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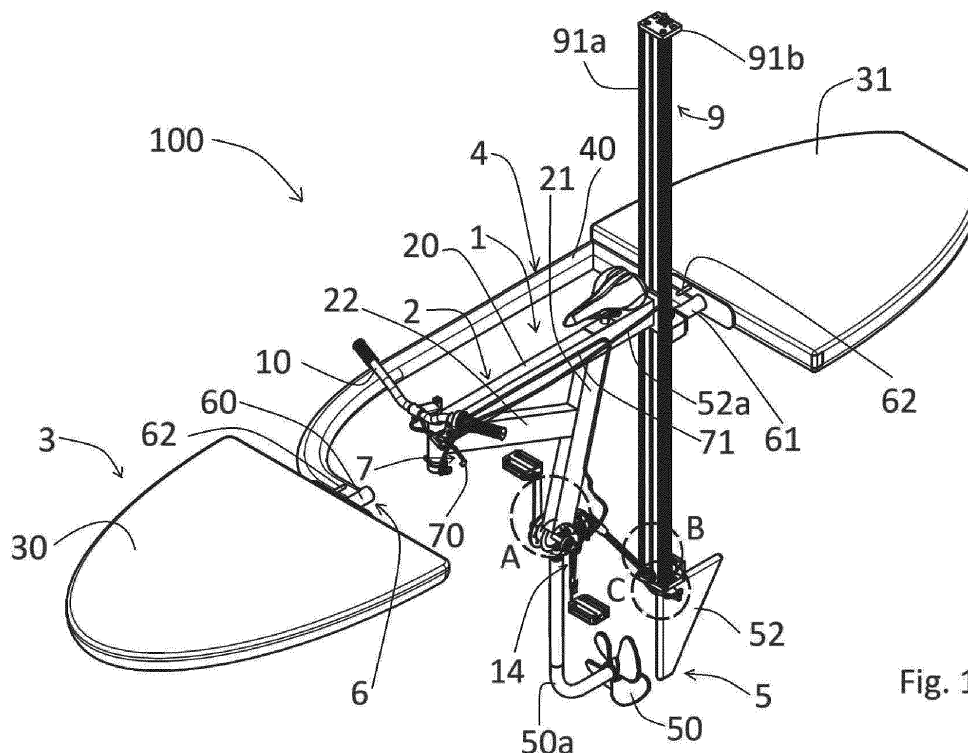
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(54) AQUATIC DEVICE

(57) An aquatic device comprises: a bicycle (1), propulsion means (5) suitable to be actuated to move and steer the aquatic device (100) and a fixed frame (4) comprising floating means (3); the bicycle (1) is mounted to slide relative to the fixed frame (4); the aquatic device (100) comprises: movement means (9) connected to the bicycle (1) so that the bicycle (1) can perform upward and

downward strokes relative to the fixed frame (4) between a raised position and a lowered position, transmission means (8) connected to the movement means (9) and connectable to a pedal assembly (14) to transmit motion from the pedal assembly (14) to the movement means (9), and enabling/disabling means (7) to enable/disable the transmission means (8).

**Fig. 1****EP 4 545 395 A1**

Description

[0001] The present patent application for an industrial invention relates to an aquatic device. In particular, the field of reference is that of devices for water entertainment and sports, suitable to be used, in particular, at the sea or lake.

[0002] Aquatic devices, also known as waterbikes, are known, comprising:

- a bicycle, usually without wheels;
- two floating boards, designed to be positioned on the water surface to float the bicycle;
- propulsion means for moving the aquatic device on the water;
- a connecting frame for connecting the bicycle to the floating boards.

[0003] A first type of aquatic device is known, in which the bicycle is positioned above the water surface, so that the user, positioned on the bicycle, does not get wet during the use of the aquatic device. A second type of aquatic device is known, in which the bicycle is positioned so that a user is partially below the water surface, usually with the head and part of the torso above the water surface.

[0004] The propulsion means may be, for example:

- a propeller, connected to a pedal-crank assembly of the bicycle, so that, by moving said pedal-crank assembly, the propeller rotates and propels the aquatic device in movement on the water, and
- a rudder, connected to a handlebar of the bicycle, in order to vary the direction of movement of the aquatic device on the water.

[0005] Alternatively, the propulsion means comprise an electric motor connected to the propeller, in order to move the propeller.

[0006] FR3055810 discloses a floating aquatic device comprising an aquatic bicycle suitable to be positioned so that a user is partially below the water surface. The aquatic bicycle of FR3055810 comprises a frame comprising a first fixed portion supporting a saddle and a second movable portion supporting pedals, a propeller, and a transmission assembly. The second portion is able to slide with respect to the first portion in upward and downward strokes, in order to adjust the position of the pedals with respect to the saddle, so that the bicycle can be adapted to users of different heights. However, the aquatic device of FR3055810 does not allow to modify the distance of the user from the water surface. In other words, the user always maintains the same distance from floats of the bicycle.

[0007] EP2510986 discloses an aquatic device comprising a bicycle, suitable to be positioned so that a user is partially below the water surface, a fixed frame to which pedals and saddle of the bicycle are connected, and a

movable frame to which a handlebar and a rudder are connected. The movable frame comprises a telescopic rod inserted into a sleeve hinged to the front of the fixed frame and able to assume:

- a contracted position, so that the aquatic device has a reduced volume;
- a first operating position, so that a user can pedal with a back in a horizontal position;
- a second operating position, so that a user can pedal with a back in a vertical position.

[0008] Front floats are connected to the movable frame and rear floats are connected to the fixed frame. The rear floats are adjustable in height, as a consequence of the positioning of the movable frame. The aquatic device of EP2510986 does not allow to adjust the distance of the user from the water surface, while at the same time allowing the user to maintain the back in a substantially vertical position. Furthermore, the movable frame and the rear floats of EP2510986 cannot be moved from one position to another during the use of the device.

[0009] EP0287526 discloses an aquatic device comprising a bicycle, able to be positioned so that a user is partially below the water surface. The aquatic device of EP0287526 does not allow to adjust the distance of a user from the water surface.

[0010] DE9315804U discloses an aquatic device comprising a bicycle positioned above the water surface. The aquatic device of DE9315804U does not allow to adjust the distance of a user from the water surface.

[0011] The purpose of the present invention is to overcome the drawbacks of the known art, providing an aquatic device comprising a bicycle that can be adjusted in height relative to floats of the aquatic device during the use of the aquatic device, so that a user can modify the height position relative to the water surface, maintaining the back in a substantially vertical position.

[0012] A further purpose is to provide an aquatic device that is easy to use, practical, comfortable, versatile and economical.

[0013] These purposes are achieved in accordance with the invention having the features listed in the appended independent claim 1.

[0014] Advantageous embodiments appear from the dependent claims.

[0015] The aquatic device according to the invention is defined by claim 1.

[0016] The advantages of the aquatic device according to the invention are evident, as it is possible to move the bicycle of the aquatic device in upward and downward strokes relative to the fixed frame, thanks to the movement means, transmission means, and enabling/disabling means. This allows a user, with the back in a substantially vertical position, to go from being completely below the surface of the water to being completely above the surface of the water, during the use of the aquatic device, in a simple, comfortable, practical and

quick manner. Additionally, the user can decide to stop the movement of the bicycle at any height between the raised position and the lowered position.

[0017] For greater clarity, the description of the aquatic device according to the invention continues with reference to the attached drawings, which have a non-limiting illustrative purpose, wherein:

- Fig. 1 is an axonometric view of an aquatic device according to the invention;
- Fig. 1A is an enlargement of the portion of the aquatic device enclosed by circle A of Fig. 1;
- Fig. 1B is an enlargement of the portion of the aquatic device enclosed by circle B of Fig. 1;
- Fig. 1C is an enlargement of the portion of the aquatic device enclosed by circle C of Fig. 1;
- Fig. 2 is similar to Fig. 1A, but with the transmission means in an operational position;
- Fig. 3 is an axonometric view of the back of the aquatic device according to the invention;
- Fig. 3A is an enlargement of the portion of the aquatic device enclosed by circle A of Fig. 3;
- Fig. 3B is an enlargement of the portion of the aquatic device enclosed by circle B of Fig. 3;
- Fig. 4 is similar to Fig. 1, but with the bicycle in the lowered position;
- Fig. 5 is similar to Fig. 1, but with the bicycle in the raised position;
- Fig. 6 is a side view of the aquatic device in Fig. 1, in the lowered position;
- Fig. 7 is a side view of the aquatic device in Fig. 1, in an intermediate position;
- Fig. 8 is a side view of the aquatic device in Fig. 1, in the raised position;
- Fig. 9 is an axonometric view of a variation of the aquatic device according to the invention;
- Fig. 9A is an enlargement of the portion of the aquatic device enclosed by circle A of Fig. 9;
- Fig. 9B is an enlargement of the portion of the aquatic device enclosed by circle B of Fig. 9.

[0018] With reference to Figs. from 1 to 8, an aquatic device according to the invention is described, generally indicated by the reference number 100.

[0019] The aquatic device (100) is suitable to be used in water, such as in the sea or lake, for entertainment or sports activities.

[0020] The aquatic device (100) comprises a bicycle (1) comprising:

- a frame (2) comprising a horizontal top crossbeam (20), a bottom crossbeam (21) connected below the top crossbeam (20), and a connecting crossbeam (22) connected to both the top crossbeam (20) and the bottom crossbeam (21); advantageously, the crossbeams (20, 21, 22) are profiles made of plastic or metal;
- a handlebar (10) connected to the top of the frame

(2); more specifically, the handlebar (10) is rotatably mounted within a stem fixed to the top crossbeam (20);

- a saddle (12) connected to the top of the frame (2) and positioned behind the handlebar (10); the saddle (12) is advantageously connected to the top crossbeam (20) of the frame;
- a pedal assembly (14) comprising two pedal-crank units connected to the bottom of the frame (2) and a central pin (14a) connecting cranks of said pedal-crank units; the pedal assembly (14) is advantageously connected to the bottom crossbeam (21) of the frame.

[0021] The bicycle (1) is advantageously wheel-less.

[0022] The aquatic device (100) comprises propulsion means (5) suitable to be activated to move and steer the aquatic device (100). Advantageously, the propulsion means (5) comprise a propeller (50) positioned beneath the bicycle (1). The propeller (50) is advantageously located below the pedal assembly (14) and is connected to the bicycle (1) via a support (50a).

[0023] The propeller (50) comprises a hub with a horizontal axis and a plurality of blades extending radially from the hub.

[0024] With particular reference to Fig. 1A, the pedal assembly (14) comprises a conical gear (14b) with a horizontal axis, fitted onto the central pin (14a) of the pedal assembly and integral in rotation to said central pin (14a). The propeller (50) comprises a conical gear (50b) with a vertical axis, that engages with the conical gear (14b) of the pedal assembly, so that by moving the pedal-crank units, the conical gear (14b) of the pedal assembly rotates and transmits the rotation to the conical gear (50b) of the propeller. The propeller (50) comprises a transmission group that transmits motion from the conical gear (50b) of the propeller to the hub of the propeller, allowing the hub to rotate around its own axis and propel the aquatic device (100) along a horizontal trajectory.

[0025] By rotating the pedal assembly (14), the conical gear (14b) of the pedal assembly rotates and transmits rotation to the conical gear (50b) of the propeller. The conical gear (50b) of the propeller transmits the rotation to the hub of the propeller.

[0026] With particular reference to Figs. 1 and 1C, the propulsion means (5) advantageously comprise a rudder (52) connected via a connecting cable (52a) to the handlebar (10), so that by rotating the handlebar (10), the rudder (52) rotates around a vertical axis, changing the direction of movement of the aquatic device (100).

[0027] With reference to Figs. 1 and 3, the aquatic device (100) comprises a fixed frame (4) comprising floating means (3) suitable to be placed on a water surface to allow the aquatic device (100) to float on the water. The floating means (3) advantageously comprise:

- a front float (30) positioned at the front of the bicycle (1);

- a rear float (31) positioned at the rear of the bicycle (1) and connected to the front float (30) via a connecting means (40).

[0028] It is specified that the terms "front" and "rear" refer to the direction of movement of the aquatic device.

[0029] Each float (30, 31) is made of a buoyant material, such as polyurethane foam and/or expanded polystyrene, or inflatable air-filled plastic.

[0030] Advantageously, the connecting means (40) comprise a bar connected to the floating means (3), specifically to the front float (30) and the rear float (31). The bar advantageously is curved, is positioned laterally relative to the bicycle (1) and is intended to be placed on the water surface.

[0031] The bicycle (1) is mounted to slide relative to the fixed frame (4). The aquatic device (100) comprises movement means (9) connected to the bicycle (1) and to the fixed frame (4), so that the bicycle (1) can perform upward and downward strokes relative to the fixed frame (4) between a raised position (Figs. 5 and 8), in which the pedal assembly (14) is above the lower surface of the floats (30, 31) and is intended to be above the water surface, and a lowered position (Figs. 4 and 6), in which the saddle (12) and the handlebar (10) are below the upper surface of the floats (30, 31) and are intended to be below a water surface. When the bicycle (1) is in the raised position, it is at a greater height compared to the height it assumes in the lowered position.

[0032] With reference to Figs. 1, 3, 3A and 3B, the movement means (9) advantageously comprise:

- a support frame (91) positioned at the rear of the bicycle (1) and integral with the frame (2) of the bicycle; the support frame (91) comprises a vertical portion (91a) fixed to the back of the horizontal cross-beam (20) of the bicycle frame, an upper portion (91b), and a lower portion (91c);
- a vertical lead screw (90) rotatably mounted on the support frame (91); the ends of the lead screw (90) are rotatably connected to the upper portion (91b) and the lower portion (91c) of the support frame;
- a nut (92) connected to the fixed frame (4) and into which the lead screw (90) is threaded.

[0033] Advantageously, the rudder (52) is rotatably connected below the support frame (91) of the movement means.

[0034] The movement means (9) are driven by the pedal assembly (14). Therefore, the aquatic device (100) comprises:

- transmission means (8) connected to the movement means (9) and connectable to the pedal assembly (14) to transmit motion from the pedal assembly (14) to the movement means (9);
- enabling/disabling means (7) to enable/disable the transmission means (8).

[0035] With reference to Figs. 1A, 1B, 1C and 2, the transmission means (8) comprise:

- a pin (81) positioned at the central pin (14a) of the pedal assembly and comprising an enlarged end; the pin (81) of the transmission means has a horizontal axis, perpendicular to the axis of the central pin (14a) of the pedal assembly;
- a conical gear (80) integral in rotation with the pin (81) of the transmission means and slidably mounted on the pin (81) of the transmission means, so as to assume an operational position (Fig. 2), in which the conical gear (80) of the transmission means is engaged with the conical gear (14b) of the pedal assembly, and a resting position (Fig. 1A), in which the conical gear (80) of the transmission means is distal from the conical gear (14b) of the pedal assembly; the conical gear (80) of the transmission means and the pin (81) of the transmission means are coupled together via a male-female connection, such as longitudinal grooves and longitudinal ribs, allowing the conical gear (80) of the transmission means to transmit rotation to the pin (81) of the transmission means; the enlarged end of the pin (81) of the transmission means is able to prevent the conical gear (80) of the transmission means from sliding off the pin (81) of the transmission means;
- a universal joint (82) (Figs. 1B, 1C and 2) connected to the pin (81) of the transmission means and connected via gears to one end, for example the lower end, of the lead screw (90), so as to transmit rotation from the pin (81) of the transmission means to the lead screw (90).

[0036] With reference to Figs. 1, 1A and 2, the enabling/disabling means (7) advantageously comprise:

- a movable handle (70) advantageously positioned near the handlebar (10) and suitable to be operated by a user;
- a connecting cable (71) connected to the handle (70);
- a lever (72) rotating around a pin (72a) and comprising a first arm connected to the connecting cable (71) of the enabling/disabling means and a second arm positioned in correspondence of the conical gear (80) of the transmission means, so as to shift the conical gear (80) of the transmission means into the operational position;
- a spring (73) mounted on the pin (81) of the transmission means, between the conical gear (80) of the transmission means and the enlarged end of the pin (81) of the transmission means; the spring (73) is suitable to be compressed when the conical gear (80) of the transmission means is moved into the operational position and to extend when the handle (70) of the transmission means is released, so as to push the conical gear (80) of the transmission means

into the resting position.

[0037] Activating the handle (70) of the enabling/disabling means, the cable (71) of the enabling/disabling means is pulled. Said cable (71) of the enabling/disabling means moves in rotation the lever (72) of the enabling/disabling means, so that the second arm of the lever (72) pushes the conical gear (80) of the transmission means into the operational position, that is, engaging with the conical gear (14b) of the pedal assembly. Simultaneously, the spring (73) of the enabling/disabling means is compressed. By rotating the pedal assembly (14), the conical gear (14b) of the pedal assembly rotates and transmits the rotation to the conical gear (80) of the transmission means. The conical gear (80) of the transmission means transmits the rotation to the pin (81) of the transmission means. The pin (81) of the transmission means transmits the rotation to the universal joint (82) and, then, to the lead screw (90) of the movement means. The lead screw (90) threads into the nut (92), causing the upward and downward strokes of the support frame (91) of the movement means and, consequently, of the bicycle (1).

[0038] Releasing the handle (70) of the enabling/disabling means, the cable (71) of the enabling/disabling means relaxes and the spring (73) of the enabling/disabling means extends, pushing the conical gear (80) of the transmission means into the rest position.

[0039] The advantages of the aquatic device (100) are evident, as the movement means, transmission means and enabling/disabling means allow the bicycle (1) to move upward and downward relative to the fixed frame (4). This enables a user, with the back in a substantially vertical position, to perform upward and downward strokes, transitioning from being completely below the water surface to being completely above it, and vice versa, during the use of the aquatic device. The user can also decide to stop the bicycle's (1) movement at any height between the raised and lowered positions (Figs. 1 and 7).

[0040] When the bicycle is in the lowered position, the user is entirely below the water surface. In this way, the user avoids prolonged sun exposure while using the aquatic device. Additionally, equipped with a mask and snorkel, the user can observe the underwater scenery while continuing to use the aquatic device (100). To allow a user to be completely below the water surface when the bicycle (1) is in the lowered position, the lead screw (90) has a length between 120 and 170 cm.

[0041] Furthermore, the aquatic device is simple to use, practical, comfortable, versatile and economical.

[0042] With reference to Fig. 1, the fixed frame (4) advantageously comprises anti-roll means (6) to compensate for the rolling movement of the floating means (3) caused by water waves.

[0043] The anti-roll means (6) comprise a front pin (60) connected to the connecting means (40) of the fixed frame and to a rear wall of the front float (30), and a rear

pin (61) connected to the connecting means (40) of the fixed frame and to a front wall of the rear float (31). More precisely, the bar of the connecting means (40) is fixed to a lateral wall of the front pin (60) and of the rear pin (61).

5 The front pin (60) is inserted into a hole of the rear wall of the front float (30) and the rear pin (61) is inserted into a hole of the front wall of the rear float (31).

[0044] Each pin (60, 61) of the anti-roll means is free-rotating and has a horizontal axis intended to be parallel to a forward direction of the aquatic device (100), allowing the floats (30, 31) of the floating means to rotate around a horizontal axis parallel to the forward direction of the device and compensate for the rolling motion.

[0045] The anti-roll means (6) are simple to manufacture, effective and robust. Additionally, these anti-roll means (6) allow the aquatic device to maintain a compact shape and reduced size, even when in use.

[0046] With reference to Figs. 1 and 3A, optionally, the anti-roll means (6) comprise locking pins (62) to disable the rotation of the pins (60, 61) of the anti-roll means. It should be noted that the disabling of the anti-roll means (6) must be performed when the center of gravity of a user is below the waterline, preferably when the bicycle (1) is in the lowered position.

25 **[0047]** Optionally, the floating means (3) comprise lateral floats (not shown in the figures) that can be connected to the floats (30, 31) to increase stability when the bicycle (1) is above the water surface.

[0048] With reference to Fig. 3A, the nut (92) of the movement means is connected to the rear pin (61) of the anti-roll means of the fixed frame.

[0049] With reference to Figs. 9, 9A, and 9B, a variation of the aquatic device according to the invention is described. Identical or corresponding elements are indicated by the same reference numbers, and their detailed description is omitted.

[0050] The movement means (9) of the aquatic device comprise:

- 40 - a rack (95) connected to the frame (2) of the bicycle;
- a pinion connected to the fixed frame (4).

[0051] The transmission means (8) are able to transfer the rotational motion from the pedal assembly (14) to the pinion of the movement means and comprise an elastic cable, capable of stretching and shortening during the movement of the bicycle (1) in upward and downward strokes.

[0052] The enabling/disabling means (7) are designed to enable/disable the transmission means (8).

[0053] Although not shown in the figures, the movement means, transmission means, and enabling/disabling means can be of any type.

55 **[0054]** Although not shown in the figures, the propulsion means may be without a rudder, and the propeller can be mounted to rotate both around a horizontal axis passing through the center of the hub of the propeller and around a vertical axis, so that by moving the handlebar,

the propeller rotates around the vertical axis and changes the direction of movement of the aquatic device.

[0055] Although not shown in the figures, alternatively, the propeller can be driven by electric drive means, either as an alternative to or in addition to the pedal assembly.

[0056] Although not shown in the figures, alternatively, the connecting means of the fixed frame can be of any type and shape.

[0057] Modifications or variations of detail within the scope of a person skilled in the art may be made to the present embodiment of the invention, which, however, fall within the scope of the invention as expressed in the appended claims.

Claims

1. Aquatic device (100) comprising:

- a bicycle (1) comprising:

- a frame (2);
- a handlebar (10) connected to the frame (2);
- a saddle (12) connected to the frame (2) and positioned behind the handlebar (10);
- a pedal assembly (14) comprising two pedal-crank units connected to the frame (2) and a central pin (14a) connecting cranks of said pedal-crank units;

- propulsion means (5) suitable to be activated to move and steer the aquatic device (100);

- a fixed frame (4) comprising floating means (3) suitable to be placed on a water surface to allow the aquatic device (100) to float on the water;

wherein the bicycle (1) is mounted to slide relative to the fixed frame (4); said aquatic device (100) comprising:

- movement means (9) connected to the bicycle (1) and to the fixed frame (4), so that the bicycle (1) can perform upward and downward strokes relative to the fixed frame (4) between a raised position, in which the pedal assembly (14) is intended to be above the water surface, and a lowered position, in which the saddle (12) and the handlebar (10) are intended to be below a water surface; said movement means (9) being driven by the pedal assembly (14);
- transmission means (8) connected to the movement means (9) and connectable to the pedal assembly (14) to transmit motion from the pedal assembly (14) to the movement means (9);
- enabling/disabling means (7) to enable/disable the transmission means (8).

2. Aquatic device (100) according to claim 1, wherein the movement means (9) comprise:

- a support frame (91) positioned at the rear of the bicycle (1) and integral with the frame (2) of the bicycle;
- a vertical lead screw (90) rotatably mounted on the support frame (91);
- a nut (92) connected to the fixed frame (4) and into which the lead screw (90) is threaded.

3. Aquatic device (100) according to claim 2, wherein the transmission means (8) comprise:

- a pin (81) positioned at the central pin (14a) of the pedal assembly;
- a conical gear (80) integral in rotation with the pin (81) of the transmission means and slidably mounted on the pin (81) of the transmission means, so as to assume an operational position in which the conical gear (80) of the transmission means is engaged with a conical gear (14b) of the pedal assembly, and a resting position in which the conical gear (80) of the transmission means is distal from the conical gear (14b) of the pedal assembly;
- a universal joint (82) connected to the pin (81) of the transmission means and connected to one end of the lead screw (90), so as to transmit rotation from the pin (81) of the transmission means to the lead screw (90).

4. Aquatic device (100) according to claim 3, wherein the enabling/disabling means (7) comprise:

- a movable handle (70) suitable to be operated by a user;
- a connecting cable (71) connected to the handle (70);
- a lever (72) rotating around a pin (72a) and comprising a first arm connected to the connecting cable (71) of the enabling/disabling means and a second arm positioned in correspondence of the conical gear (80) of the transmission means, so as to shift the conical gear (80) of the transmission means into the operational position;
- a spring (73) mounted on the pin (81) of the transmission means, between the conical gear (80) of the transmission means and an enlarged end of the pin (81) of the transmission means; said spring (73) being suitable to be compressed when the conical gear (80) of the transmission means is moved into the operational position, and to extend when the handle (70) of the transmission means is released, so as to push the conical gear (80) of the transmission means into the resting position.

5. Aquatic device (100) according to anyone of the claims from 2 to 4, wherein the lead screw (90) has a length between 120 and 170 cm.
6. Aquatic device (100) according to claim 1, wherein the movement means (9) of the aquatic device comprise:
- a rack (95) connected to the frame (2) of the bicycle;
 - a pinion connected to the fixed frame (4).
7. Aquatic device (100) according to claim 6, wherein the transmission means (8) are able to transfer rotational motion from the pedal assembly (14) to the pinion of the movement means and comprise an elastic cable, capable of stretching and shortening during the movement of the bicycle (1) in upward and downward strokes.
8. Aquatic device (100) according to any one of the preceding claims, wherein the floating means (3) comprise:
- a front float (30) positioned at the front of the bicycle (1);
 - a rear float (31) positioned at the rear of the bicycle (1) and connected to the front float (30) via a connecting means (40);
- said fixed frame (4) comprising anti-roll means (6) to compensate for the rolling movement of the floating means (3); said anti-roll means (6) comprising:
- a front pin (60) connected to the connecting means (40) of the fixed frame and to a rear wall of the front float (30);
 - a rear pin (61) connected to the connecting means (40) of the fixed frame and to a front wall of the rear float (31);
- wherein each pin (60, 61) of the anti-roll means is free-rotating and has a horizontal axis intended to be parallel to a forward direction of the aquatic device (100).
9. Aquatic device (100) according to claim 8, wherein the connecting means (40) comprises a bar connected to the floating means (3); the bar of the connecting means (40) being fixed to a lateral wall of the front pin (60) and of the rear pin (61); the front pin (60) being inserted into a hole of the rear wall of the front float (30) and the rear pin (61) being inserted into a hole of the front wall of the rear float (31).
10. Aquatic device (100) according to claim 8 or 9, wherein the anti-roll means (6) comprise locking pins (62) to disable the rotation of the pins (60, 61) of the

anti-roll means.

11. Aquatic device (100) according to any one of the preceding claims, wherein the propulsion means (5) comprise a propeller (50) positioned beneath the bicycle (1); said propeller (50) comprising:

- a hub with a horizontal axis;
- a plurality of blades extending radially from the hub;
- a conical gear (50b) with a vertical axis, that engages with a conical gear (14b) of the pedal assembly, so that by moving the pedal-crank units, the conical gear (14b) of the pedal assembly rotates and transmits the rotation to the conical gear (50b) of the propeller;
- a transmission group that transmits motion from the conical gear (50b) of the propeller to the hub of the propeller.

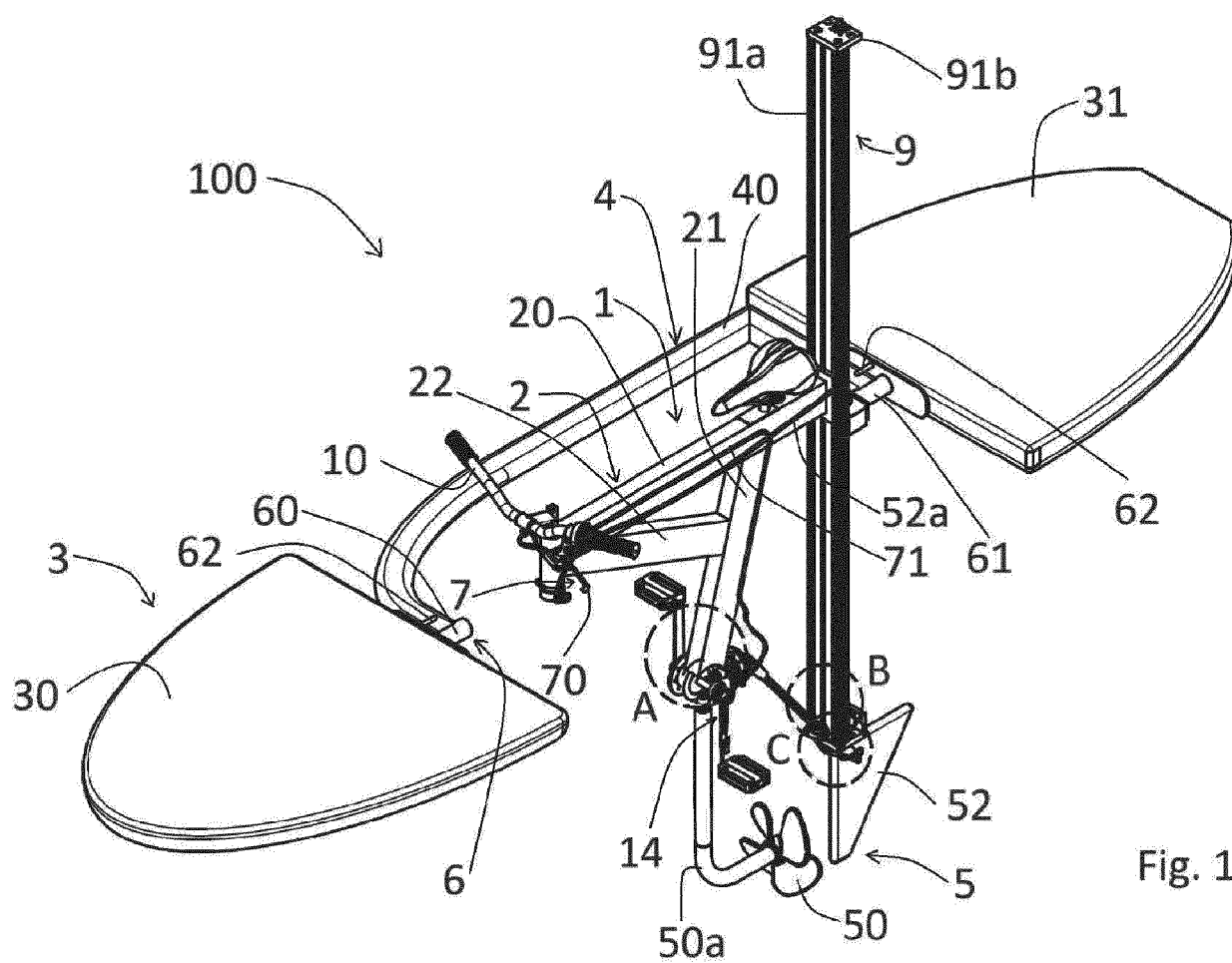
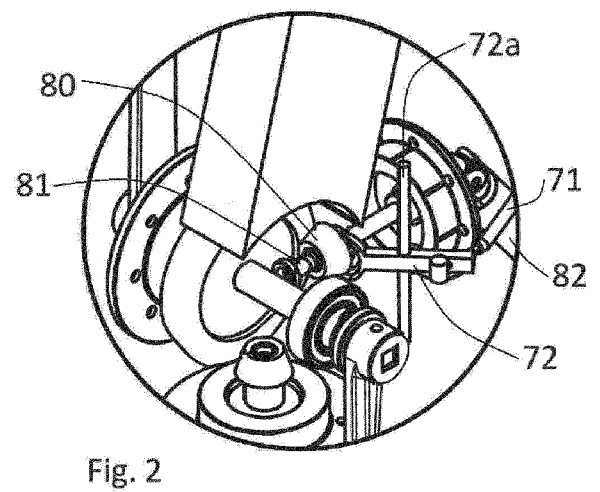
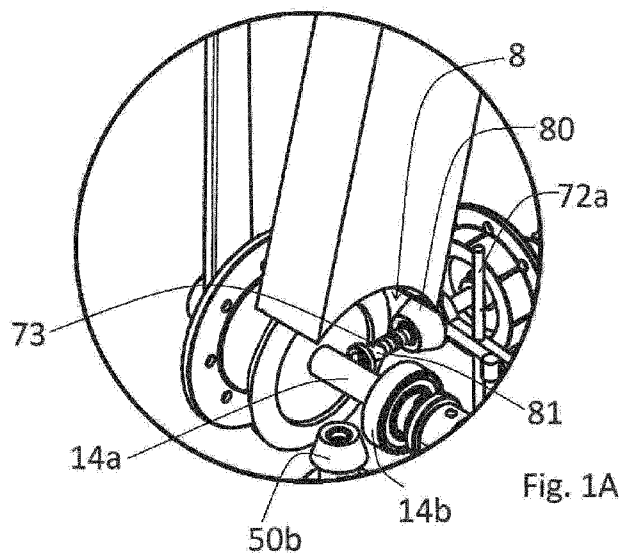


Fig. 1



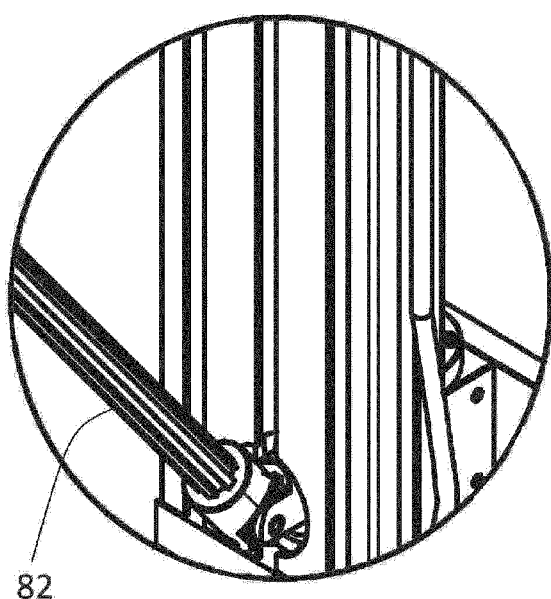


Fig. 1B

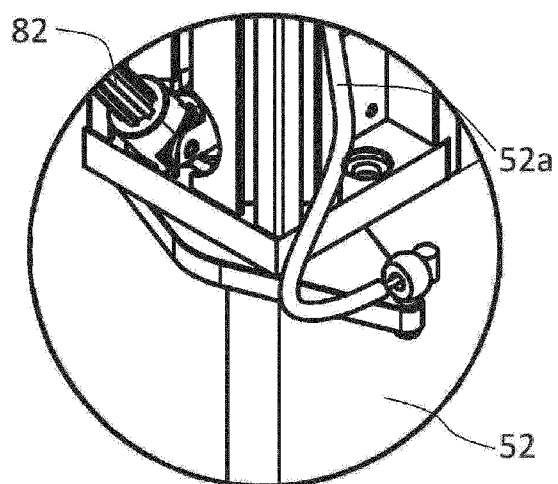


Fig. 1C

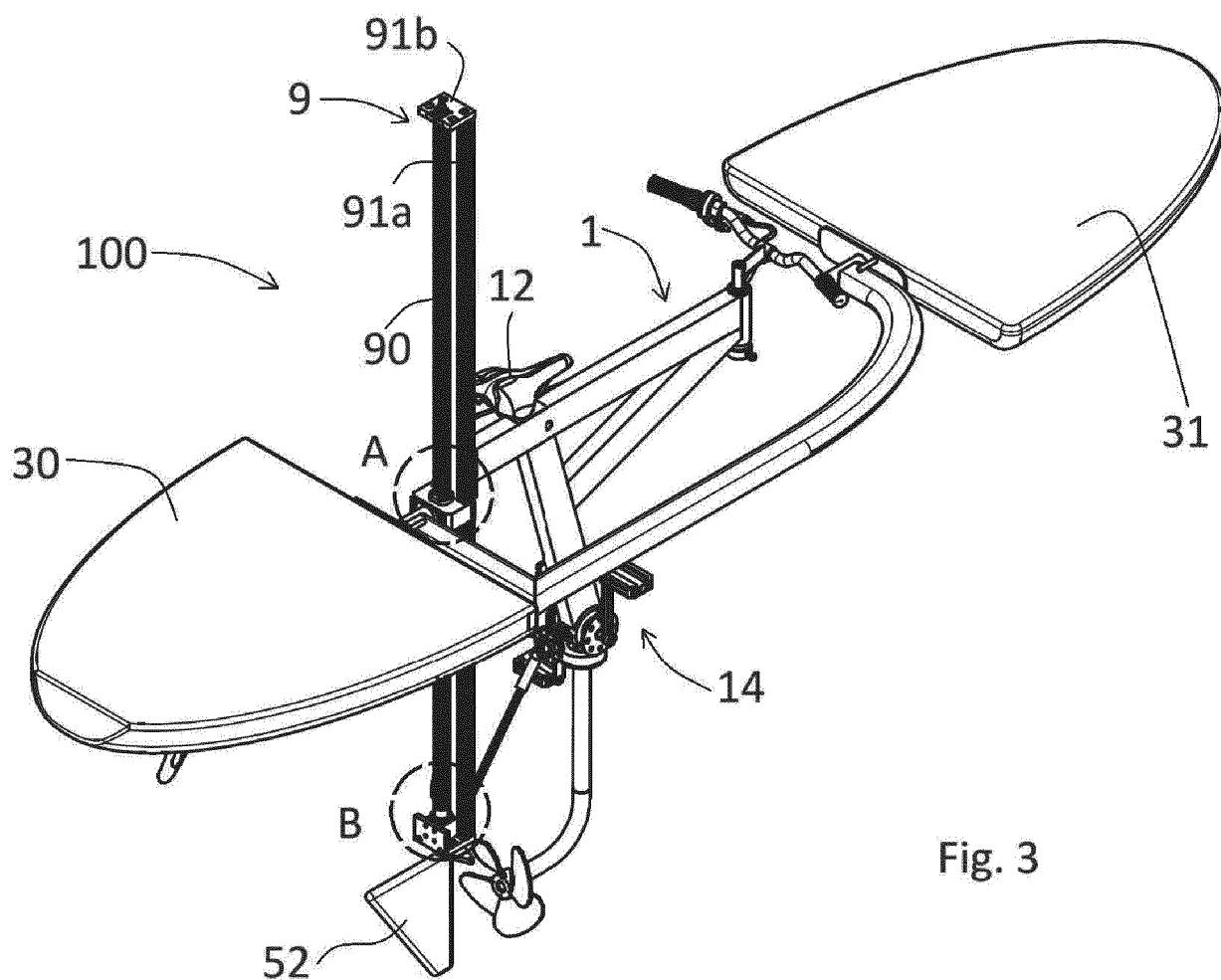


Fig. 3

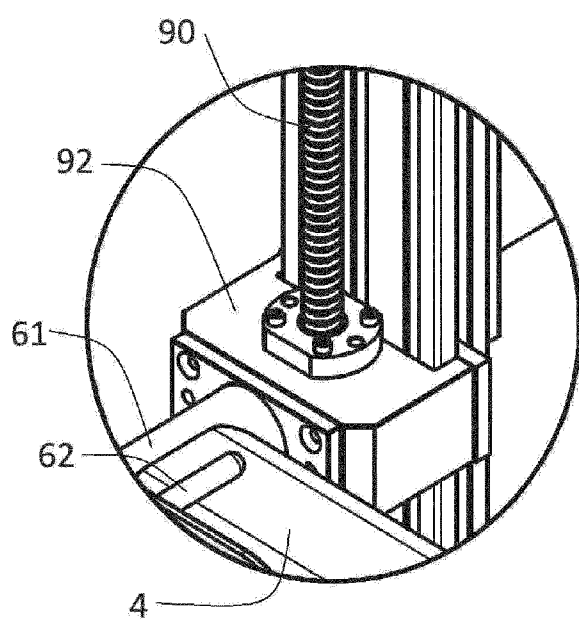


Fig. 3A

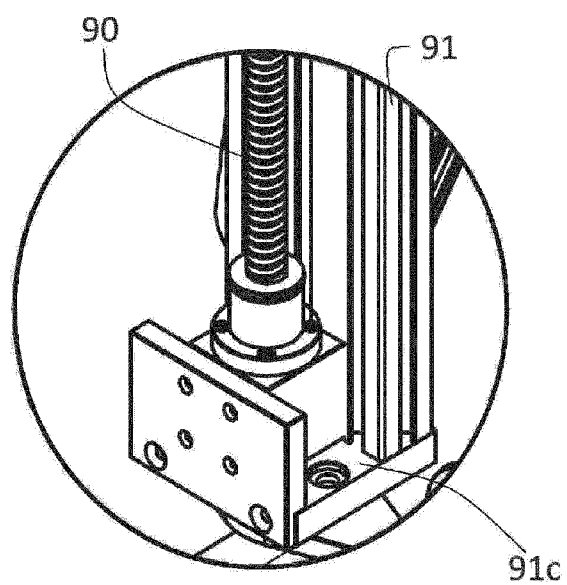


Fig. 3B

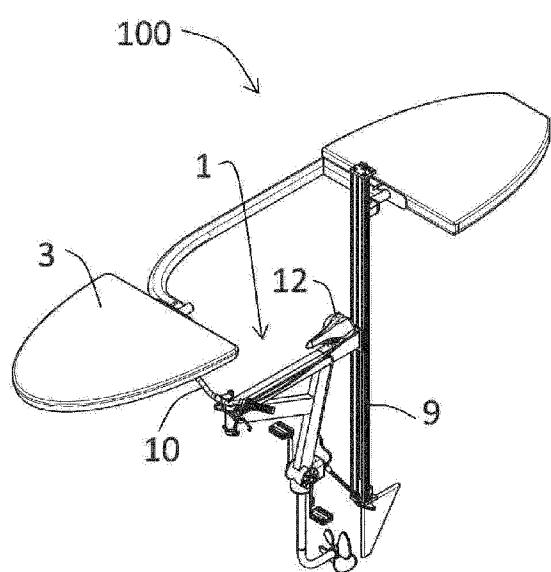


Fig. 4

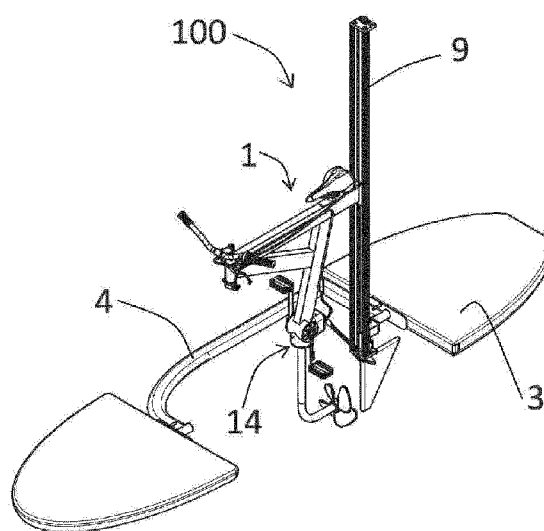
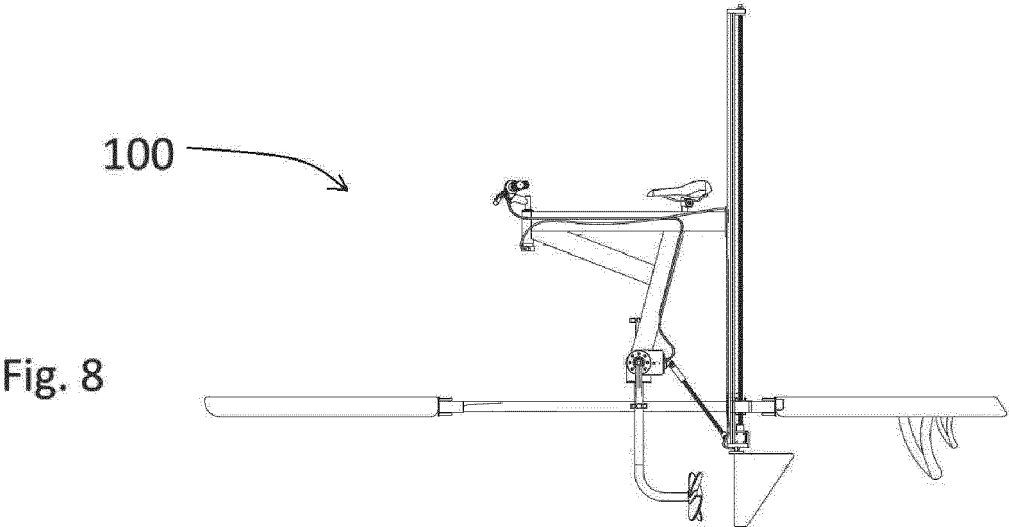
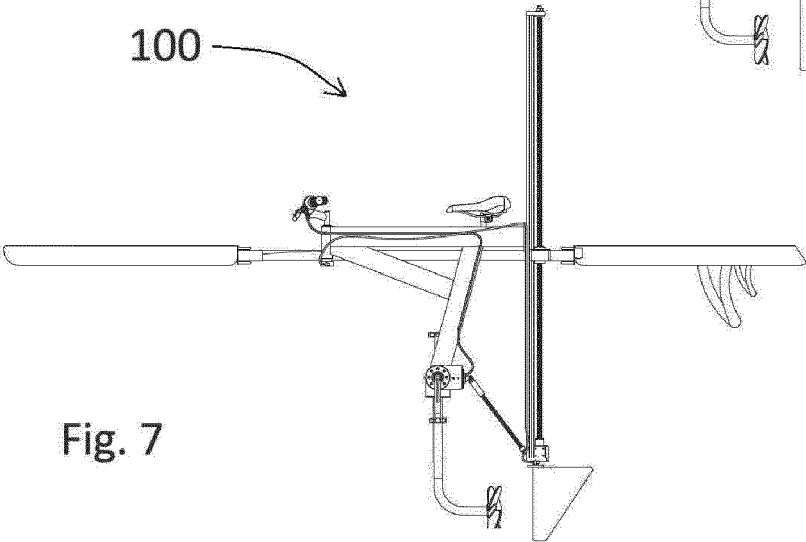
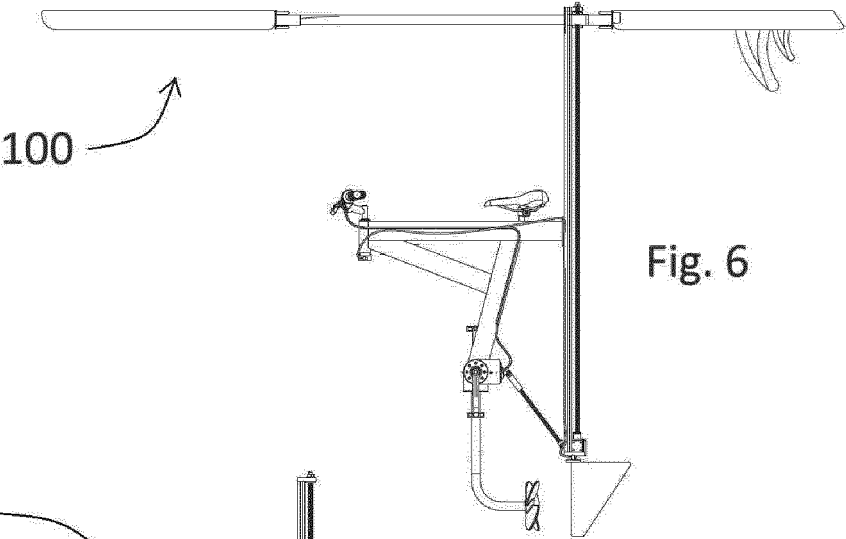


Fig. 5



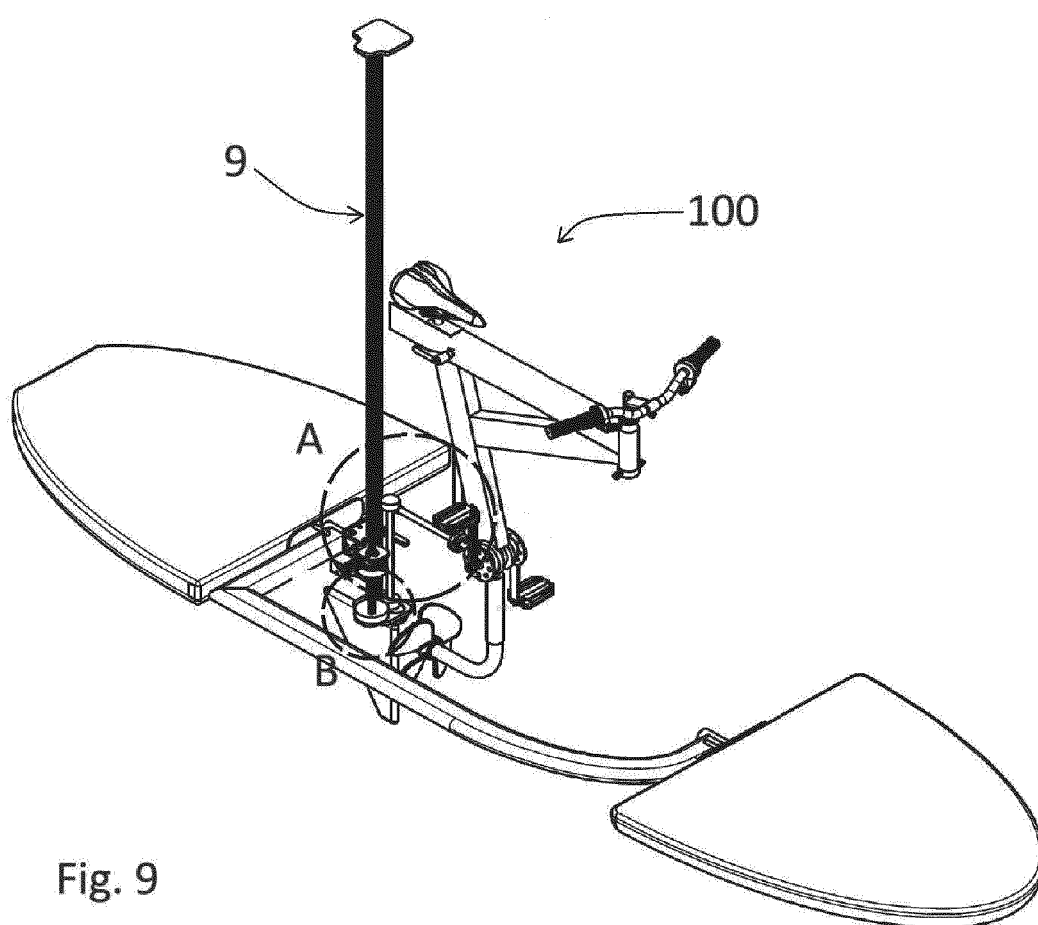


Fig. 9

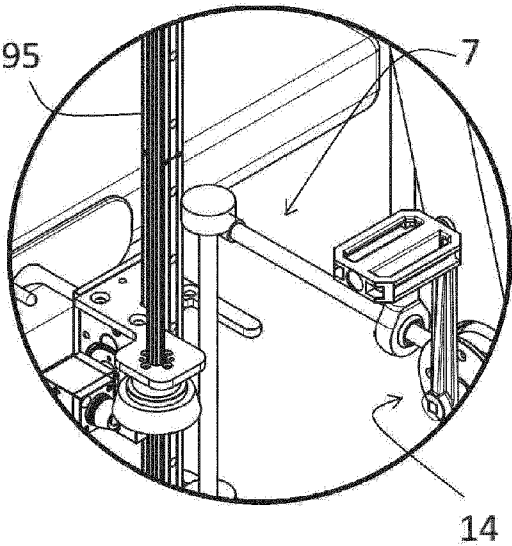


Fig. 9A

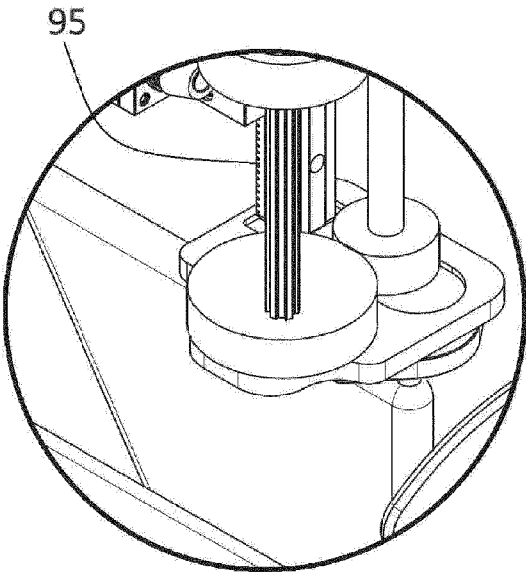


Fig. 9B



EUROPEAN SEARCH REPORT

Application Number

EP 24 20 4590

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 8 167 667 B2 (STURM REX L [US]) 1 May 2012 (2012-05-01)	1,11	INV. B63B34/50
Y	* column 4, line 64 - column 6, line 13;	8-10	B63H16/20
A	figures 10-15 *	4	A63B21/00 A63B35/10
A	FR 3 055 810 A1 (TRACOL CHRISTOPHE [FR]) 16 March 2018 (2018-03-16) * page 17, line 4 - page 18, line 13; figures 1-3 *	1-11	
A	EP 2 510 986 A1 (CHIOCCA GIACOMO [IT]) 17 October 2012 (2012-10-17) * figures 3,8 *	1,8-11	
Y	DE 19 60 373 A1 (DRAZDAL ANTON; SCHREDL CHARLOTTE) 16 July 1970 (1970-07-16) * figures 1,2,4,5 *	8-10	
Y	US 1 831 229 A (CLARK WILLIAM D) 10 November 1931 (1931-11-10) * figures 1-2 *	8-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			B63B B63H A63B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		11 March 2025	Mauriès, Laurent
CATEGORY OF CITED DOCUMENTS			
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 20 4590

5

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
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11-03-2025

10

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 8167667	B2	01-05-2012	CN	101720295 A		02-06-2010
			GB	2460613 A		09-12-2009
			US	2008289554 A1		27-11-2008
			US	2012190254 A1		26-07-2012
			WO	2008147767 A2		04-12-2008

FR 3055810	A1	16-03-2018	NONE			

EP 2510986	A1	17-10-2012	NONE			

DE 1960373	A1	16-07-1970	NONE			

US 1831229	A	10-11-1931	NONE			

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20

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35

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50

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EPO FORM P0459

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- FR 3055810 [0006]
- EP 2510986 A [0007] [0008]
- EP 0287526 A [0009]
- DE 9315804 U [0010]