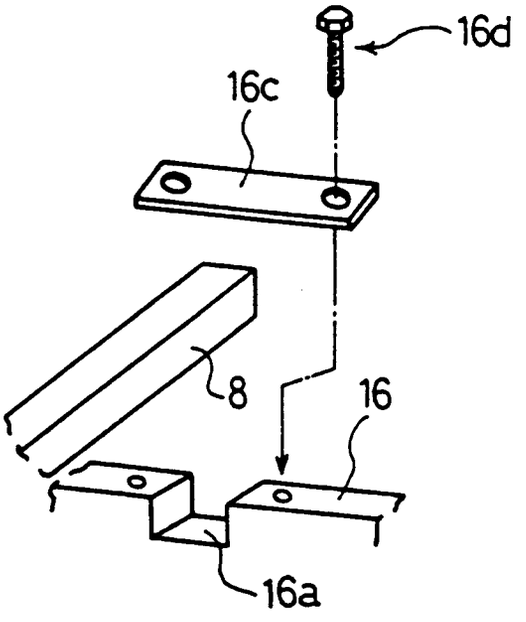


Fig. 39



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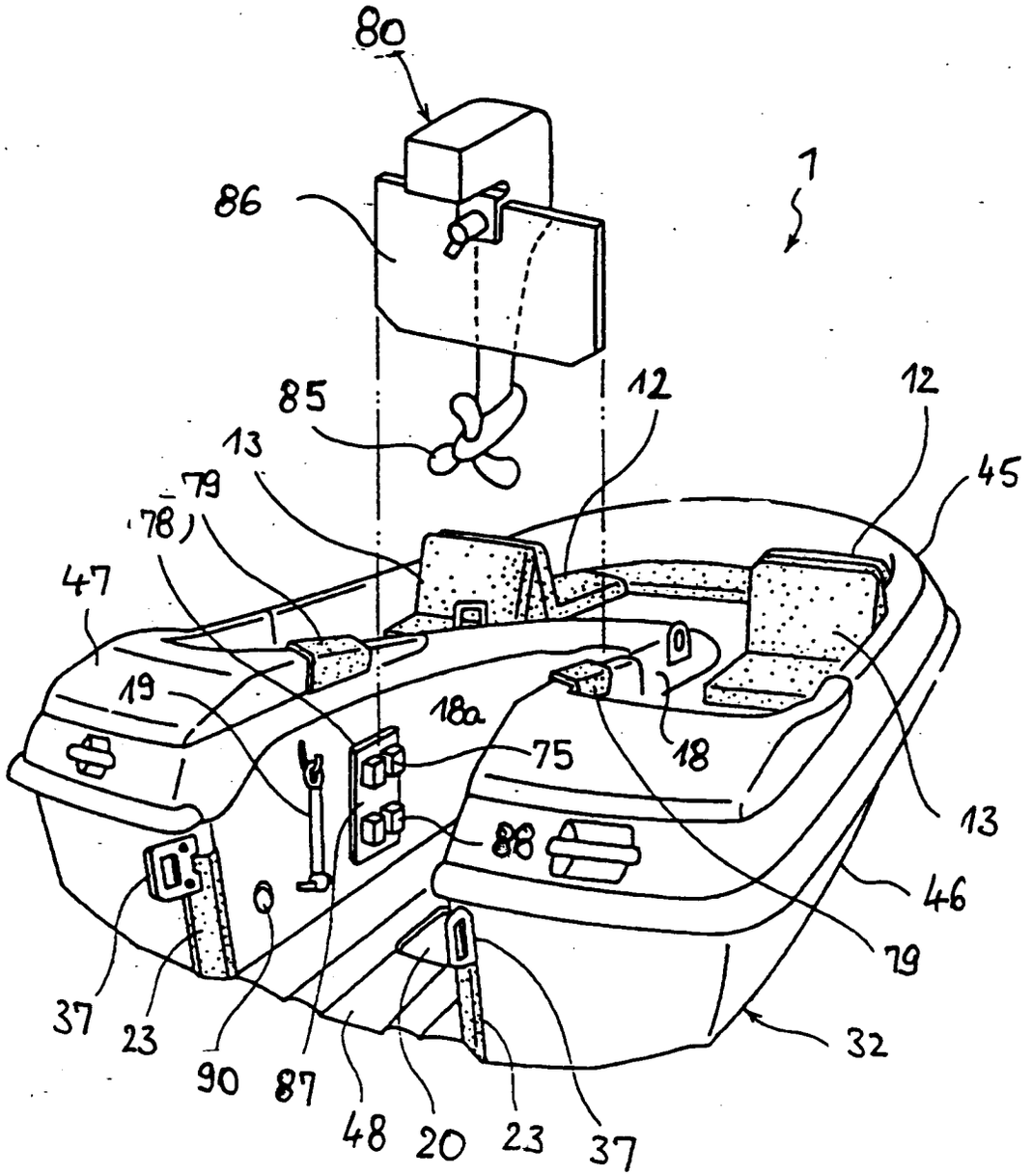
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Fig. 41

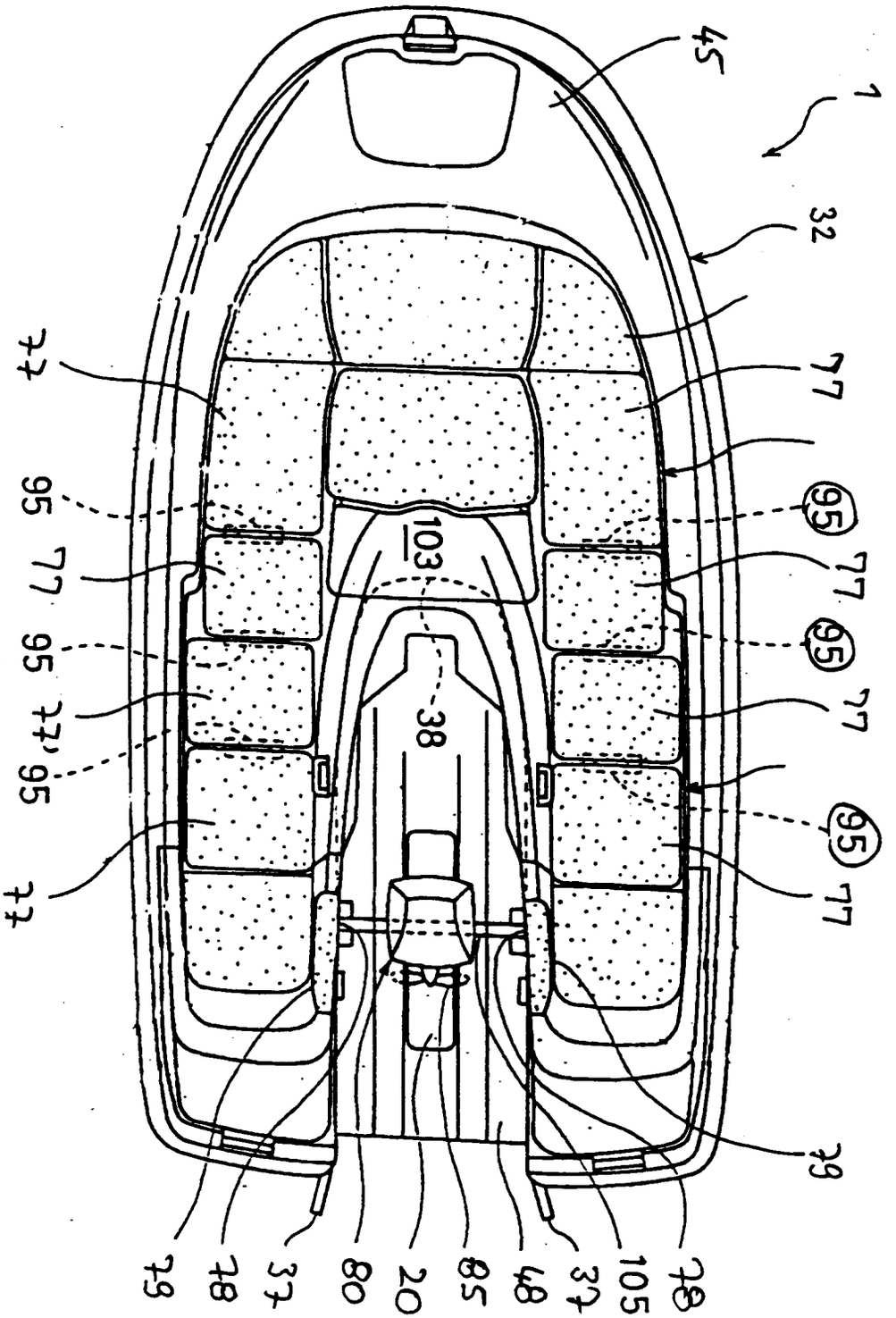


Fig 42

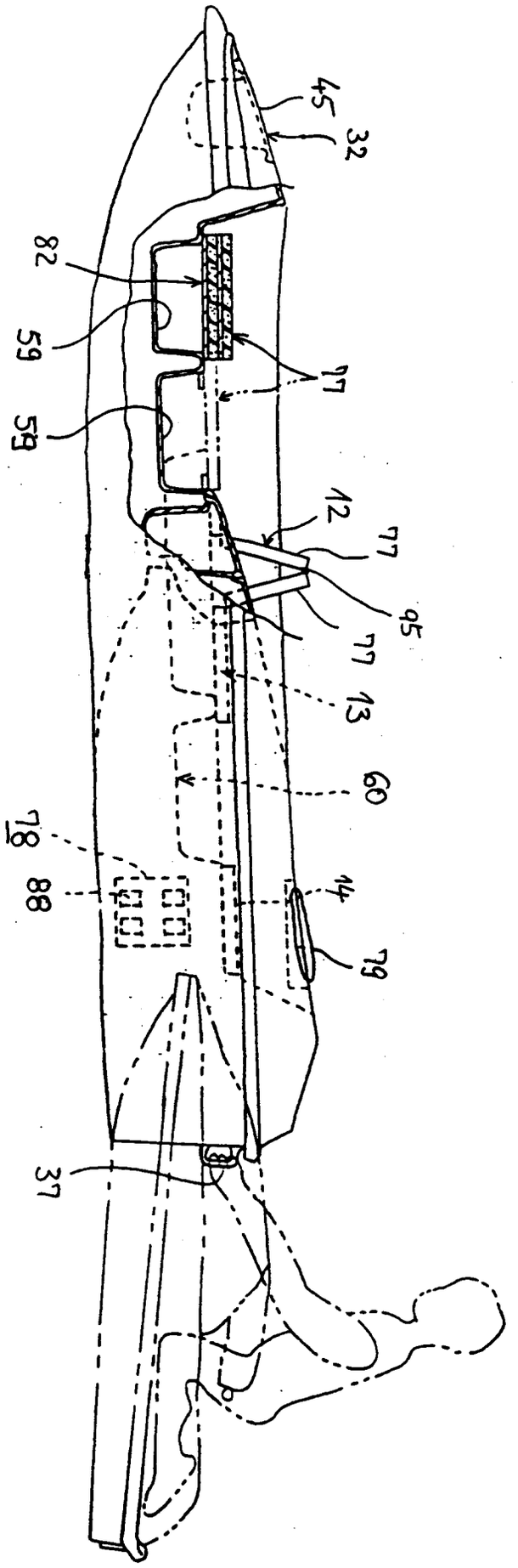


Fig. 43

Fig. 45

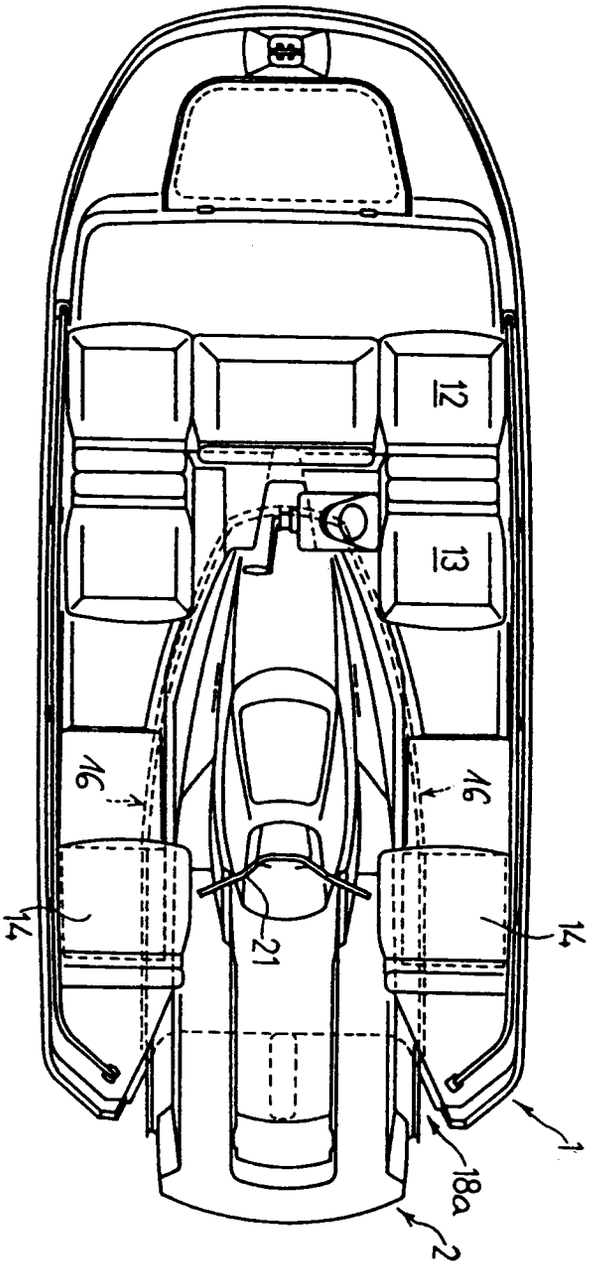
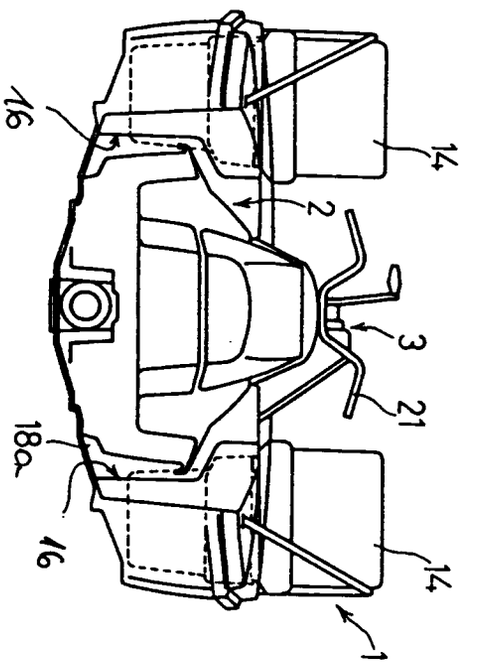


Fig. 44



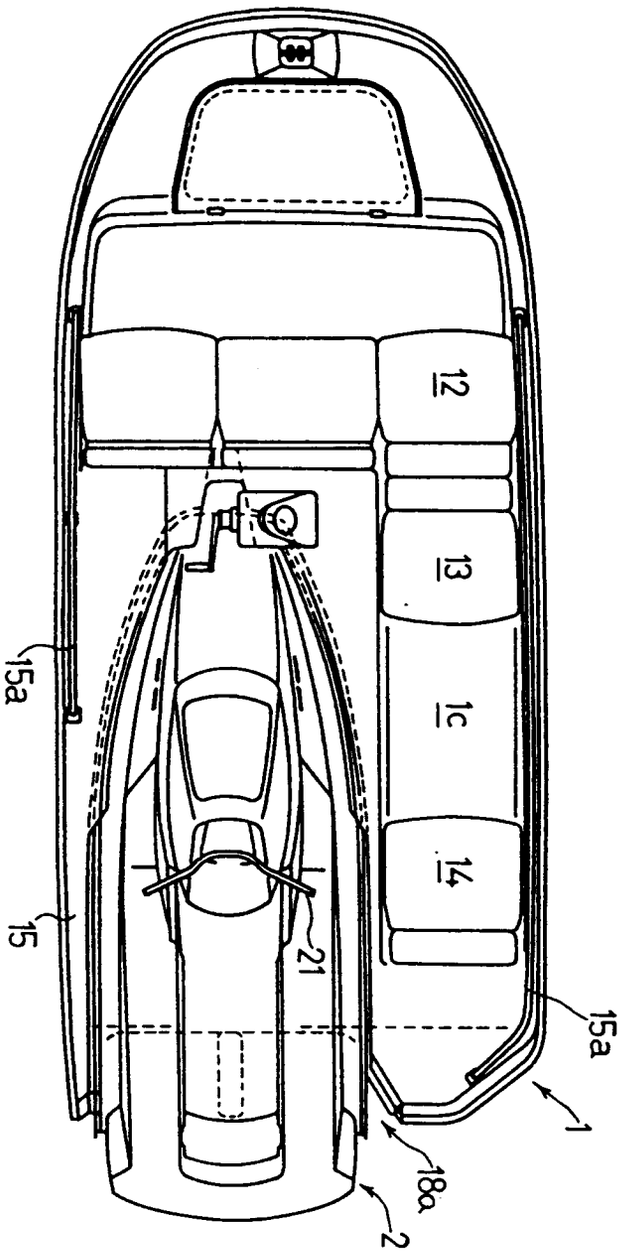


Fig. 47

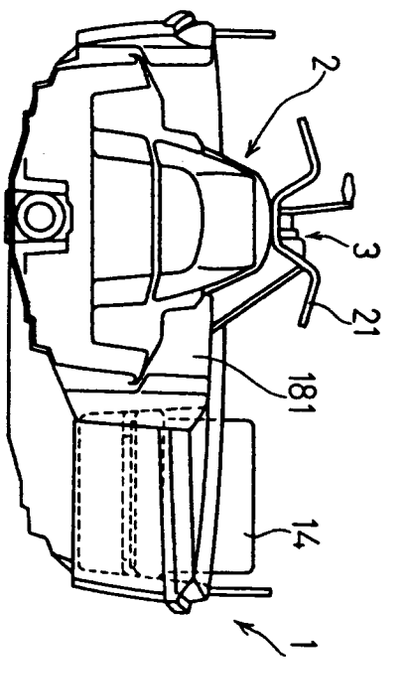


Fig. 46