



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.05.2011 Bulletin 2011/19

(51) Int Cl.:
B63H 5/14 (2006.01) B63H 11/113 (2006.01)

(21) Application number: **10151293.7**

(22) Date of filing: **21.01.2010**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

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(30) Priority: **06.11.2009 TW 98137865**

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(54) **Marine propelling system**

(57) A marine propelling system for a boat (3) includes a guide shell (32) having a guideway (33) for guiding a water flow to pass therethrough; a propelling member (40) having a main body (41) and a propeller (42); a vortex guide member (50) mounted to an outlet of the main body (41) and extending backward; a horizontally steering ring (60,70) sleeved onto a peripheral edge of a front section of the vortex guide member (50), a vertically steering ring (70) sleeved onto a peripheral edge of

a rear section of the vortex guide member (50); and an inverted guide hood (80) mounted to a rear side of the vortex guide member. When the propeller (42) is rotated, a water flow enters through the guideway (33) and is then pressurized by the propeller to become a vortex flow ejected outward for providing the boat with a propulsive force. In this way, marine propelling system can greatly enhance the steering maneuverability and the safety of the boat.

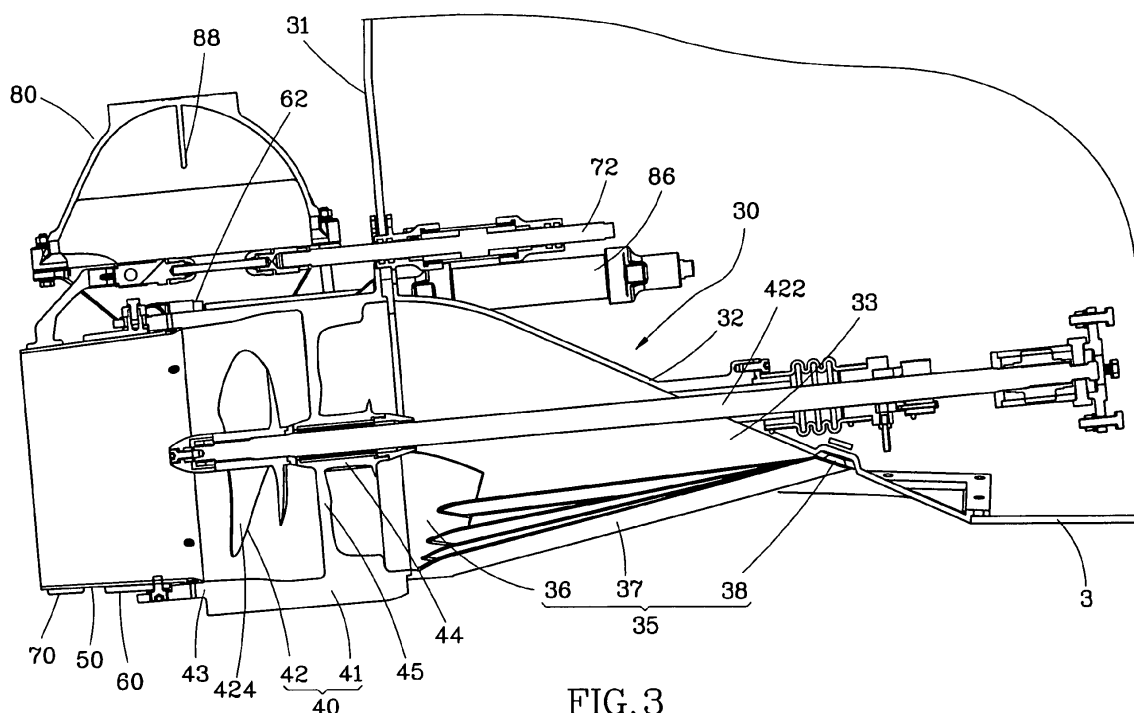


FIG. 3

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates generally to a propelling system, and more particularly, to a marine propelling system for a boat.

2. Description of the Related Art

[0002] Referring to FIG. 1, a conventional propelling system 10 for a large boat 1 is composed of an open-type propeller 12 and a rudder plate 14. Rotation of the propeller 12 and yaw of the rudder plate 14 can drive the boat 1 to move forward and to turn respectively. However, the rudder plate 14 is located behind the propeller 12, such that the rudder plate 14 having a predetermined size inevitably counteracts the thrust generated by the propeller 12. Furthermore, the loss of vortex flow generated by the open-type propeller 12 can lessen the propulsive efficiency of such kind of the boat 1. Besides, the steering of the boat 1 needs a large yaw angle to allow the boat 1 to effectively turn leftward or rightward due to the shape of the rudder plate 14, such that such kind of the boat 1 is worse in steering maneuverability.

[0003] Referring to FIG. 2, a conventional propelling system 20 for a speedboat 2 is also composed of a propeller 22 and a rudder plate 24 located behind the propeller 22. In addition to the aforesaid drawback, such propelling system 20 includes another recited hereinafter. To enhance the steering maneuverability of docking the speedboat 2, a sideward impeller 26 is mounted to a front section of the hull of the speedboat 2. However, such sideward impeller 26 not only increases the production cost of the speedboat 2 but decreases the utilization rate of the space inside the hull of the speedboat 2.

[0004] In addition, each of the propellers 12 and 22 and the rudder plates 14 and 24 of the aforesaid two propelling systems 10 and 20 is located at the bottom of the large boat 1 or the speedboat 2, such that objects in the water, like plastic bag, fishing net, or waterweed, may be sucked into the vortex flow to damage the propeller 12 (22); or the propellers 12 and 22 and the rudder plates 14 and 24 may hurt divers or swimmers or marine creatures, like cowfish. Further, the aforesaid large boat and the speedboat only fit the shipping lane of relatively deep water. The last but not the least, they both do not have any means for dexterously controlling backward navigation.

SUMMARY OF THE INVENTION

[0005] The primary objective of the present invention is to provide a marine propelling system, which can greatly enhance the steering maneuverability and the safety of a boat.

[0006] The foregoing objective of the present invention is attained by the marine propelling system composed of a guide shell, a propelling member, a vortex guide member, and a horizontally steering ring. The guide shell includes a guideway for guiding a water flow to pass there-through. The propelling member includes a main body and a propeller. The main has a plurality of fixed wings located inside a front section thereof for swirling the water flow flowing therein from the guideway in a direction. The propeller is mounted to rear sides of the fixed wings and rotated in a direction converse to that of the water flow passing through the fixed wings. The vortex guide member is made of a flexible material and mounted to an outlet of the main body, extending backward. The horizontally steering ring is sleeved onto a peripheral edge of a front section of the vortex guide member and pivoted to the main body at a top edge thereof and a bottom edge thereof for linking-up with and forcing the vortex guide member to turn leftward or rightward relative to the propelling member. When the vortex guide member is linking-up with the horizontally steering ring to turn leftward or rightward, a high-speed vortex flow ejected through the propeller can dexterously drive the boat to turn for better steering maneuverability.

[0007] Further, the propelling system of the present invention comprises a vertically steering ring sleeved onto the vortex guide member and pivoted to the horizontally steering ring in such a way that the vortex guide member can be linking-up with the vertically steering ring to turn upward or downward so as to properly adjust depress and elevation angles of marine voyage, thus allowing the boat to navigate forward under the least resistance.

[0008] Further, the propelling system of the present invention comprises an inverted guide hood pivoted to the main body of the propelling member. When the boat navigates forward, the inverted guide hood is located above the main body. When the boat needs to stop forward navigation or to navigate backward, the inverted guide hood can be displaced to a rear side of the vortex guide member; meanwhile, the vortex flow flowing backward through the propeller is guided by the inverted guide hood to be ejected forward. When the boat navigates backward, the vortex guide member can be controlled to turn leftward or rightward to eject the vortex flow toward a left front or right front side. In this way, the boat can still be controlled to turn leftward or rightward while navigating backward.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIG. 1 is a schematic view of a conventional propelling system installed to a large boat.

FIG. 2 is a schematic view of a conventional propelling system installed to a speedboat.

FIG. 3 is a sectional view of a preferred embodiment

of the present invention.

FIG. 4 is a partially exploded view of the preferred embodiment of the present invention.

FIG. 5 is a side view of the preferred embodiment of the present invention.

FIG. 6 is a top view of a part of the preferred embodiment of the present invention, showing that a vortex guide member is normally located.

FIG. 7 is a top view of a part of the preferred embodiment of the present invention, showing that the vortex guide member is linking-up with and forces a horizontally steering ring to turn rightward.

FIG. 8 is similar to FIG. 7, showing that the vortex guide member is linking-up with and forces the horizontally steering ring to turn leftward.

FIG. 9 is a side view of a part of the preferred embodiment of the present invention, showing that the vortex guide member is linking-up with and forces a vertically steering ring to turn upward.

FIG. 10 is similar to FIG. 9, showing that the vortex guide member is linking-up with and forces the vertically steering ring to turn downward.

FIG. 11 is a side view of the preferred embodiment of the present invention installed to a boat, showing that an inverted guide hood is located above a propelling member.

FIG. 12 is a rear view of FIG. 11.

FIG. 13 is similar to FIG. 11, showing that the inverted guide hood is located behind the propelling member and the vortex guide member.

FIG. 14 is a rear view of FIG. 13.

FIG. 15 is a rear view of the preferred embodiment of the present invention, showing that two propelling systems are installed to the stem of the boat.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0010] Referring to FIGS. 3-5, a marine propelling system for a boat 3 in accordance with a preferred embodiment of the present invention is composed of a guide shell 32, an incoming-stream chassis 35, a propelling member 40, a vortex guide member 50, a horizontally steering ring 60, a vertically steering ring 70, and an inverted guide hood 80.

[0011] The guide shell 32 is mounted to a bottom side of a stem 31 of the boat 3 and includes a streamline guideway 33 for guiding a water flow to pass there-through.

[0012] The incoming-stream chassis 35 includes an incoming-stream lower member 36, an incoming-stream grating 37, and an incoming-stream front member 38 for preventing the boat from sucking the trash, floating wood, plastic bag, fishing net or waterweed to further prevent something like propeller from entwinement with the afore-said things.

[0013] The propelling member 40 includes a main body 41 and a propeller 42. The main body 41 has a housing

43, a support axial tube 44, four fixed wings 45, a pair of water-baffling wings 46, and a stabilizing wing 47. The housing 43 is fixed to the stem 31 by screws (not shown). The support axial tube 44 is fixed to a center of the housing 43, defining a passage 442 for a water flow to pass through. The fixed wings 45 are fixed to an external surface of the support axial tube 44 and arranged like a cross. The water-baffling wings 46 are mounted to an external surface of the housing 43 and located at two opposite sides (left and right) of the housing 43 for preventing the water flow from impacting an upper side of the propelling member 40. The stabilizing wing 47 is also mounted to the external surface of the housing 43 and located at a bottom side of the housing 43 for keeping the boat 3 in stable navigation. The propeller 42 includes a rotary shaft 422 and a plurality of blades 424. The rotary shaft 422 has a front end inserted into the boat 3 and connected with a power source (not shown), such as an engine or electric motor, and passes through the support axial tube 44, and has a rear end fixedly connected with the blades 424.

[0014] The vortex guide member 50 is made of a flexible material, such as rubber or the like, and can be forced to pivotably wag. The vortex guide member 50 is combined into the housing 43 of the main body 41 of the propelling member 40 by screws (not shown), extending backward from an outlet end of the housing 43.

[0015] Referring to FIGS. 6-8, the horizontally steering ring 60 is sleeved onto a peripheral edge of a front section of the vortex guide member 50, having a top edge and a bottom edge, both of which are pivoted to the housing 43. In this way, the horizontally steering ring 60 can be driven by a first driving device 62 to turn leftward or rightward relative to the propelling member 40, and meanwhile, the vortex guide member 50 can be forced to wag leftward or rightward relative to the propelling member 40 to further control the steering of the boat 3.

[0016] Referring to FIGS. 9-10, the vertically steering ring 70 is sleeved onto a peripheral edge of a rear section of the vortex guide member 50, having two sides (left and right) pivoted to the horizontally steering ring 60, and can be driven by a second driving device 72 to turn upward or downward, such that the water flow passing through the vortex guide member 50 can be ejected upward or downward. In this way, the depress and elevation angles of the marine voyage of the boat 3 can be manipulated to keep the boat 3 navigating under the least resistance.

[0017] Referring to FIGS. 11-14 in view of FIGS. 3-5 again, the inverted guide hood 80 is pivoted to the main body 41 by a strut 82 and can be driven by a third driving device 86 to shift between a first position P1 and a second position P2. While in the first position P1, the inverted guide hood 80 is located behind the propelling member 40, as shown in FIG. 13, and meanwhile, a vortex flow generated by the propeller 42 is guided by the inverted guide hood 80 to flow forward instead of backward, such that the boat 3 can stop forward navigation or navigate backward. While in the second position P2, the inverted

guide hood 80 is located above the propelling member 40, as shown in FIG. 11, and meanwhile, the vortex flow flowing backward drives the boat 3 to navigate forward. It is to be noted that the inverted guide hood 80 includes two guide portions 84 facing forward and inclined slightly downward, as shown in FIG. 4, and the inverted guide hood 80 has a cross-shaped deflector 88 formed at an internal periphery thereof. The guide portions 84 and the cross-shaped deflector 88 can change backward water flow of the vortex flow ejected to the left, right, and lower sides of the inverted guide hood 80 to forward water flow. Besides, the cross-shaped deflector 88 can distribute the water flow in proportion to allow the boat 3 to turn left or right for leftward or rightward navigation, while it navigates backward, to greatly enhance the dexterity of the backward navigation of the boat 3.

[0018] When a power source is switched on to drive rotation of the propeller 42, a normal water flow under the bottom of the boat 3 is sucked into the guideway 33. Next, the normal water flow passes through the passage 442 and the fixed wings to be swirled in a predetermined direction. In this way, the normal water flow flowing from the guideway 33 is pressurized by the propeller 42 to become the vortex flow ejected backward through the vortex guide member 50 in such a way that the boat 3 can navigate forward. Because the loss of the vortex flow generated by the propelling member 40 is far less than that of the conventional propeller, the propelling member 40 can generate higher propulsive performance.

[0019] When it is intended to control the backward or rightward navigation of the boat 3, referring to FIGS. 6-8 again, the first driving device 62 can drive the horizontally steering ring 60 to turn leftward or rightward; meanwhile, the flexible vortex guide member 50 can be linking-up to turn leftward or rightward to enable the vortex flow passing through the vortex guide member 50 to be ejected toward the left rear or right rear side of the boat 3, such that the boat 3 can be controlled to navigate leftward or rightward.

[0020] When the draft of the stem 31 becomes deep or shallow due to the weight and position of the load, as shown in FIGS. 9-10, the second driving device 72 can drive the vertically steering ring 70 to turn upward or downward and then the vortex guide member 50 is linking-up with the vertically steering ring 70 to flexibly wag upward or rightward for adjusting the elevation angle of the navigation of the boat 3, such that the boat 3 can keep navigating forward under the least resistance.

[0021] Further, when it is intended to control backward navigation of the boat 3, as shown in FIGS. 11-14, the third driving device 86 can drive the inverted guide hood 80 to shift to the first position P1 from the second position P2 and meanwhile, the inverted guide hood 80 is located behind the vortex guide member 50. In this way, when the vortex flow ejected backward from the vortex guide member 50, the vortex flow is guided by the cross-shaped deflector 88 to be partially diverted to the two guide portions 84 and then to be ejected toward the bow of the

boat 3 to provide the boat with the propulsive force of the backward navigation. Besides, during the forward navigation of the boat 3, the vortex guide member 50 can also be controlled for wag to allow the boat 3 to navigate toward the left rear or right rear side.

[0022] In conclusion, the propelling system 30 of the present invention includes the following advantages.

1. Because the bottom edge of the propelling system 30 is as high as the bottom of the boat 3, when the boat 3 can navigate under the least resistance to be able to navigate the shallow-water shipping lane without running against any rock. Besides, referring to FIG. 15, the propelling system 30 can be installed to each of the left and right sides of the stem 31 to enable the boat 3 to have dual propelling systems 30 for greater propulsive force.

2. The blades 424 of the propeller 42 is not exposed outside the propelling system and the incoming-stream chassis 35 can prevent the rotary shaft 422 and the blades 424 of the propeller 42 from entwinement with the trash, floating wood, plastic bag, fishing net, or water weed sucked therein. Besides, when the boat 3 docks, the inverted guide hood 80 can be moved to the first position to become a protective shield protecting the marine creatures or the people in the water from injury.

3. The delicate inverted guide hood 60 can allow the boat 3 to navigate backward to effectively save the production cost, thus replacing the expensive conventional sideward impeller and saving the space occupied by the conventional sideward impeller for better utilization.

4. The propelling system 30 can focalize the water flow entering and enable it to become a vortex flow to be ejected outward through the vortex guide member 50, thus enhancing the propulsive efficiency and the control dexterity of the forward and backward navigation of the boat 3. In other words, the vortex guide member 50 can be linking-up with the horizontally steering ring 60 to wag for angles to drive the boat 3 to turn, definitely enhancing the maneuverability of the boat 3.

5. The propelling system can adjust the elevation and depress angles of the stern 31 to the most proper ones by the upward and downward turning of the vertically steering ring 70 so as to prevent overgreat resistance from slowing down the navigation. In other words, the propelling system 30 can set the proper elevation and depress angles of the stern 31 for the boat 3 to navigate under the least resistance.

[0023] Although the present invention has been described with respect to a specific preferred embodiment thereof, it is no way limited to the details of the illustrated structures but changes and modifications may be made within the scope of the appended claims.

Claims

1. A marine propelling system for a boat (3), being **characterized in that** the marine propelling system comprises:
 - a guide shell (32) having a streamline guideway (33) for a water flow to pass through;
 - a propelling member (40) having a main body (41) and a propeller (42), the propeller (42) being rotatably connected with the main body (41);
 - a vortex guide member (50) having an end combined into the main body (41) and extending backward from an outlet end of the main body (41); and
 - at least one steering ring (60,70) sleeved onto a peripheral edge of the vortex guide member (50) for linking-up with the vortex guide member (50) to wag toward a predetermined direction.
2. The marine propelling system as defined in claim 1, being **characterized in that** the vortex guide member (50) is flexible and can be forced to wag.
3. The marine propelling system as defined in claim 1, being **characterized in that** the at least one steering ring (60,70) is a horizontally steering ring (60) sleeved onto a front section of the peripheral edge of the vortex guide member (50), whereby the horizontally steering ring (60) can be driven by a first driving device (62) for linking-up with and forcing the vortex guide member (50) to wag leftward or rightward.
4. The marine propelling system as defined in claim 1, being **characterized in that** the at least one steering ring (60,70) is a vertically steering ring (70) sleeved onto a rear section of the peripheral edge of the vortex guide member (50), whereby the vertically steering ring (70) can be driven by a second driving device (72) for linking-up with and forcing the vortex guide member (50) to wag upward or downward.
5. The marine propelling system as defined in claim 1, being **characterized in that** the marine propelling system further comprises an inverted guide hood (80) and a strut (82), wherein the inverted guide hood (80) comprises two guide portions (84) curved toward the propelling member (40), and the strut (82) comprises two ends, one of which is connected with the inverted guide hood (80) and the other is pivoted to an external surface of the main body (41) of the propelling member (40), whereby the inverted guide hood (80) can be driven by a third driving device (86) via the strut relative to the propelling member (40) to shift between a first position, where the inverted guide hood (80) is located behind the vortex guide member (50), and a second position, where the inverted guide hood (80) is located away from the vortex guide member (50).
6. The marine propelling system as defined in claim 5, being **characterized in that** the inverted guide hood (80) comprises a cross-shaped deflector (88) formed at an internal periphery thereof.
7. The marine propelling system as defined in claim 1, being **characterized in that** the main body (41) of the propelling member (40) comprises a housing (43), a support axial tube (44), and a plurality of fixed wings (45), the support axial tube (44) being mounted to a center of an internal side of the housing (43), the fixed wings (45) being fixed to an external side of the support axial tube (44) and arranged in the shape of a cross; the vortex guide member (50) is mounted to a rear end of the housing (43); the propeller (42) comprises a rotary shaft (422) and a plurality of blades (424), the rotary shaft (422) being rotatably inserted into the support axial tube (44), the blades (424) being connected with a distal end of the rotary shaft (422).
8. The marine propelling system as defined in claim 7, being **characterized in that** the main body (41) of the propelling member (40) further comprises a pair of water-baffling wings (46) mounted to an external side of the housing (42) and located at two opposite sides of the housing (43) respectively.
9. The marine propelling system as defined in claim 7, being **characterized in that** the main body (41) of the propelling member (40) further comprises a stabilizing wing (47), wherein the stabilizing wing (47) is mounted to an external side of the housing (43) and located at a bottom side of the housing (43).

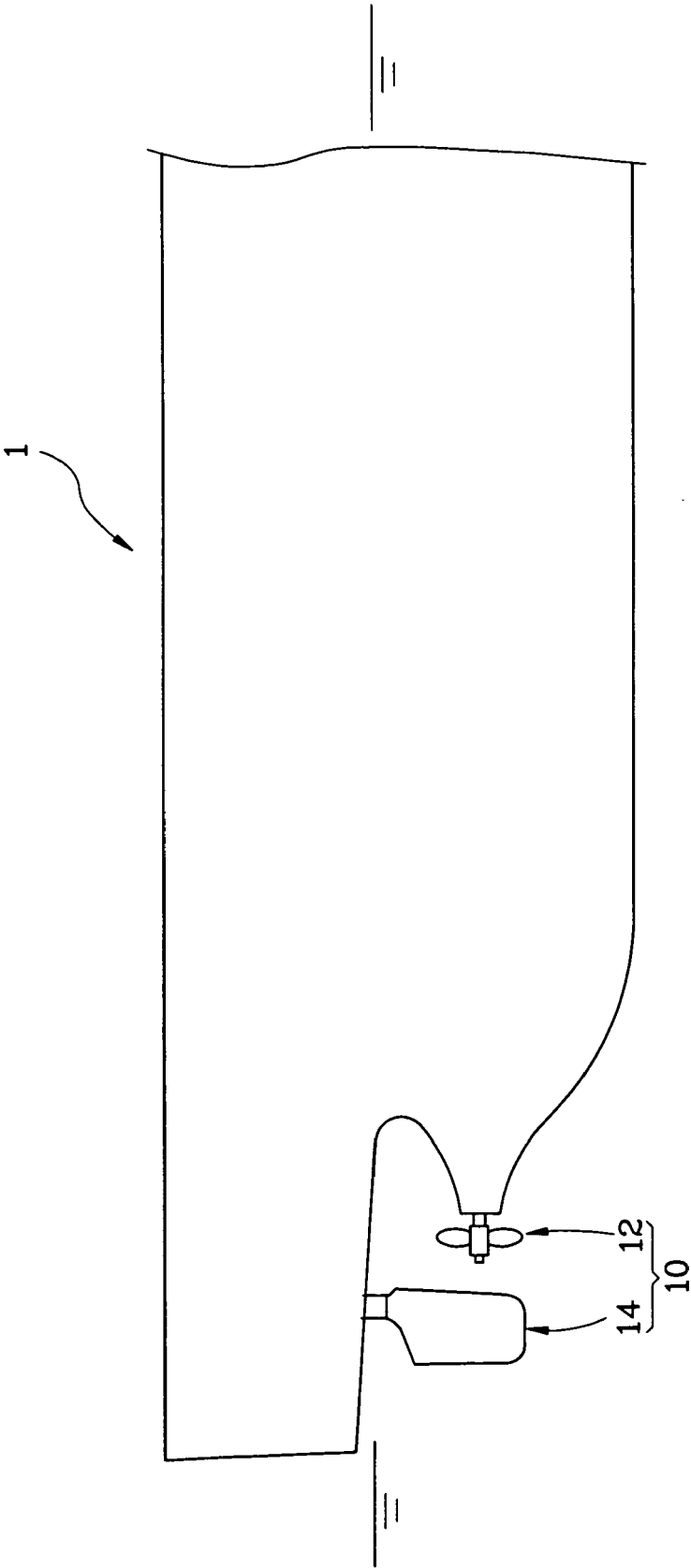


FIG. 1
PRIOR ART

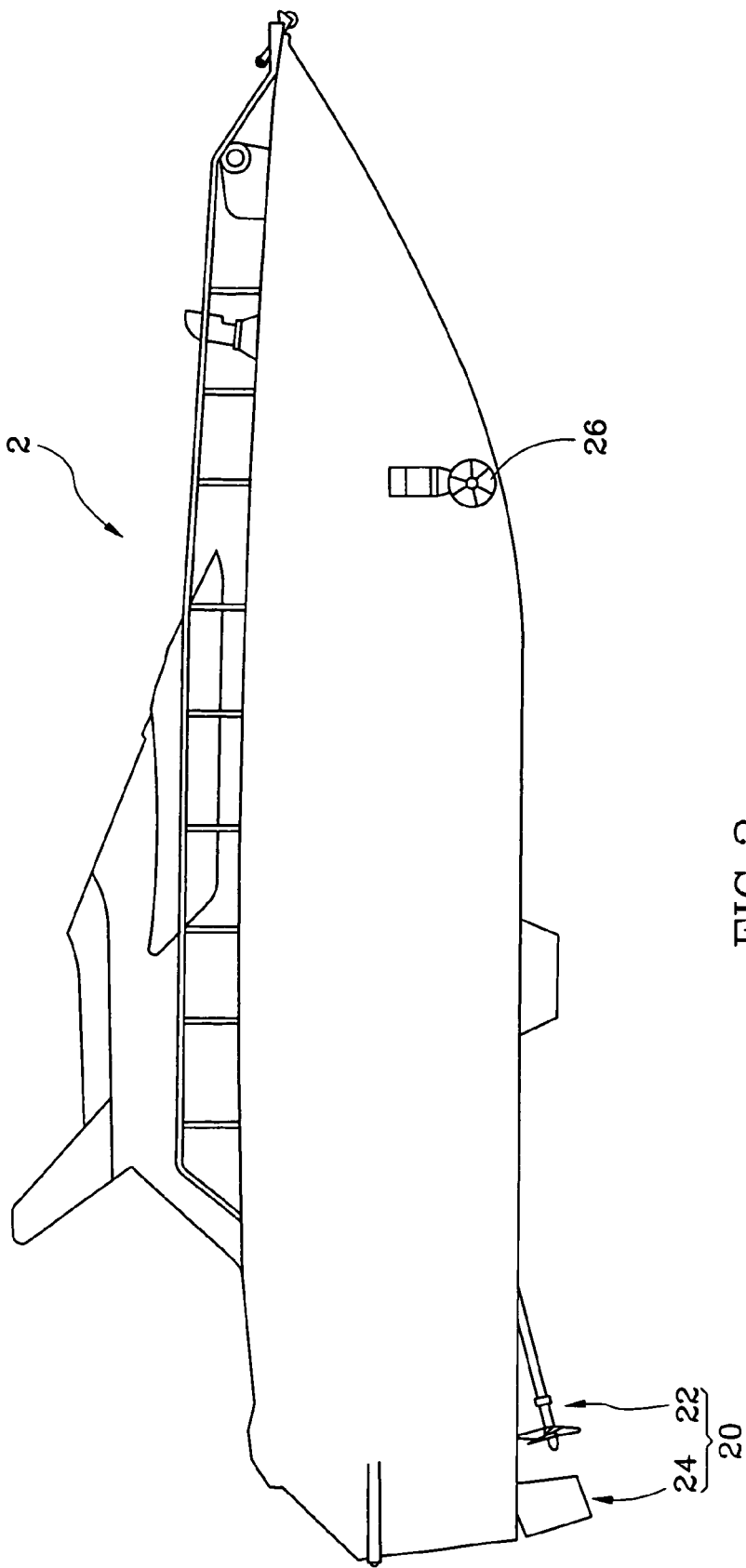


FIG. 2
PRIOR ART

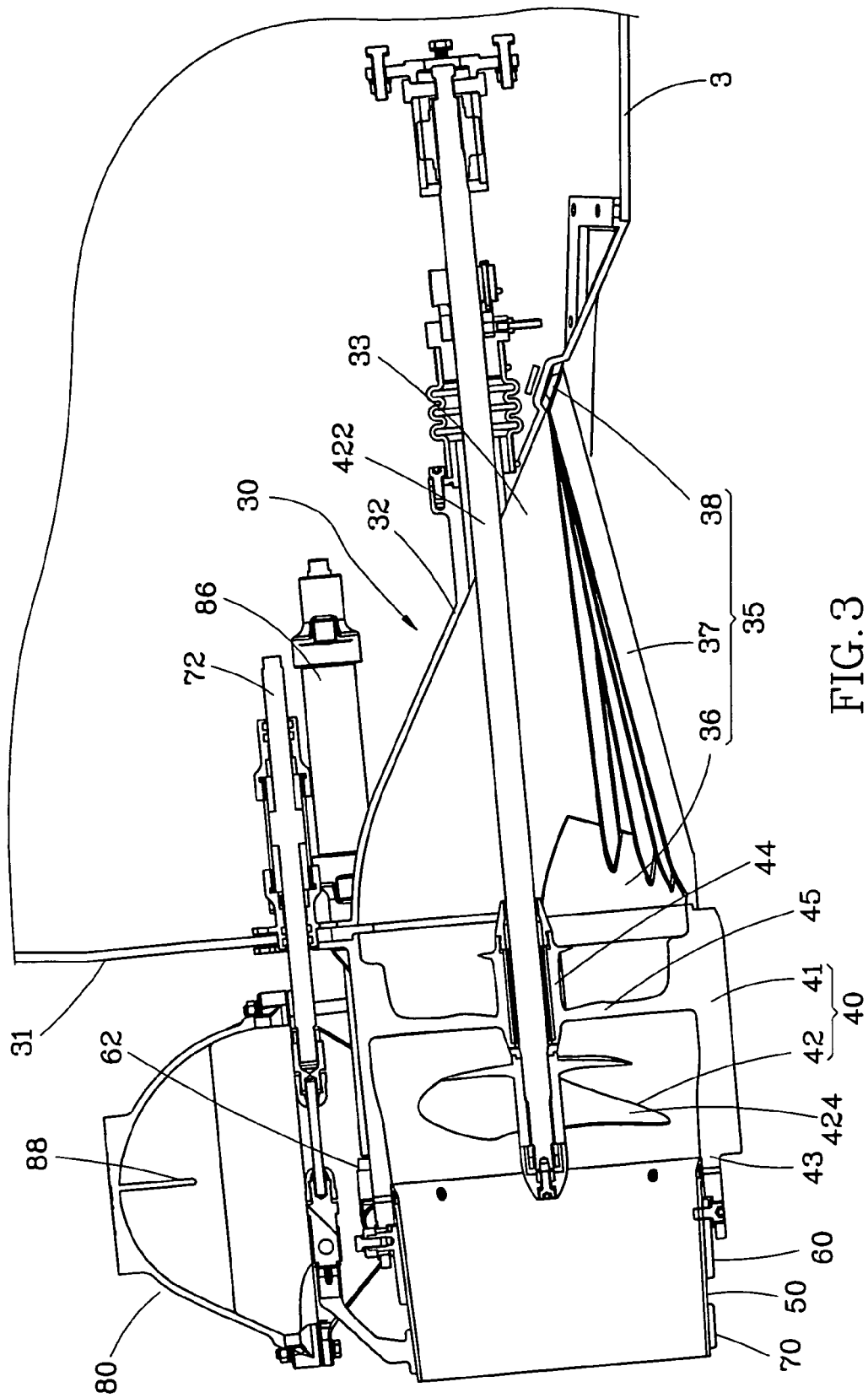
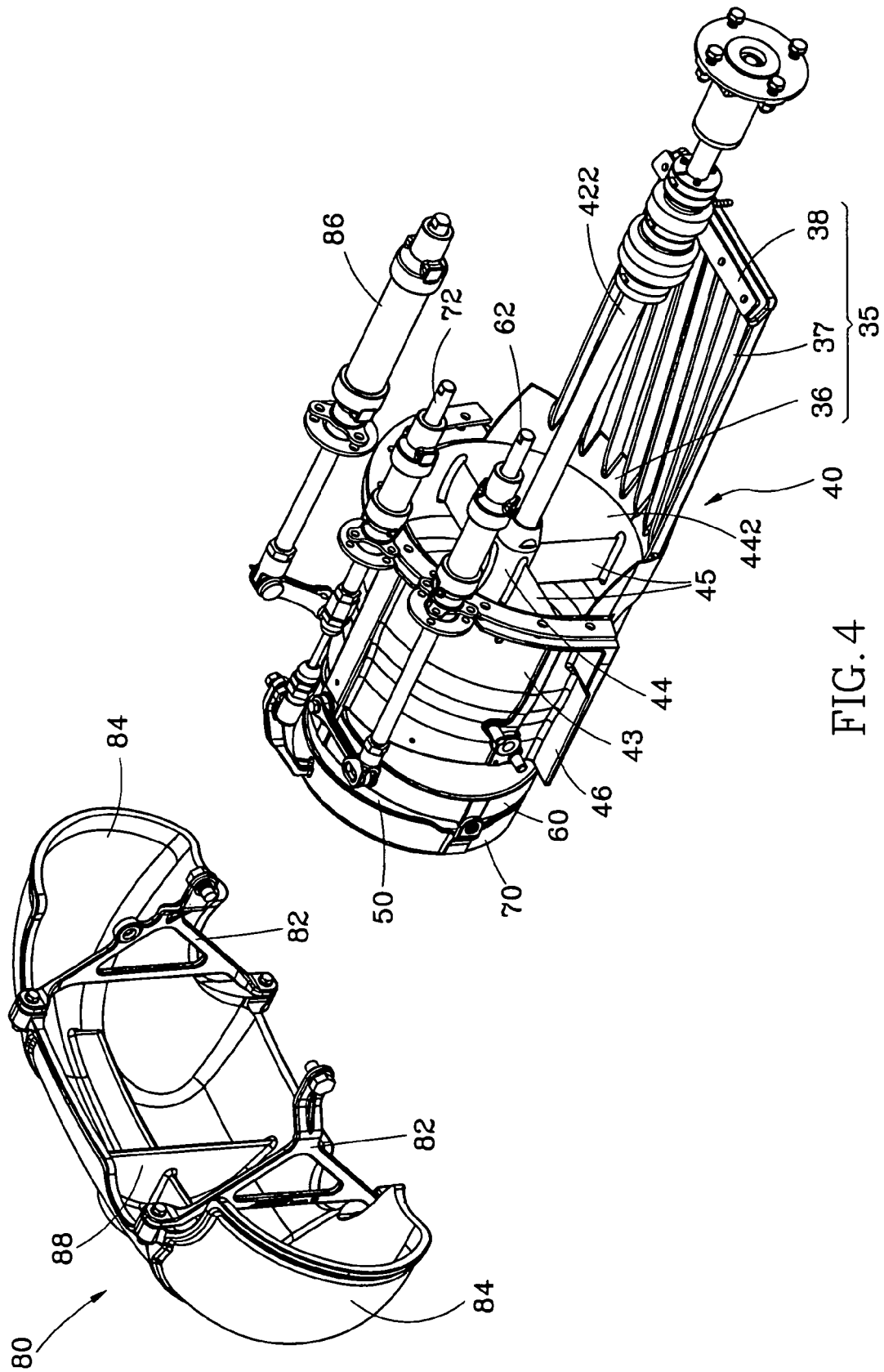


FIG. 3



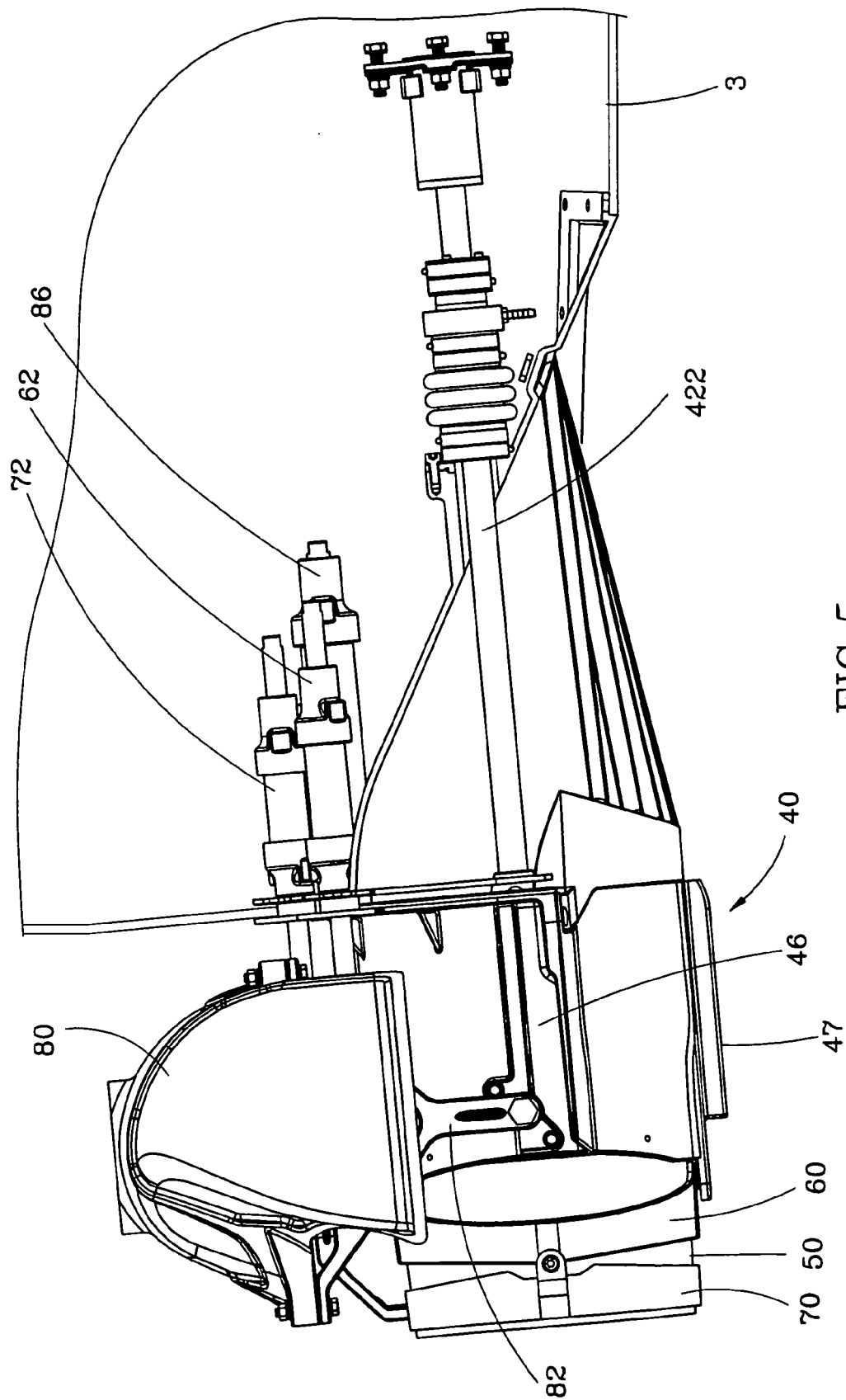


FIG. 5

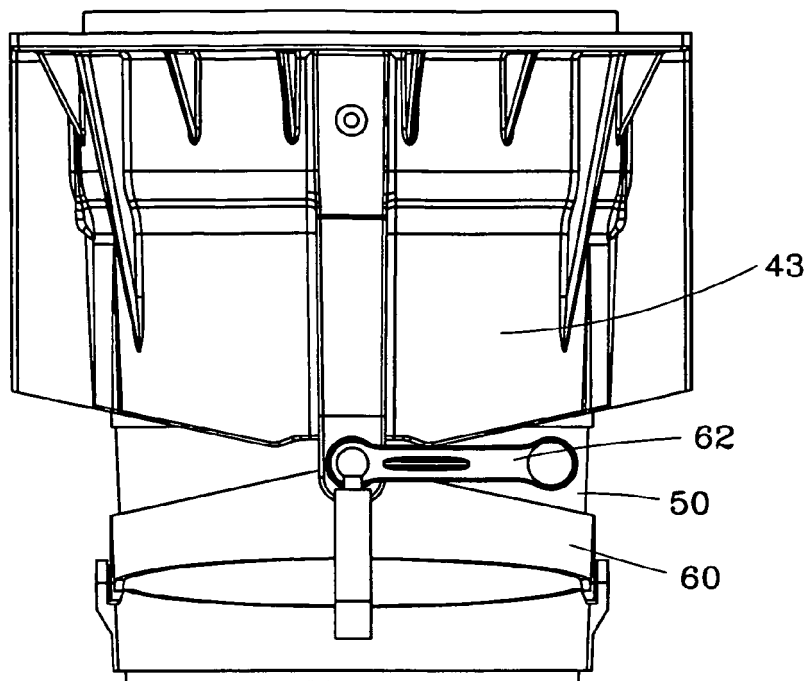


FIG. 6

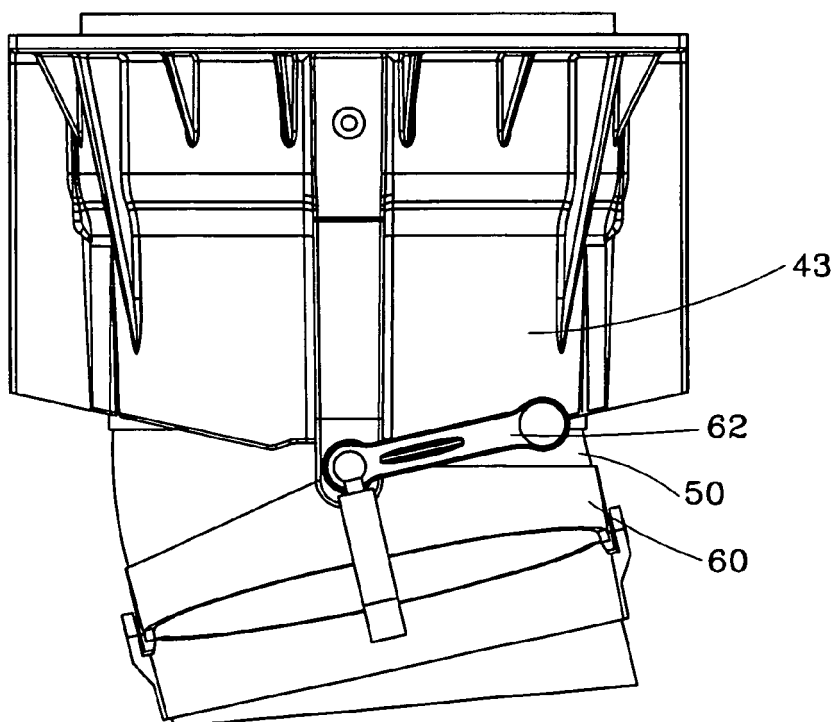


FIG. 7

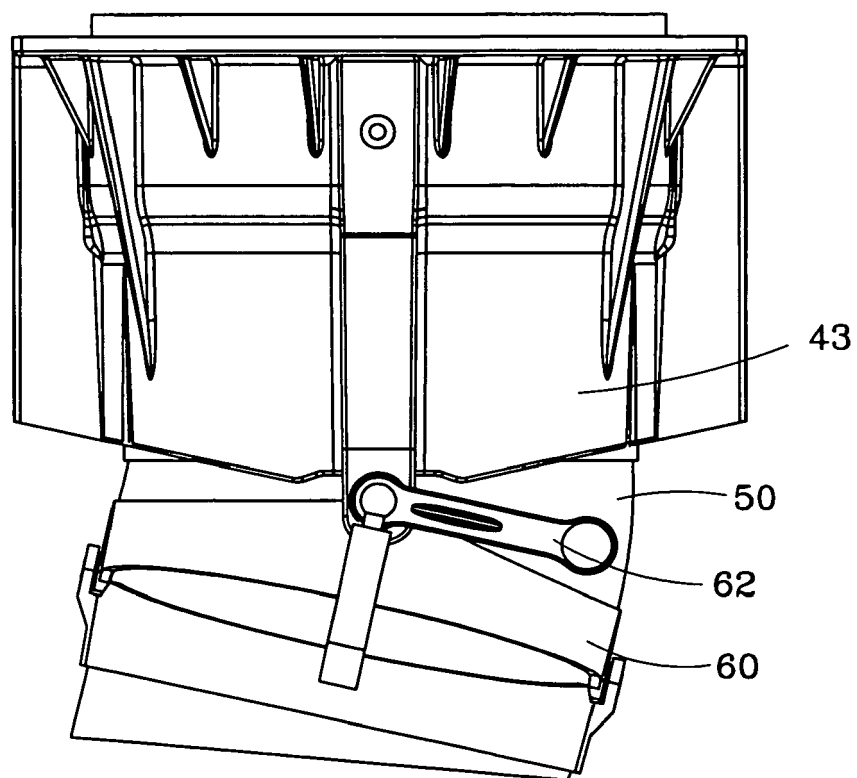


FIG. 8

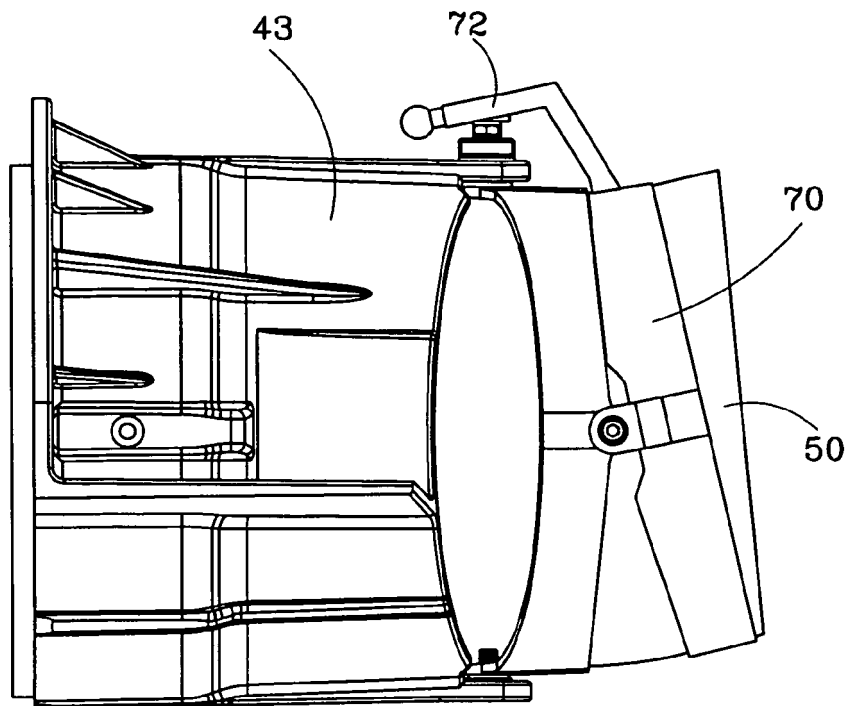


FIG. 9

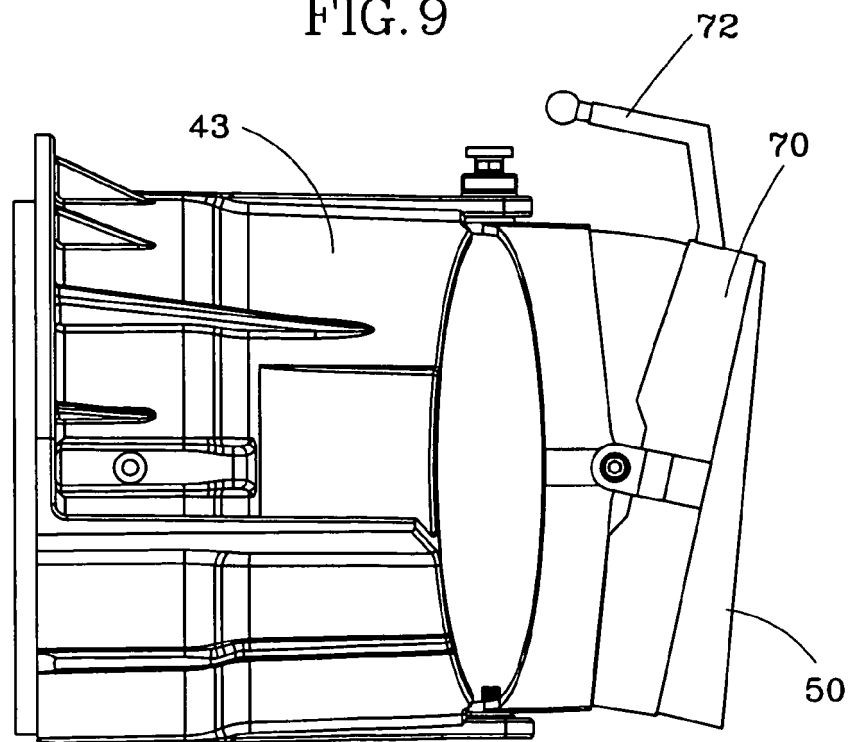
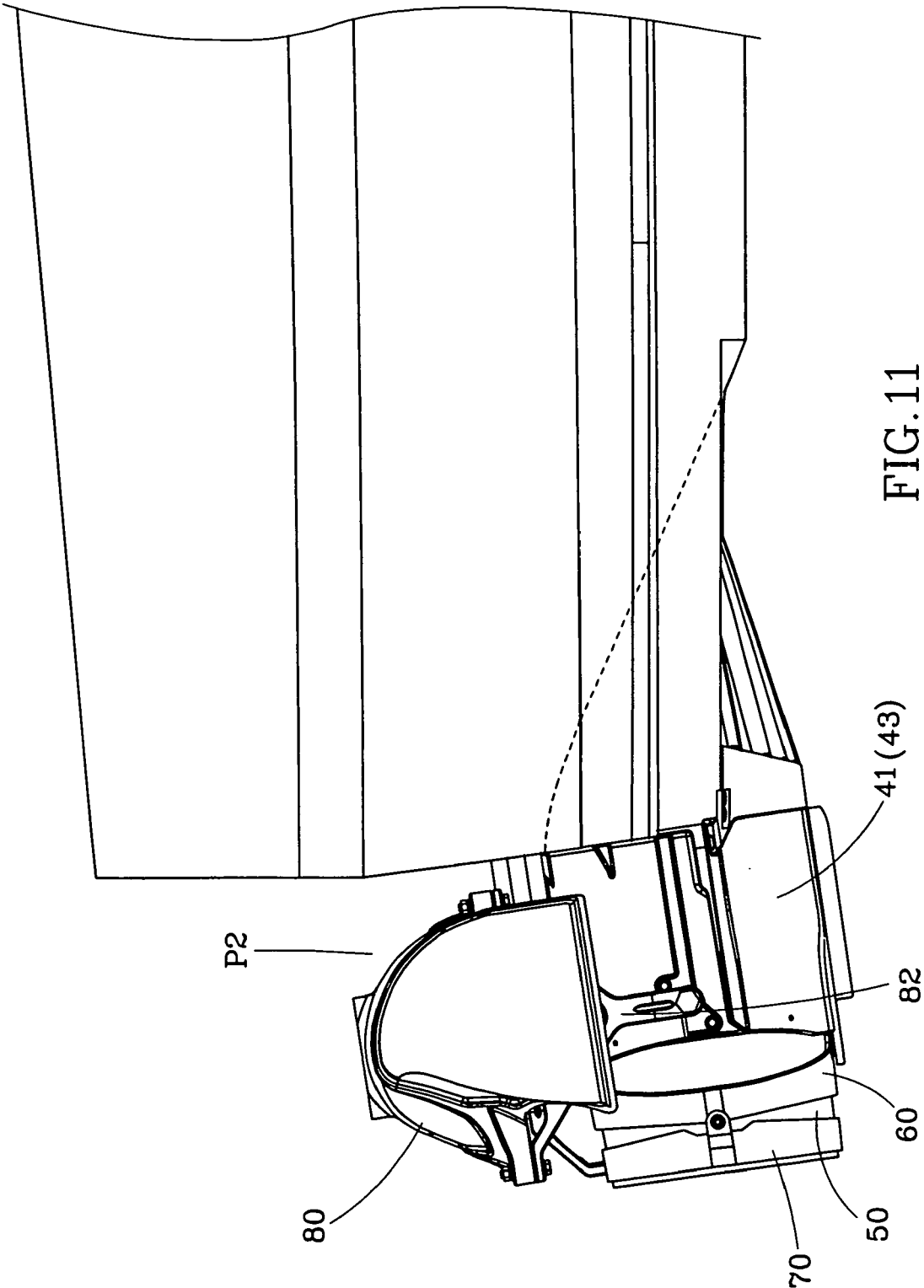


FIG. 10



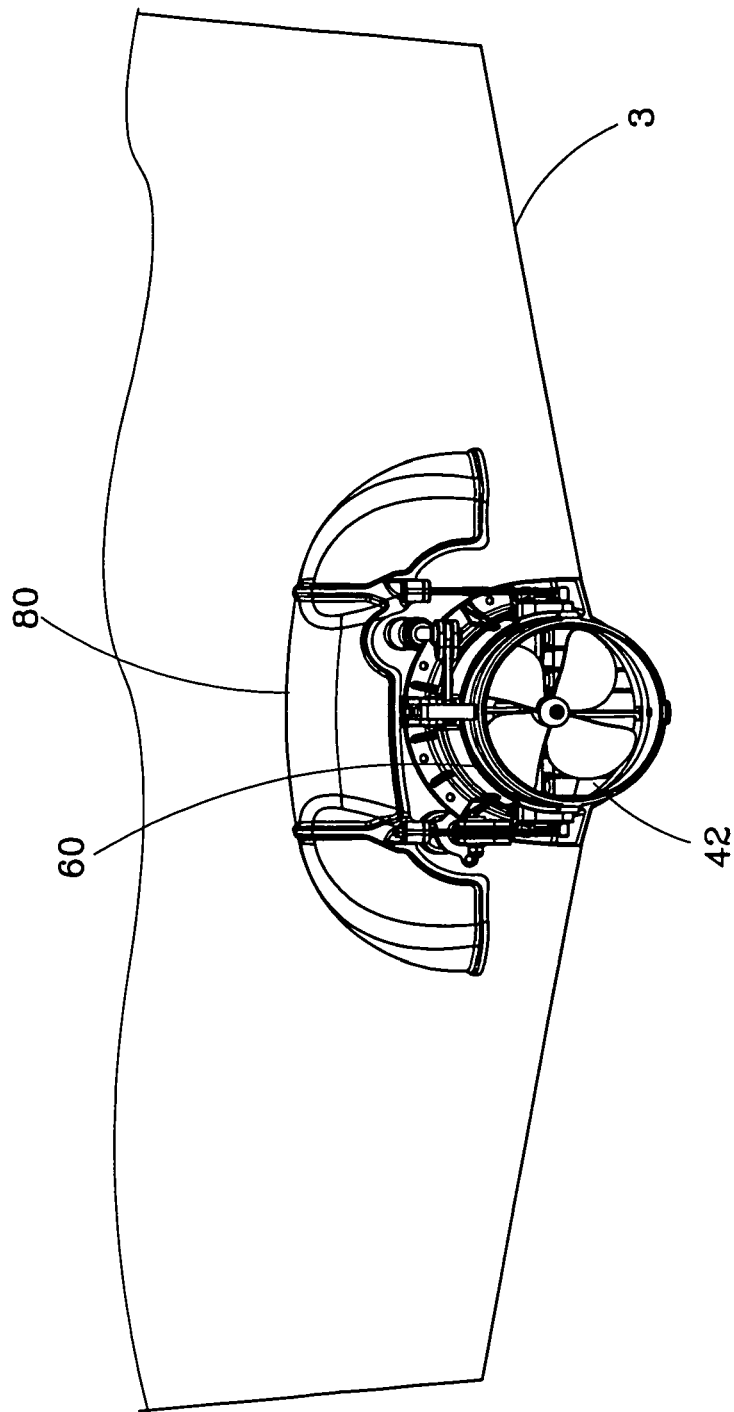
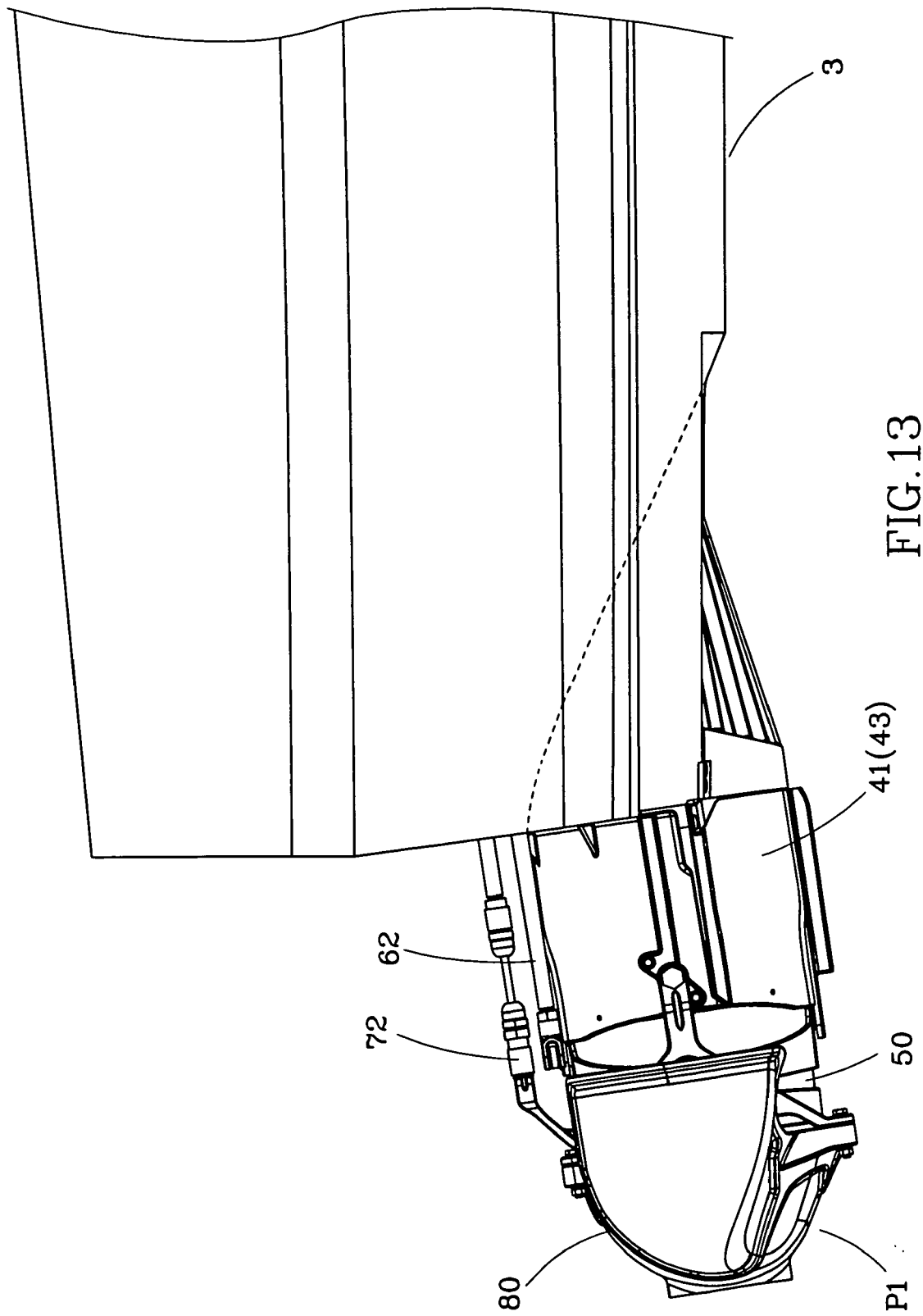


FIG. 12



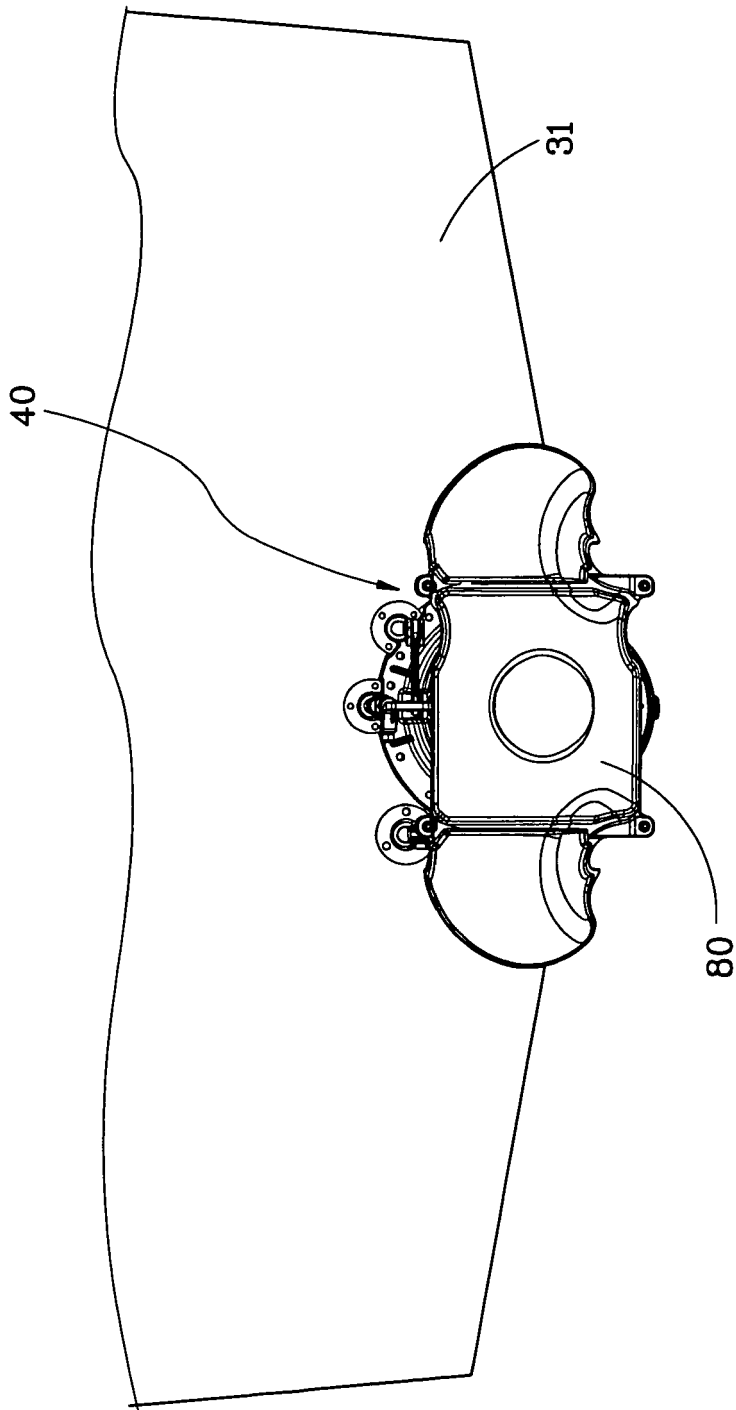


FIG.14

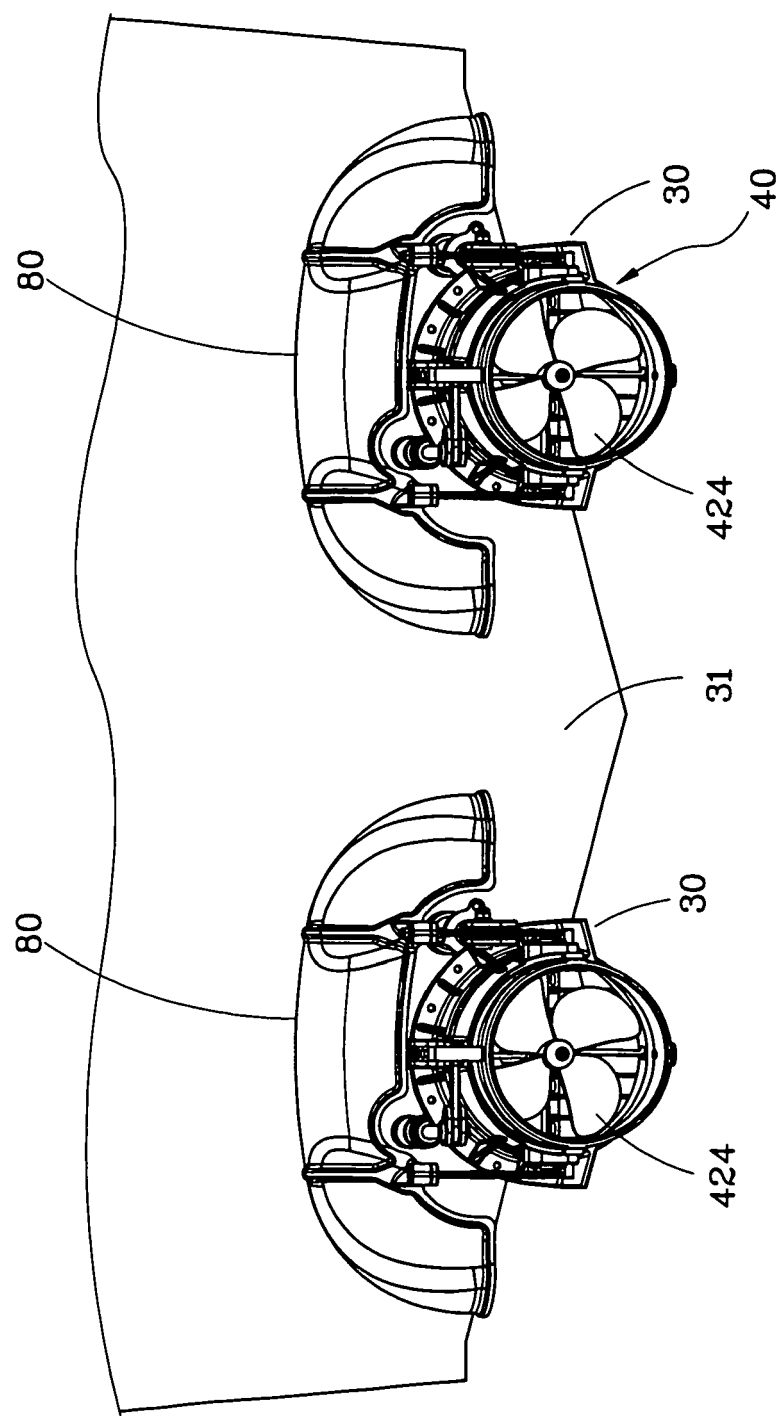


FIG.15