(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 682 038 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.01.2026 Bulletin 2026/04

(21) Application number: **25181324.2**

(22) Date of filing: **06.06.2025**

(51) International Patent Classification (IPC):
B63B 15/00 *(2006.01)* ***B63H 9/06*** *(2020.01)*
B63H 9/08 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B63B 15/0083; B63H 9/06; B63H 9/08;
B63B 2015/0025; B63B 2015/005; B63B 2015/0075; B63H 2009/082

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

(30) Priority: **19.07.2024 JP 2024115766**

(71) Applicant: **Yamaha Hatsudoki Kabushiki Kaisha**
Shizuoka-ken 438-8501, (JP)

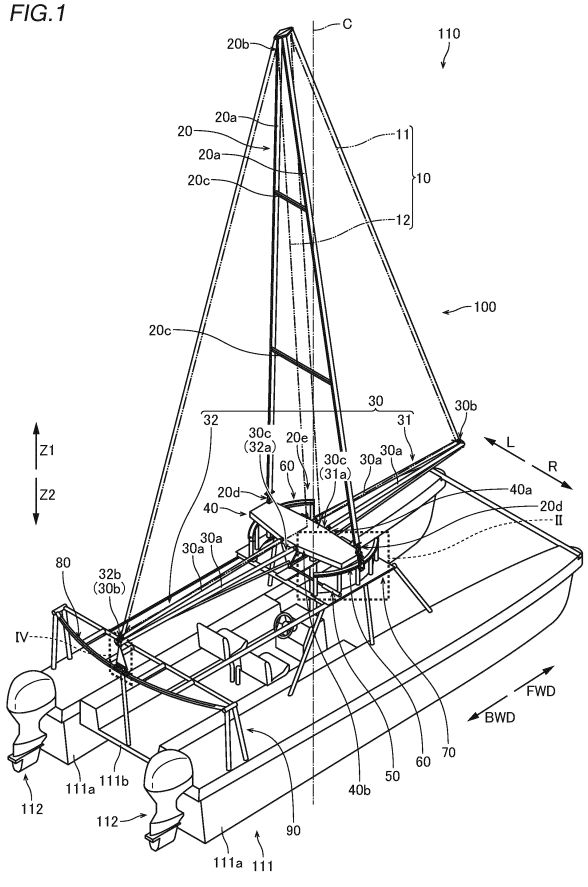
(72) Inventor: **Hara, Ioki**
Iwata-shi, Shizuoka-ken, 438-8501 (JP)

(74) Representative: **Grünecker Patent- und Rechtsanwälte**
PartG mbB
Leopoldstraße 4
80802 München (DE)

(54) **SAILING DEVICE**

(57) A sailing device (100, 200) includes a base (40) configured to allow a lower end portion (20d) of a mast (20) and a proximal portion (30c) of a boom (30) to be connected thereto, and configured to be rotatable in a plane perpendicular to an upward-downward direction of a hull (111, 211).

FIG.1



EP 4 682 038 A1

Description

[0001] The present invention relates to a sailing device.

[0002] A marine vessel including a base member to which a lower end portion of a mast is connected and which is rotatable in a plane perpendicular to the upward-downward direction of a hull is known in general. Such a marine vessel is disclosed in JP 2-068290 A, for example.

[0003] JP 2-068290 A discloses a sailing vessel (marine vessel) including a sail, a mast extending along the upward-downward direction of a hull to support the sail, a boom extending along a plane perpendicular to the upward-downward direction of the hull to support the sail from below in the upward-downward direction of the hull, and a circular guide (base) to which a lower end portion of the mast is connected and which is rotatable in a plane perpendicular to the upward-downward direction of the hull. In other words, in the sailing vessel described in JP 2-068290 A, the sail, the mast, and the boom are integrally rotatable in the plane perpendicular to the upward-downward direction of the hull by the circular guide. In the sailing vessel described in JP 2-068290 A, a proximal portion of the boom is connected to the lower end portion of the mast.

[0004] However, in the sailing vessel (marine vessel) described in JP 2-068290 A, the proximal portion of the boom is connected to the lower end portion of the mast, and thus a load to support the boom is applied to the mast. In such a case, the mast is required to have a relatively large strength. Therefore, a structure is desired to integrally rotate the sail, the mast, and the boom in the plane perpendicular to the upward-downward direction of the hull while an increase in strength required for the mast is reduced or prevented.

[0005] It is an object of the present invention to provide a sailing device that integrally rotates a sail, a mast, and a boom in a plane perpendicular to the upward-downward direction of a hull while an increase in strength required for the mast is reduced or prevented. According to the present invention, said object is solved by a sailing device having the features of independent claim 1. Preferred embodiments are laid down in the dependent claims.

[0006] A sailing device according to an example embodiment is configured to be attached to a hull, and includes a sail, a mast extending along an upward-downward direction of the hull and configured to support the sail, a boom extending along a plane perpendicular to the upward-downward direction of the hull and configured to support the sail from below in the upward-downward direction of the hull, and a base configured to allow a lower end portion of the mast and a proximal portion of the boom to be connected thereto, and configured to be rotatable in the plane perpendicular to the upward-downward direction of the hull.

[0007] A sailing device according to an example embodiment includes the base to allow the lower end portion of the mast and the proximal portion of the boom to be connected thereto, and rotatable in the plane perpendicular to the upward-downward direction of the hull. Accordingly, the base allows the sail, the mast, and the boom to integrally rotate in the plane perpendicular to the upward-downward direction of the hull. Furthermore, the proximal portion of the boom is connected to the base, and thus a load to support the boom is not applied to the mast. Thus, as compared with a case in which the proximal portion of the boom is connected to the lower end portion of the mast, strength required for the mast is reduced. Consequently, the sail, the mast, and the boom are integrally rotated in the plane perpendicular to the upward-downward direction of the hull while an increase in strength required for the mast is reduced or prevented.

[0008] A sailing device according to an example embodiment preferably further includes a base guide having an arcuate or circular shape configured to guide and support the base when the base rotates in the plane perpendicular to the upward-downward direction of the hull. Accordingly, the base is easily rotated in the plane perpendicular to the upward-downward direction of the hull by the arcuate or circular base guide that guides and supports the base.

[0009] In a sailing device including the base guide, the base guide preferably includes a pair of base guides, one of the pair of base guides is preferably provided in the arcuate shape leftward of a central portion of the mast in a right-left direction of the hull, and the other of the pair of base guides is preferably provided in the arcuate shape rightward of the central portion of the mast in the right-left direction of the hull. Accordingly, as compared with a case in which the base guide is circular, an installation space for the base guides in the hull is reduced. Furthermore, the pair of base guides are unlikely to be located, in the forward-rearward direction of the hull, forward of and rearward of the central portion of the mast in the right-left direction of the hull, and thus the possibility that the base guides prevent passengers from moving in the forward-rearward direction of the hull is reduced or prevented.

[0010] In a sailing device including the base guide, the base guide is preferably configured to guide and support the base via a base moving member configured to be movable along the base guide having the arcuate or circular shape. Accordingly, the base moving member that is movable along the arcuate or circular base guide allows the arcuate or circular base guide to easily guide and support the base.

[0011] In a sailing device including the base guide to guide and support the base via the base moving member that is rotatable along the base guide having the arcuate or circular shape, the base guide preferably includes a rail having the arcuate or circular shape, and the base moving member preferably includes a roller configured to be movable along the rail having the arcuate or circular shape. Accordingly, a structure in which the base guide guides and supports the base via the base moving member that is movable along the arcuate or circular base guide is easily achieved.

[0012] A sailing device according to an example embodiment preferably further includes, forward or rearward of the base in a forward-rearward direction of the hull, a boom guide having an arcuate shape, connected to a distal end portion of the boom, and configured to guide and support the boom when the base rotates in the plane perpendicular to the upward-downward direction of the hull. Accordingly, the arcuate boom guide connected to the distal end portion of the boom to guide and support the boom allows the base to easily rotate in the plane perpendicular to the upward-downward direction of the hull. Moreover, the boom guide is located forward or rearward of the base in the forward-rearward direction of the hull and is connected to the distal end portion of the boom, and thus the boom guide is unlikely to be located in a central portion in the forward-rearward direction of the hull. Thus, the possibility that the boom guide prevents the passengers from moving in the forward-rearward direction of the hull is reduced or prevented.

[0013] In a sailing device including the boom guide, the sail preferably includes a rear sail on a rear side in the forward-rearward direction of the hull, the boom preferably includes a rear boom configured to support the rear sail, and the boom guide is preferably connected to a rear end portion of the rear boom and is preferably rearward of the base in the forward-rearward direction of the hull. Accordingly, the boom guide is located rearward of the base in the forward-rearward direction of the hull, and thus the boom guide is likely to be located on the rear side in the forward-rearward direction of the hull. Thus, the possibility that the boom guide obstructs the passengers' view of the front side in the forward-rearward direction of the hull is reduced or prevented.

[0014] In a sailing device including the boom guide, the boom guide is preferably configured to guide and support the boom via a boom moving member configured to be movable along the boom guide having the arcuate shape. Accordingly, the boom moving member that is movable along the arcuate boom guide allows the arcuate boom guide to easily guide and support the boom.

[0015] In a sailing device including the boom guide to guide and support the boom via the boom moving member that is rotatable along the arcuate boom guide, the boom guide preferably includes a rail having the arcuate shape, and the boom moving member preferably includes a bearing configured to be movable along the rail having the arcuate shape. Accordingly, a structure in which the boom guide guides and supports the boom via the boom moving member that is movable along the arcuate boom guide is easily achieved.

[0016] In a sailing device according to an example embodiment, the mast preferably has an inverted V shape in which two mast portions gradually approach each other toward an upper end portion of the mast. Accordingly, it is not necessary to provide separate wires to support the two mast portions in a direction in which the two mast portions are aligned, and thus the device structure is simplified, and an operation to adjust the wires is eliminated.

[0017] In a sailing device according to an example embodiment, the boom preferably has an inverted V shape in which two boom portions gradually approach each other toward the distal end portion of the boom. Accordingly, it is not necessary to provide separate wires to support the two boom portions in a direction in which the two boom portions are aligned, and thus the device structure is simplified, and an operation to adjust the wires is eliminated.

[0018] In a sailing device according to an example embodiment, the sail preferably includes a front sail on a front side in a forward-rearward direction of the hull, and a rear sail on a rear side in the forward-rearward direction of the hull, the boom preferably includes a front boom configured to support the front sail, and a rear boom configured to support the rear sail, the front boom preferably includes a rear end portion connected to a front end portion of the base, and the rear boom preferably includes a front end portion connected to a rear end portion of the base. Accordingly, the rear end portion of the front boom is connected to the front end portion of the base, and thus a load to support the front boom is not applied to the mast. Thus, as compared with a case in which the rear end portion of the front boom is connected to the lower end portion of the mast, strength required for the mast is reduced. Furthermore, the front end portion of the rear boom is connected to the rear end portion of the base, and thus a load to support the rear boom is not applied to the mast. Thus, as compared with a case in which the front end portion of the rear boom is connected to the lower end portion of the mast, strength required for the mast is reduced.

[0019] A sailing device according to an example embodiment preferably further includes an actuator configured to adjust a rotation angle of the base. Accordingly, the rotation angle of the base is easily and automatically adjusted by the actuator.

[0020] The above and other elements, features, steps, characteristics and advantages of preferred embodiments will become more apparent from the following detailed description of the preferred embodiments with reference to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

FIG. 1 is a perspective view showing a marine vessel according to an example embodiment.

FIG. 2 is an enlarged view of a portion II in FIG. 1.

FIG. 3 is a diagram of a base guide and a base moving member of a sailing device as viewed from the rear side in the forward-rearward direction of a hull according to an example embodiment.

FIG. 4 is an enlarged view of a portion IV in FIG. 1 as viewed from the rear side in the forward-rearward direction of a hull.

FIG. 5 is a diagram of a boom guide and a boom moving member of a sailing device as viewed from the right side in the right-left direction of a hull according to an example embodiment.

FIG. 6 is a perspective view of a boom guide and a boom moving member of a sailing device according to an example embodiment.

FIG. 7 is a plan view showing a sailing device according to a modified example.

FIG. 8 is an enlarged perspective view of a winch in FIG. 7.

DETAILED DESCRIPTION OF THE EXAMPLE EMBODIMENTS

[0022] Example embodiments are hereinafter described with reference to the drawings.

[0023] A sailing device 100 and a marine vessel 110 according to example embodiments are now described with reference to FIGS. 1 to 6. In the figures, arrow FWD represents the front side in the forward-rearward direction of a hull 111 (see FIG. 1), and arrow BWD represents the rear side in the forward-rearward direction of the hull 111. In the figures, arrow Z1 represents the upper side in the upward-downward direction of the hull 111, and arrow Z2 represents the lower side in the forward-rearward direction of the hull 111. In the figures, arrow L represents the left side in the right-left direction of the hull 111, and arrow R represents the right side in the right-left direction of the hull 111.

[0024] As shown in FIG. 1, the marine vessel 110 includes the hull 111, two outboard motors 112, and a sailing device 100. The hull 111 includes two bodies 111a aligned in the right-left direction of the hull 111 and connected to each other by a deck 111b. That is, the marine vessel 110 is a catamaran. The deck 111b includes an operator to operate the marine vessel 110, seats for passengers, etc. Each of the two outboard motors 112 is attached to a stern of the hull 111. Specifically, the two outboard motors 112 are attached to the rear end portions of the two bodies 111a, respectively. Each of the two outboard motors 112 is an engine outboard motor including an engine to drive a propeller. The sailing device 100 is attached to an upper portion of the hull 111. The sailing device 100 is used to sail the marine vessel 110.

[0025] As shown in FIG. 1, the sailing device 100 includes a sail 10, a mast 20, a boom 30, a base 40, an actuator 50, base guides 60, a base guide support 70, a boom guide 80, and a boom guide support 90. In FIG. 1, the sail 10 is indicated by a two-dot chain line.

[0026] As shown in FIG. 1, the opening degree of the sail 10 is adjustable to receive wind to obtain a propulsive force for the marine vessel 110. The sail 10 is opened in the forward-rearward direction of the hull 111 and in the upward-downward direction of the hull 111 when the boom 30 extends in the forward-rearward direction of the hull 111. In other words, the sail 10 is a fore-and-aft sail. The sail 10 has a triangular shape. The sail 10 includes a front sail 11 on the front side in the forward-rearward direction of the hull 111, and a rear sail 12 on the rear side in the forward-rearward direction of the hull 111.

[0027] As shown in FIG. 1, the mast 20 extends upward from the base 40 along the upward-downward direction of the hull 111. The mast 20 supports the sail 10. The mast 20 has an inverted V shape in which two mast portions 20a gradually approach each other toward an upper end portion 20b of the mast 20. The mast 20 includes mast portion connectors 20c to connect the two mast portions 20a to each other. FIG. 1 shows an example in which the mast 20 includes two mast portion connectors 20c.

[0028] As shown in FIG. 1, the boom 30 extends from the base 40 along a plane perpendicular to the upward-downward direction of the hull 111. The boom 30 supports the sail 10 from below in the upward-downward direction of the hull 111. The boom 30 has an inverted V shape in which two boom portions 30a gradually approach each other toward a distal end portion 30b of the boom 30. The boom 30 includes a front boom 31 to support the front sail 11 and a rear boom 32 to support the rear sail 12. The front boom 31 extends forward from the base 40 in the forward-rearward direction of the hull 111 when extending along the forward-rearward direction of the hull 111. The rear boom 32 extends rearward from the base 40 in the forward-rearward direction of the hull 111 when extending along the forward-rearward direction of the hull 111.

[0029] As shown in FIG. 1, the base 40 is plate-shaped so as to extend along the plane perpendicular to the upward-downward direction of the hull 111. A lower end portion 20d of the mast 20 and a proximal portion 30c of the boom 30 are connected to the base 40. Specifically, the lower end portion 20d of one of the two mast portions 20a and the lower end portion 20d of the other of the two mast portions 20a are connected to a left end portion and a right end portion of the base 40, respectively. A rear end portion 31a of each of the two boom portions 30a of the front boom 31 is connected to a front end portion 40a of the base 40. A front end portion 32a of each of the two boom portions 30a of the rear boom 32 is connected to a rear end portion 40b of the base 40.

[0030] The base 40 is rotatable about a rotation central axis C in the plane perpendicular to the upward-downward direction of the hull 111. That is, the base 40 allows the mast 20 connected to the base 40, the boom 30 connected to the base 40, and the sail 10 supported by the mast 20 and the boom 30 to integrally rotate about the rotation central axis C in the plane perpendicular to the upward-downward direction of the hull 111. The rotation central axis C passes through a central portion of the base 40 in the right-left direction of the hull 111 and through a front portion of the base 40 in the forward-rearward direction of the hull 111.

[0031] As shown in FIG. 1, the actuator 50 adjusts the rotation angle of the base 40. The actuator 50 is located between the base 40 and the hull 111 in the upward-downward direction of the hull 111, and in a central portion of the hull 111 in the forward-rearward direction. The

actuator 50 includes a hydraulic cylinder or an electric cylinder, for example.

[0032] As shown in FIG. 1, the base guides 60 guide and support the base 40 when the base 40 rotates in the plane perpendicular to the upward-downward direction of the hull 111. As shown in FIG. 2, each of the base guides 60 has an arcuate shape corresponding to a circle centered on the rotation central axis C. Specifically, each of the base guides 60 includes a rail having the arcuate shape corresponding to the circle centered on the rotation central axis C. As shown in FIG. 1, a pair of base guides 60 are provided. One of the pair of base guides 60 is provided in the arcuate shape corresponding to the circle centered on the rotation central axis C leftward of a central portion 20e of the mast 20 in the right-left direction of the hull 111, and the other of the pair of base guides 60 is provided in the arcuate shape corresponding to the circle centered on the rotation central axis C rightward of the central portion 20e of the mast 20 in the right-left direction of the hull 111. The base guides 60 are located downward of the base 40 in the upward-downward direction of the hull 111.

[0033] As shown in FIG. 2, each of the base guides 60 guides and supports the base 40 via base moving members 61 that are movable along the base guide 60 having the arcuate shape corresponding to the circle centered on the rotation central axis C. The base moving members 61 include rollers that are movable along the rail having the arcuate shape corresponding to the circle centered on the rotation central axis C. Specifically, as shown in FIG. 3, the rollers (base moving members 61) are fixed to the base 40 via a fastener, for example, so as to be rotatable about a direction from the rollers toward the rotation central axis C. Two rollers (base moving members 61) are aligned in the upward-downward direction of the hull 111 to sandwich the rail (base guide 60). The rail (base guide 60) includes a plate-shaped rail main body 60a and protrusions 60b that protrude upward and downward in the upward-downward direction of the hull 111 from the plate-shaped rail main body 60a. The two rollers (base moving members 61) include recesses that engage with the protrusions 60b of the rail (base guide 60), respectively.

[0034] As shown in FIG. 1, the base guide support 70 supports the base guides 60 from below in the upward-downward direction of the hull 111. The base guide support 70 is attached to the hull 111. The base guide support 70 includes a combination of a plurality of rod-shaped members, a plurality of plate-shaped members, etc., such that the base guide support 70 is at a predetermined position with respect to the hull 111 in the upward-downward direction of the hull 111.

[0035] As shown in FIG. 1, the boom guide 80 guides and supports the boom 30 when the base 40 rotates in the plane perpendicular to the upward-downward direction of the hull 111. The boom guide 80 has an arcuate shape corresponding to a circle centered on the rotation central axis C. Specifically, the boom guide 80 includes a rail having the arcuate shape corresponding to the circle centered on the rotation central axis C. The boom guide 80 is located rearward of the base 40 in the forward-rearward direction of the hull 111, and is connected to the distal end portion 30b of the boom 30. Specifically, the boom guide 80 is connected to a rear end portion 32b of the rear boom 32. The boom guide 80 is located downward of the boom 30 in the upward-downward direction of the hull 111.

[0036] As shown in FIGS. 4 and 5, the boom guide 80 guides and supports the boom 30 via boom moving members 81 that are movable along the boom guide 80 having the arcuate shape corresponding to the circle centered on the rotation central axis C (see FIG. 1). The boom moving members 81 include bearings that are movable along the rail having the arcuate shape corresponding to the circle centered on the rotation central axis C. Specifically, the bearings (boom moving members 81) are fixed to the rear end portion 32b of the rear boom 32 via an aluminum plate 82 that extends in the upward-downward direction of the hull 111, connectors 83, and fasteners, for example, so as to be rotatable about a direction from the bearings toward the rotation central axis C. The aluminum plate 82 is fixed to the rear end portion 32b of the rear boom 32 by a fastener, for example. Upper end portions of the connectors 83 are fixed to a lower end portion of the aluminum plate 82. The bearings (boom moving members 81) are connected to lower end portions of the connectors 83 so as to be rotatable about a rotation axis along the movement direction of the bearings by rotation shafts 84. As shown in FIGS. 5 and 6, each of the bearings (boom moving members 81) includes a recess that is recessed upward in the upward-downward direction of the hull 111. The recess of each of the bearings (boom moving members 81) is provided on the lower side of the bearing (boom moving member 81) in the upward-downward direction of the hull 111. The rail (boom guide 80) engages with the recess of each of the bearings (boom moving members 81). As shown in FIGS. 4 and 5, the bearings (boom moving members 81) include balls to reduce friction with the rail (boom guide 80). As shown in FIG. 4, two boom moving members 81 are aligned along the arcuate boom guide 80.

[0037] As shown in FIGS. 4 and 5, the boom guide support 90 supports the boom guide 80 from below in the upward-downward direction of the hull 111. As shown in FIG. 1, the boom guide support 90 is attached to the hull 111. The boom guide support 90 includes a combination of a plurality of rod-shaped members such that the boom guide support 90 is at a predetermined position with respect to the hull 111 in the upward-downward direction of the hull 111.

[0038] According to the various example embodiments described above, the following advantageous effects are achieved.

[0039] According to an example embodiment, the sailing device 100 includes the base 40 to allow the lower end

portion 20d of the mast 20 and the proximal portion 30c of the boom 30 to be connected thereto, and rotatable in the plane perpendicular to the upward-downward direction of the hull 111. Accordingly, the base 40 allows the sail 10, the mast 20, and the boom 30 to integrally rotate in the plane perpendicular to the upward-downward direction of the hull 111. Furthermore, the proximal portion 30c of the boom 30 is connected to the base 40, and thus a load to support the boom 30 is not applied to the mast 20. Thus, as compared with a case in which the proximal portion 30c of the boom 30 is connected to the lower end portion 20d of the mast 20, strength required for the mast 20 is reduced. Consequently, the sail 10, the mast 20, and the boom 30 are integrally rotated in the plane perpendicular to the upward-downward direction of the hull 111 while an increase in strength required for the mast 20 is reduced or prevented.

[0040] According to an example embodiment, the sailing device 100 includes the arcuate base guides 60 to guide and support the base 40 when the base 40 rotates in the plane perpendicular to the upward-downward direction of the hull 111. Accordingly, the base 40 is easily rotated in the plane perpendicular to the upward-downward direction of the hull 111 by the arcuate base guides 60 that guide and support the base 40.

[0041] According to an example embodiment, a pair of base guides 60 are provided. One of the pair of base guides 60 is provided in the arcuate shape leftward of the central portion 20e of the mast 20 in the right-left direction of the hull 111, and the other of the pair of base guides 60 is provided in the arcuate shape rightward of the central portion 20e of the mast 20 in the right-left direction of the hull 111. Accordingly, as compared with a case in which the base guides 60 are circular, an installation space for the base guides 60 in the hull 111 is reduced. Furthermore, the pair of base guides 60 are unlikely to be located, in the forward-rearward direction of the hull 111, forward of and rearward of the central portion 20e of the mast 20 in the right-left direction of the hull 111, and thus the possibility that the base guides 60 prevent the passengers from moving in the forward-rearward direction of the hull 111 is reduced or prevented.

[0042] According to an example embodiment, the base guides 60 are configured to guide and support the base 40 via the base moving members 61 that are movable along the arcuate base guides 60. Accordingly, the base moving members 61 that are movable along the arcuate base guides 60 allow the arcuate base guides 60 to easily guide and support the base 40.

[0043] According to an example embodiment, each of the base guides 60 includes a rail having an arcuate shape, and the base moving members 61 include rollers that are movable along the rail having the arcuate shape. Accordingly, a structure in which the base guides 60 guide and support the base 40 via the base moving members 61 that are movable along the arcuate base guides 60 is easily achieved.

[0044] According to an example embodiment, the sailing device 100 includes, rearward of the base 40 in the forward-rearward direction of the hull 111, the arcuate boom guide 80 connected to the distal end portion 30b of the boom 30 to guide and support the boom 30 when the base 40 rotates in the plane perpendicular to the upward-downward direction of the hull 111. Accordingly, the arcuate boom guide 80 connected to the distal end portion 30b of the boom 30 to guide and support the boom 30 allows the base 40 to easily rotate in the plane perpendicular to the upward-downward direction of the hull 111. Moreover, the boom guide 80 is located rearward of the base 40 in the forward-rearward direction of the hull 111 and is connected to the distal end portion 30b of the boom 30, and thus the boom guide 80 is unlikely to be located in a central portion in the forward-rearward direction of the hull 111. Thus, the possibility that the boom guide 80 prevents the passengers from moving in the forward-rearward direction of the hull 111 is reduced or prevented.

[0045] According to an example embodiment, the sail 10 includes the rear sail 12 on the rear side in the forward-rearward direction of the hull 111. The boom 30 includes the rear boom 32 to support the rear sail 12. The boom guide 80 is connected to the rear end portion 32b of the rear boom 32 and is rearward of the base 40 in the forward-rearward direction of the hull 111. Accordingly, the boom guide 80 is located rearward of the base 40 in the forward-rearward direction of the hull 111, and thus the boom guide 80 is likely to be located on the rear side in the forward-rearward direction of the hull 111. Thus, the possibility that the boom guide 80 obstructs the passengers' view of the front side in the forward-rearward direction of the hull 111 is reduced or prevented.

[0046] According to an example embodiment, the boom guide 80 is configured to guide and support the boom 30 via the boom moving members 81 that are movable along the arcuate boom guide 80. Accordingly, the boom moving members 81 that are movable along the arcuate boom guide 80 allow the arcuate boom guide 80 to easily guide and support the boom 30.

[0047] According to an example embodiment, the boom guide 80 includes a rail having an arcuate shape, and the boom moving members 81 include bearings that are movable along the rail having the arcuate shape. Accordingly, a structure in which the boom guide 80 guides and supports the boom 30 via the boom moving members 81 that are movable along the arcuate boom guide 80 is easily achieved.

[0048] According to an example embodiment, the mast 20 has an inverted V shape in which the two mast portions 20a gradually approach each other toward the upper end portion 20b of the mast 20. Accordingly, it is not necessary to provide separate wires to support the two mast portions 20a in a direction in which the two mast portions 20a are aligned, and thus the device structure is simplified, and an operation to adjust the wires is eliminated.

[0049] According to an example embodiment, the boom 30 has an inverted V shape in which the two boom portions 30a gradually approach each other toward the

distal end portion 30b of the boom 30. Accordingly, it is not necessary to provide separate wires to support the two boom portions 30a in a direction in which the two boom portions 30a are aligned, and thus the device structure is simplified, and an operation to adjust the wires is eliminated.

[0050] According to an example embodiment, the sail 10 includes the front sail 11 on the front side in the forward-rearward direction of the hull 111, and the rear sail 12 on the rear side in the forward-rearward direction of the hull 111. The boom 30 includes the front boom 31 to support the front sail 11, and the rear boom 32 to support the rear sail 12. The rear end portion 31a of the front boom 31 is connected to the front end portion 40a of the base 40. The front end portion 32a of the rear boom 32 is connected to the rear end portion 40b of the base 40. Accordingly, the rear end portion 31a of the front boom 31 is connected to the front end portion 40a of the base 40, and thus a load to support the front boom 31 is not applied to the mast 20. Thus, as compared with a case in which the rear end portion 31a of the front boom 31 is connected to the lower end portion 20d of the mast 20, strength required for the mast 20 is reduced. Furthermore, the front end portion 32a of the rear boom 32 is connected to the rear end portion 40b of the base 40, and thus a load to support the rear boom 32 is not applied to the mast 20. Thus, as compared with a case in which the front end portion 32a of the rear boom 32 is connected to the lower end portion 20d of the mast 20, strength required for the mast 20 is reduced.

[0051] According to an example embodiment, the sailing device 100 includes the actuator 50 to adjust the rotation angle of the base 40. Accordingly, the rotation angle of the base 40 is easily and automatically adjusted by the actuator 50.

[0052] The example embodiments described above are illustrative for present teaching but the present teaching also relates to modifications of the example embodiments.

[0053] For example, according to an embodiment, the sailing device 100 includes the arcuate base guides 60 to guide and support the base 40 when the base 40 rotates in the plane perpendicular to the upward-downward direction of the hull 111. Alternatively, the sailing device may include a circular base guide to guide and support the base when the base rotates in the plane perpendicular to the upward-downward direction of the hull. Alternatively, the sailing device may not include the arcuate or circular base guide(s) to guide and support the base when the base rotates in the plane perpendicular to the upward-downward direction of the hull.

[0054] According to an embodiment, a pair of base guides 60 are provided. Alternatively, only one base guide may be provided, or three or more base guides may alternatively be provided.

[0055] According to an embodiment, one of the pair of base guides 60 is provided in an arcuate shape leftward of the central portion 20e of the mast 20 in the right-left direction of the hull 111, and the other of the pair of base guides 60 is provided in an arcuate shape rightward of the central portion 20e of the mast 20 in the right-left direction of the hull 111. Alternatively, one of the pair of base guides may be provided in an arcuate shape forward of the central portion of the mast in the right-left direction of the hull, in the forward-rearward direction of the hull, and the other of the pair of base guides may be provided in an arcuate shape rearward of the central portion of the mast in the right-left direction of the hull, in the forward-rearward direction of the hull.

[0056] According to an embodiment, two base moving members 61 are aligned in the upward-downward direction of the hull 111 to sandwich the base guide 60. Alternatively, only one base moving member may be provided for one base guide.

[0057] According to an embodiment, the arcuate base guides 60 guide and support the base 40 via the base moving members 61 that are movable along the arcuate base guides 60. Alternatively, a circular base guide may guide and support the base via base moving members that are movable along the circular base guide. Alternatively, the base guide(s) may guide and support the base via members other than the base moving members that are movable along the arcuate or circular base guide(s), or may directly guide and support the base without any members.

[0058] According to an embodiment, each of the base guides 60 includes an arcuate rail, and the base moving members 61 include rollers that are movable along the arcuate rail. Alternatively, the base guide may include a circular rail, and the base moving members may include rollers that are movable along the circular rail. Alternatively, each of the base guides or the base guide may include an arcuate or circular rail, and the base moving members may include members (bearings, for example) other than the rollers that are movable along the arcuate or circular rail.

[0059] According to an embodiment, the sailing device 100 includes, rearward of the base 40 in the forward-rearward direction of the hull 111, the arcuate boom guide 80 connected to the distal end portion 30b of the boom 30 to guide and support the boom 30 when the base 40 rotates in the plane perpendicular to the upward-downward direction of the hull 111. Alternatively, the sailing device may include, forward of the base in the forward-rearward direction of the hull, the arcuate boom guide connected to the distal end portion of the boom to guide and support the boom when the base rotates in the plane perpendicular to the upward-downward direction of the hull. Alternatively, the sailing device may not include the arcuate boom guide connected to the distal end portion of the boom to guide and support the boom when the base rotates in the plane perpendicular to the upward-downward direction of the hull.

[0060] According to an embodiment, the boom guide 80 is connected to the rear end portion 32b of the rear boom 32, and located rearward of the base 40 in the

forward-rearward direction of the hull 111. Alternatively, the boom guide may be connected to a front end portion of the front boom, and located forward of the base in the forward-rearward direction of the hull.

[0061] According to an embodiment, two boom moving members 81 are aligned along the arcuate boom guide 80. Alternatively, only one boom moving member may be provided for the boom guide.

[0062] According to an embodiment, the boom guide 80 guides and supports the boom 30 via the boom moving members 81 that are movable along the arcuate boom guide 80. Alternatively, the boom guide may guide and support the boom via members other than the boom moving members that are movable along the arcuate boom guide, or may directly guide and support the boom without any members.

[0063] According to an embodiment, the boom guide 80 includes the arcuate rail, and the boom moving members 81 include the bearings that are movable along the arcuate rail. Alternatively, the boom guide may include the arcuate rail, and the boom moving members may include members (rollers, for example) other than the bearings that are movable along the arcuate rail.

[0064] According to an embodiment, the mast 20 has an inverted V shape in which the two mast portions 20a gradually approach each other toward the upper end portion 20b of the mast 20. Alternatively, the mast may have a shape other than the inverted V shape in which the two mast portions gradually approach each other toward the upper end portion of the mast.

[0065] According to an embodiment, the boom 30 has an inverted V shape in which the two boom portions 30a gradually approach each other toward the distal end portion 30b of the boom 30. Alternatively, the boom may have a shape other than the inverted V shape in which the two boom portions gradually approach each other toward the distal end portion of the boom.

[0066] According to an embodiment, the sail 10 includes the front sail 11 on the front side in the forward-rearward direction of the hull 111, and the rear sail 12 on the rear side in the forward-rearward direction of the hull 111, the boom 30 includes the front boom 31 to support the front sail 11, and the rear boom 32 to support the rear sail 12, the rear end portion 31a of the front boom 31 is connected to the front end portion 40a of the base 40, and the front end portion 32a of the rear boom 32 is connected to the rear end portion 40b of the base 40. Alternatively, the sail may include the front sail on the front side in the forward-rearward direction of the hull, but may not include the rear sail on the rear side in the forward-rearward direction of the hull, the boom may include the front boom to support the front sail, but may not include the rear boom to support the rear sail, and the rear end portion of the front boom may be connected to the front end portion of the base. Alternatively, the sail may not include the front sail on the front side in the forward-rearward direction of the hull, but may include the rear sail on the rear side in the forward-rearward direction of the hull, the boom may not include the front boom to support the front sail, but may include the rear boom to support the rear sail, and the front end portion of the rear boom may be connected to the rear end portion of the base.

[0067] According to an embodiment, the sailing device 100 includes the actuator 50 to adjust the rotation angle of the base 40. Alternatively, the sailing device may not include the actuator to adjust the rotation angle of the base. That is, the sailing device may manually adjust the rotation angle of the base 40, as in a sailing device 200 of a marine vessel 210 according to a modified example shown in FIG. 7. As shown in FIG. 7, the sailing device 200 of the marine vessel 210 includes a pair of winches 250 to adjust the rotation angle of a base 40. One of the pair of winches 250 is located leftward of boom moving members 81 in the right-left direction of a hull 211, and the other of the pair of winches 250 is located rightward of the boom moving members 81 in the right-left direction of the hull 211. The pair of winches 250 are located in the vicinity of or adjacent to end portions of a boom guide 80 in the arcuate direction, respectively. As shown in FIG. 8, each of the pair of winches 250 is able to wind up a rope 251 (see FIG. 7). As shown in FIG. 7, one of the pair of winches 250 is able to wind up the rope 251 fixed to one of two bearings (boom moving members 81), and the other of the pair of winches 250 is able to wind up the rope 251 fixed to the other of the two bearings (boom moving members 81). When the rope 251 fixed to one of the two bearings (boom moving members 81) is wound up by one of the pair of winches 250, the bearings rotate to one side in the arcuate direction of the boom guide 80. When the rope 251 fixed to the other of the two bearings (boom moving members 81) is wound up by the other of the pair of winches 250, the bearings rotate to the other side in the arcuate direction of the boom guide 80. As the bearings (boom moving members 81) rotate in the arcuate direction of the boom guide 80, the boom 30 (and thus the base 40) fixed to the boom moving members 81 rotates about a rotation central axis C (see FIG. 1) in a plane perpendicular to the upward-downward direction of the hull 211.

[0068] According to an embodiment, the marine vessel 110 is a catamaran. Alternatively, the marine vessel may be a monohull or a trimaran.

[0069] According to an embodiment, the marine vessel 110 includes two outboard motors 112. Alternatively, the marine vessel may include one outboard motor, or may alternatively include three or more outboard motors. Alternatively, the marine vessel may not include any outboard motors.

[0070] According to an embodiment, each of the outboard motors 112 is an engine outboard motor including an engine to drive a propeller. Alternatively, each of the outboard motors may be an electric outboard motor including an electric motor to drive a propeller.

[0071] According to an embodiment, the mast 20 includes the mast portion connectors 20c to connect the two mast portions 20a to each other. Alternatively, the mast may not include the mast portion connectors to

connect the two mast portions to each other.

[0072] According to an embodiment, the rotation central axis C passes through the central portion of the base 40 in the right-left direction of the hull 111 and through the front portion of the base 40 in the forward-rearward direction of the hull 111. Alternatively, the rotation central axis may pass through a position other than the central portion of the base in the right-left direction of the hull, and may pass through a position other than the front portion of the base in the forward-rearward direction of the hull.

[0073] According to an embodiment, the actuator 50 is located between the base 40 and the hull 111 in the upward-downward direction of the hull 111, and in the central portion of the hull 111 in the forward-rearward direction. Alternatively, the actuator may be located upward of the base in the upward-downward direction of the hull, or may be located in a front or rear portion of the hull 111 in the forward-rearward direction.

Claims

1. A sailing device (100, 200) configured to be attached to a hull (111, 211) of a marine vessel (110, 210), the sailing device (100, 200) comprising:

a sail (10);
a mast (20) extending along an upward-downward direction of the hull (111, 211) and configured to support the sail (10);
a boom (30) extending along a plane perpendicular to the upward-downward direction of the hull (111, 211) and configured to support the sail (10) from below with regard to the upward-downward direction of the hull (111, 211); and
a base (40) connected to a lower end portion (20d) of the mast (20) with regard to the upward-downward direction of the hull (111, 211) and a proximal portion (30c) of the boom (30), and configured to be rotatable in the plane perpendicular to the upward-downward direction of the hull (111, 211).

2. The sailing device (100, 200) according to claim 1, further comprising:
at least one base guide (60) having an arcuate or circular shape and configured to guide and support the base (40) when the base (40) rotates in the plane perpendicular to the upward-downward direction of the hull (111, 211).

3. The sailing device (100, 200) according to claim 2, further comprising:

a pair of base guides (60); wherein
one of the pair of base guides (60) is provided in the arcuate shape leftward of a central portion (20e) of the mast (20) with regard to a right-left direction of the hull (111, 211), and the other of the pair of base guides (60) is provided in the arcuate shape rightward of the central portion of the mast (20) with regard to the right-left direction of the hull (111, 211).

4. The sailing device (100, 200) according to claim 2 or 3, wherein the base guide (60) is configured to guide and support the base (40) via a base moving member (61) configured to be movable along the base guide (60) having the arcuate or circular shape.

5. The sailing device (100, 200) according to claim 4, wherein the base guide (60) includes a rail having the arcuate or circular shape; and
the base moving member (61) includes a roller configured to be movable along the rail having the arcuate or circular shape.

6. The sailing device (100, 200) according to any one of claims 1 to 5, further comprising:
a boom guide (80) arranged forward or rearward of the base (40) with regard to a forward-rearward direction of the hull (111, 211), the boom guide (80) having an arcuate shape, connected to a distal end portion (30b) of the boom (30), and configured to guide and support the boom (30) when the base (40) rotates in the plane perpendicular to the upward-downward direction of the hull (111, 211).

7. The sailing device (100, 200) according to claim 6, wherein the sail (10) includes a rear sail (12) on a rear side with regard to the forward-rearward direction of the hull (111, 211);
the boom (30) includes a rear boom (32) configured to support the rear sail (12); and the boom guide (80) is connected to a rear end portion (32b) of the rear boom (32) and is rearward of the base (40) with regard to the forward-rearward direction of the hull (111, 211).

8. The sailing device (100, 200) according to claim 6 or 7, further comprising:
a boom moving member (81), wherein the boom guide (80) is configured to guide and support the boom (30) via the boom moving member (81) configured to be movable along the boom guide (80) having the arcuate shape.

9. The sailing device (100, 200) according to claim 8, wherein the boom guide (80) includes a rail having the arcuate shape; and
the boom moving member (81) includes a bearing configured to be movable along the rail having the arcuate shape.

10. The sailing device (100, 200) according to any one of claims 1 to 9, wherein the mast (20) has two mast

portions (20a) that gradually approach each other toward an upper end portion (20b) of the mast (20) with regard to the upward-downward direction of the hull (111, 211) to constitute an inverted V shape.

11. The sailing device (100, 200) according to any one of claims 6 to 10, wherein the boom (30) has two boom portions (30a) that gradually approach each other toward the distal end portion (30b) of the boom (30) to constitute an inverted V shape with regard an extending direction of the boom (30).

12. The sailing device (100, 200) according to any one of claims 1 to 11, wherein the sail (10) includes a front sail (11) on a front side with regard to a forward-rearward direction of the hull (111, 211), and a rear sail (12) on a rear side with regard to the forward-rearward direction of the hull (111, 211);

the boom (30) includes a front boom (31) with regard to the forward-rearward direction of the hull (111, 211) configured to support the front sail (11), and a rear boom (32) with regard to the forward-rearward direction of the hull (111, 211) configured to support the rear sail (12);
the front boom (31) includes a rear end portion (31a) connected to a front end portion (40a) of the base (40) with regard to the forward-rearward direction of the hull (111, 211); and
the rear boom (32) includes a front end portion (32a) connected to a rear end portion (40b) of the base (40) with regard to the forward-rearward direction of the hull (111, 211).

13. The sailing device (100) according to any one of claims 1 to 12, further comprising: an actuator (50) configured to adjust a rotation angle of the base (40) in the plane perpendicular to the upward-downward direction of the hull (111, 211).

14. A marine vessel (110, 210) having at least one hull (111, 211) and a sailing device (100, 200) according to at least one of the claims 1 to 13.

15. A marine vessel (110, 210) according to claim 14, one or more hulls (111, 210) are arranged to constitute a catamaran, a monohull-marine vessel or a trimaran.

FIG.1

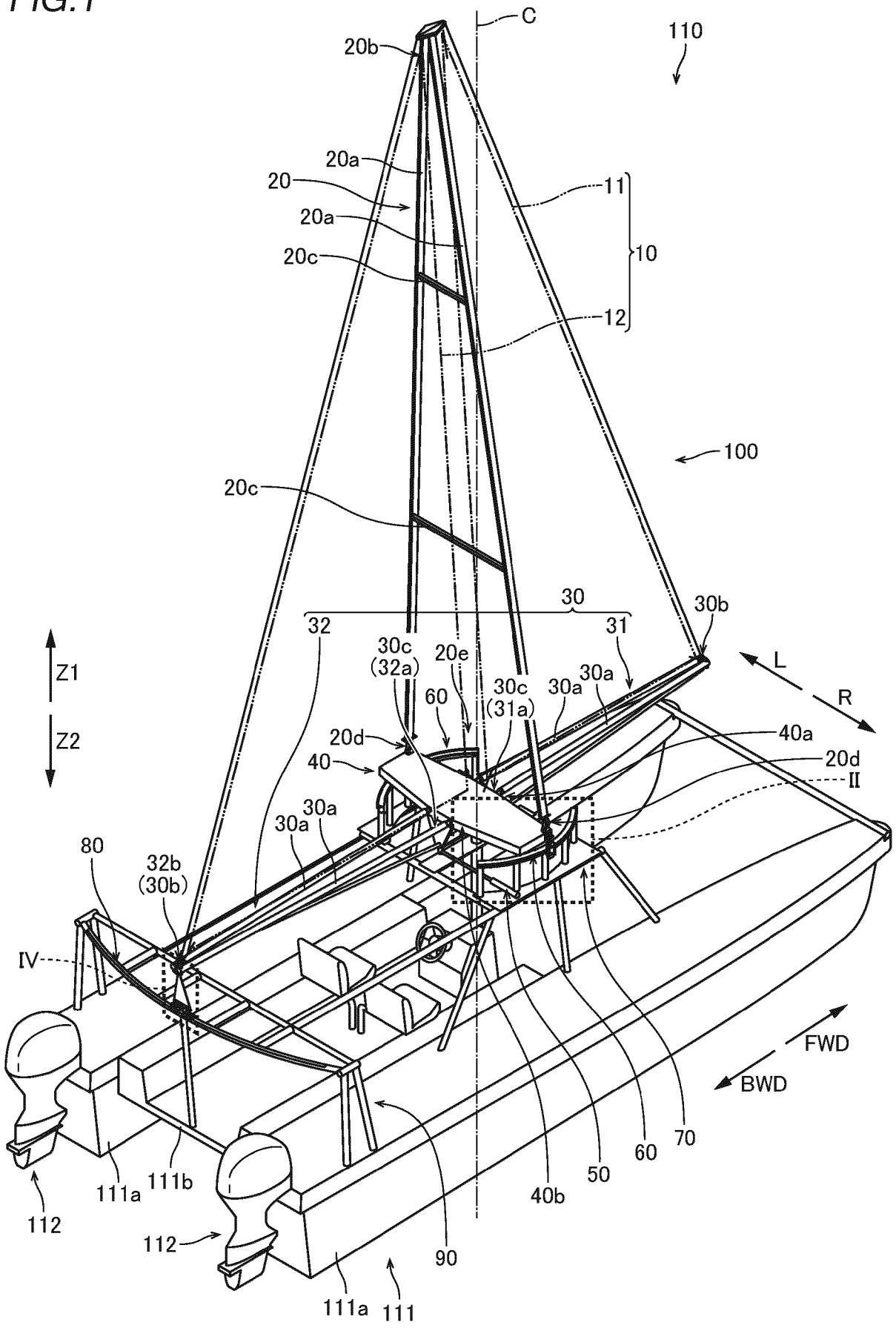

C
110
20b
20a
20
20a
20c
11
10
12
100
20c
30
32
31
30b
30c
(32a)
20e
60
30c
(31a)
30a
30a
L
R
Z1
Z2
20d
40
40a
20d
II
30a
30a
80
32b
(30b)
IV
FWD
BWD
70
60
50
40b
111a
111b
112
112
90
111a
111

FIG.2

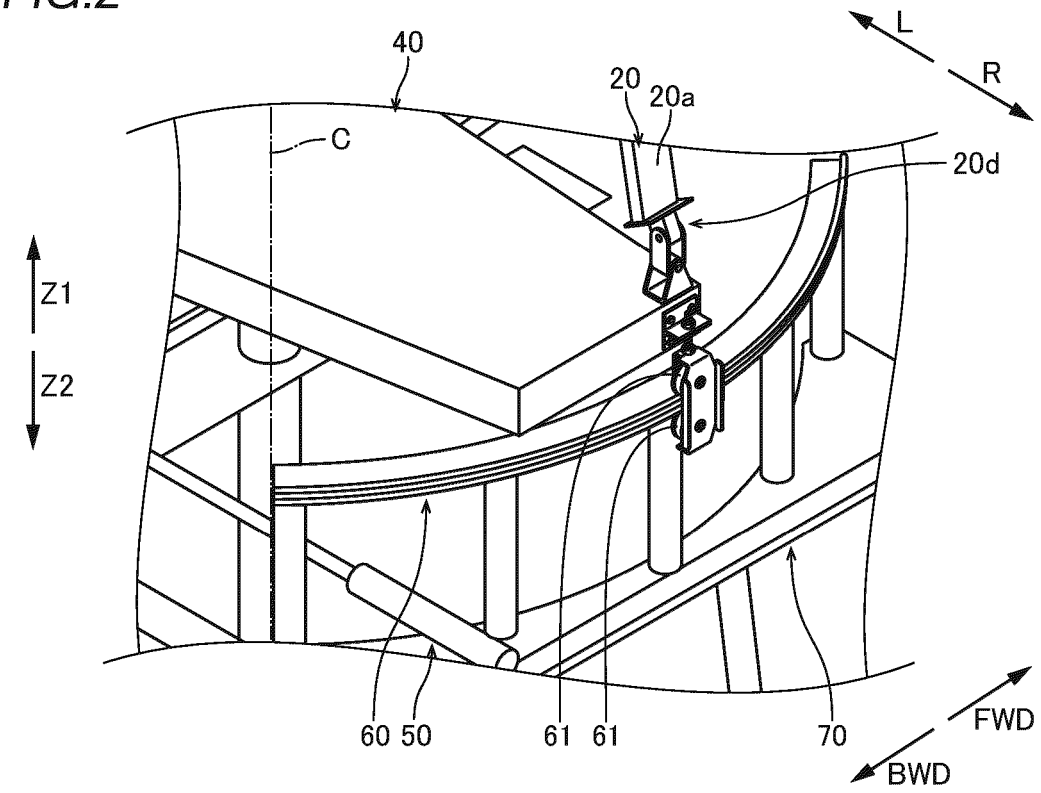

40
20
20a
L
R
C
20d
Z1
Z2
60
50
61
61
70
FWD
BWD

FIG.3

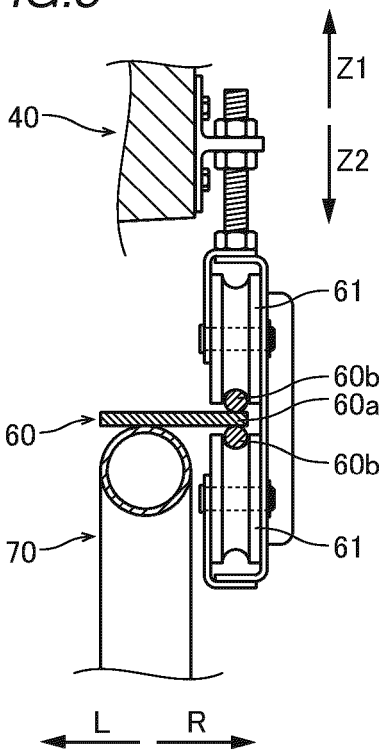

Z1
40
Z2
61
60b
60a
60
60b
70
61
L
R

FIG.4

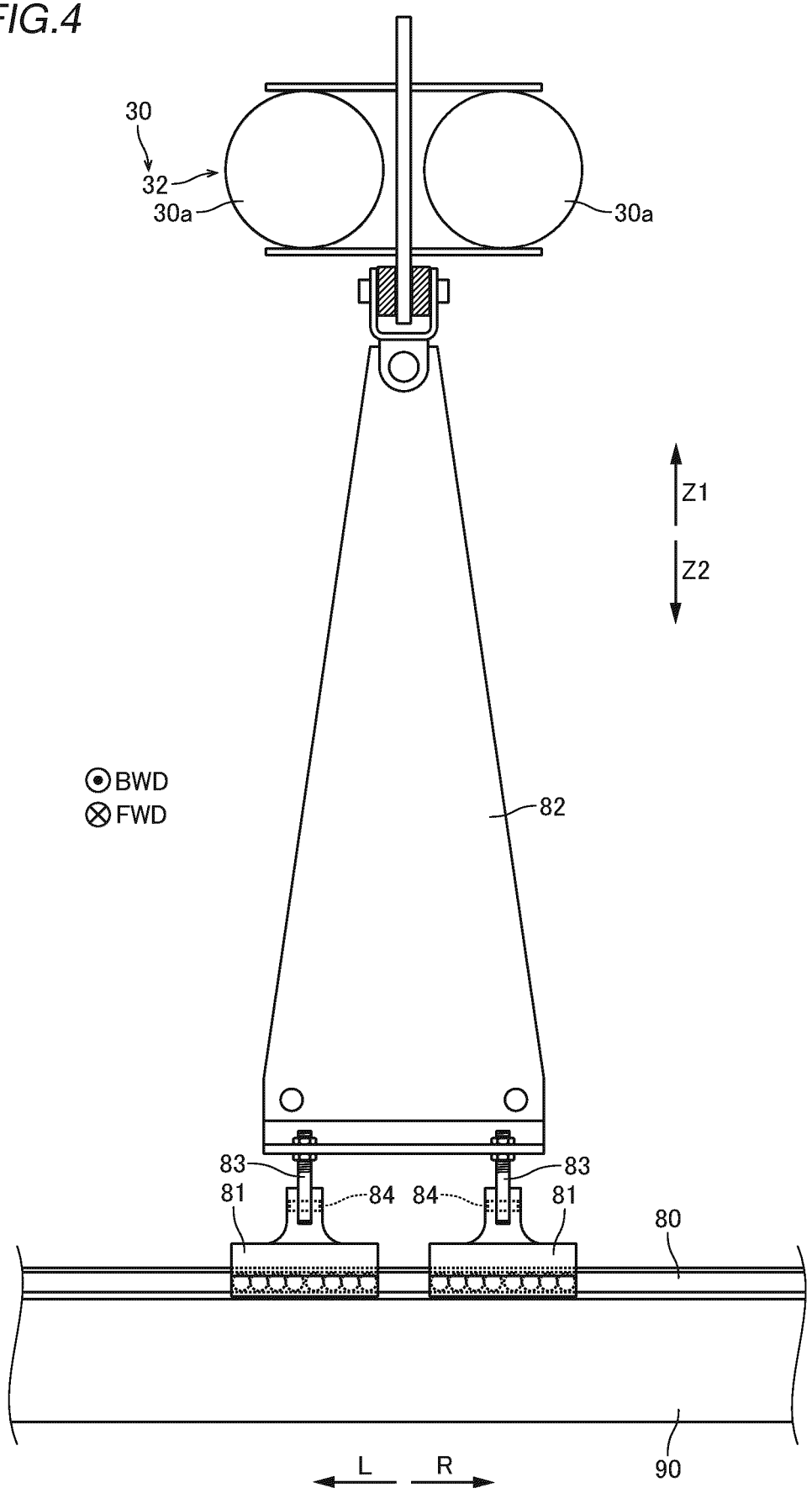


FIG.5

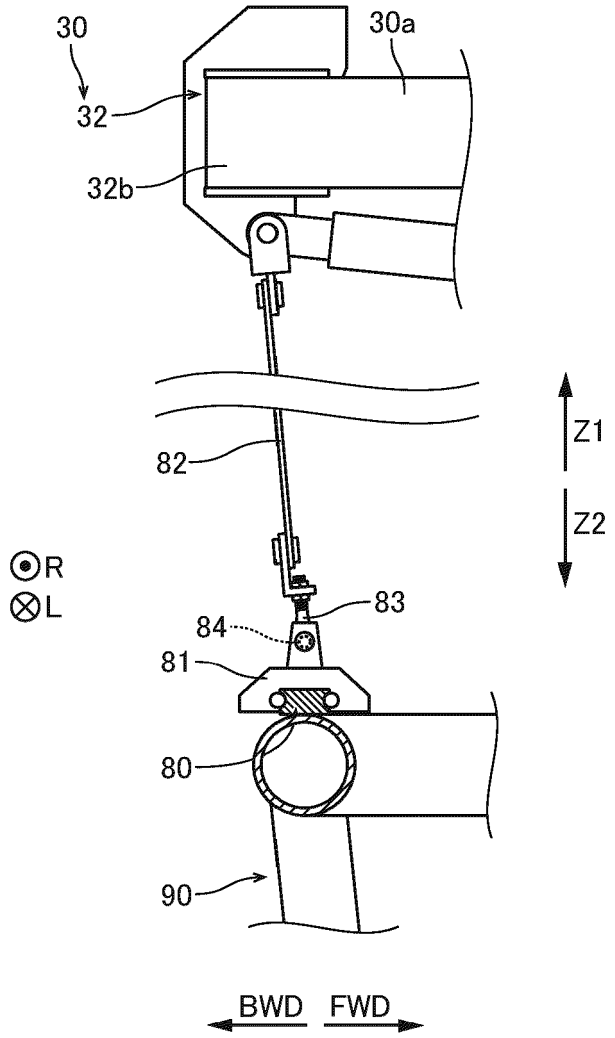

30
30a
32
32b
Z1
Z2
82
R
L
83
84
81
80
90
BWD
FWD

FIG.6

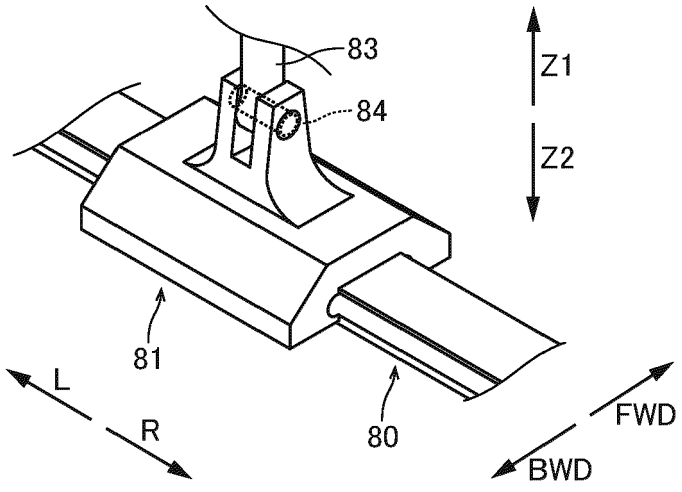

83
Z1
84
Z2
81
L
R
80
FWD
BWD

FIG.7

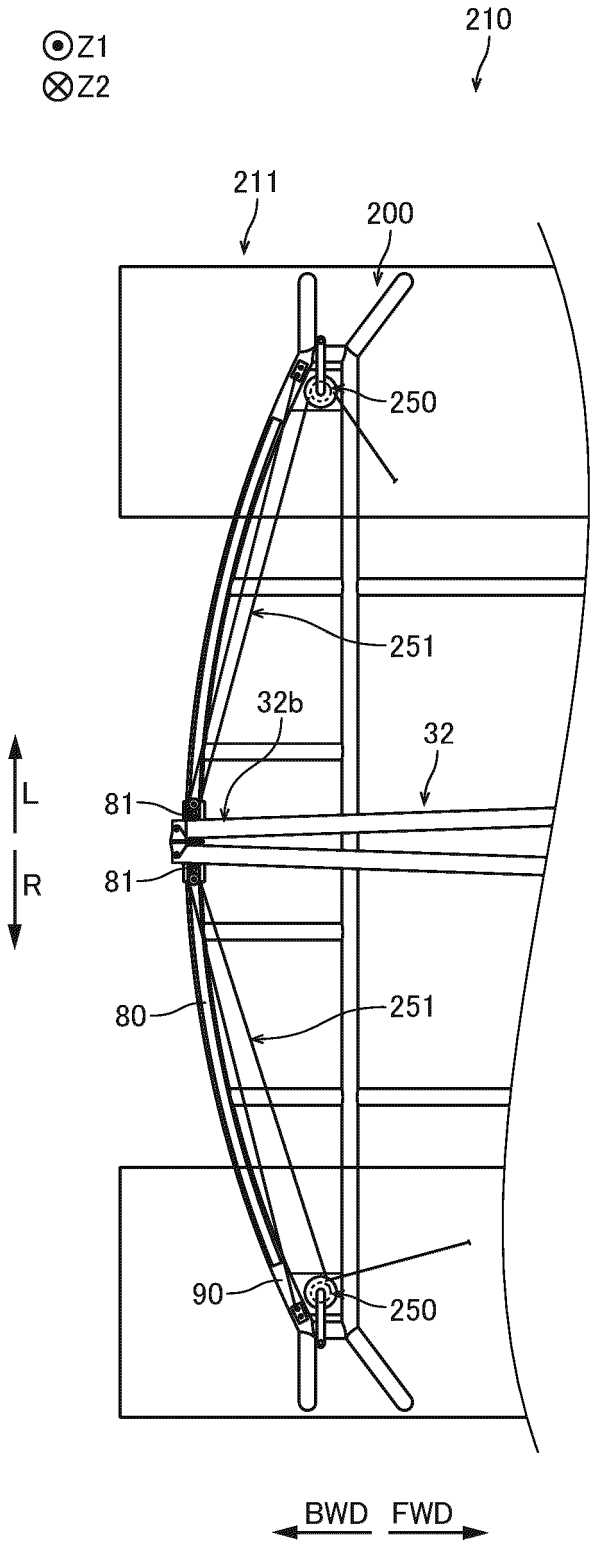
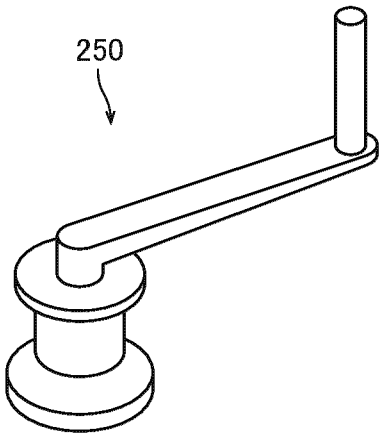


FIG.8



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 25 18 1324

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2 147 501 A (RYDER WILLIAM E) 14 February 1939 (1939-02-14) * figures 1-9 * -----	1,6-15	INV. B63B15/00 B63H9/06 B63H9/08
X	FR 2 822 798 A1 (WARD DENNIS HAROLD [GB]) 4 October 2002 (2002-10-04) * figures 1-5 * -----	1-5	
X	JP H02 68290 A (HORI YUKIMASA) 7 March 1990 (1990-03-07) * figures 1, 2, 3a, 3b * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)

B63B
B63H

The present search report has been drawn up for all claims

1

Place of search	Date of completion of the search	Examiner
The Hague	25 November 2025	Ibarrondo, Borja

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 25 18 1324

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-11-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2147501 A	14-02-1939	NONE	
FR 2822798 A1	04-10-2002	AU 2775102 A	03-10-2002
		FR 2822798 A1	04-10-2002
		GB 2374060 A	09-10-2002
		NZ 517982 A	26-11-2002
		US 2002139285 A1	03-10-2002
JP H0268290 A	07-03-1990	NONE	

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2068290 A **[0002] [0003] [0004]**