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(54) **FOILBOARD, IN PARTICULAR E-FOIL, WITH A SEATING DEVICE AND SEATING ARRANGEMENT FOR A FOILBOARD**

(57) To provide a foilboard, in particular an e-foil, which can be ridden by a rider in a seating position and which has a good controllability and is save to use, a foilboard (100), in particular e-foil (10), is proposed comprising a board (11) and a hydrofoil (12), the hydrofoil (12) comprising a mast (13) and at least one wing (14), wherein the mast (13) is attached to an underside (15) of the board (11), wherein the foilboard further comprises a seating device (16) for a rider (17) to sit on, wherein the seating device (16) is arranged on a top side (18) of the board (11), such that the seating device (16) can be rolled and/or tilted at least in a forward direction (19) and in a backward direction (20) by the rider (17) to control and/or steer the foilboard.

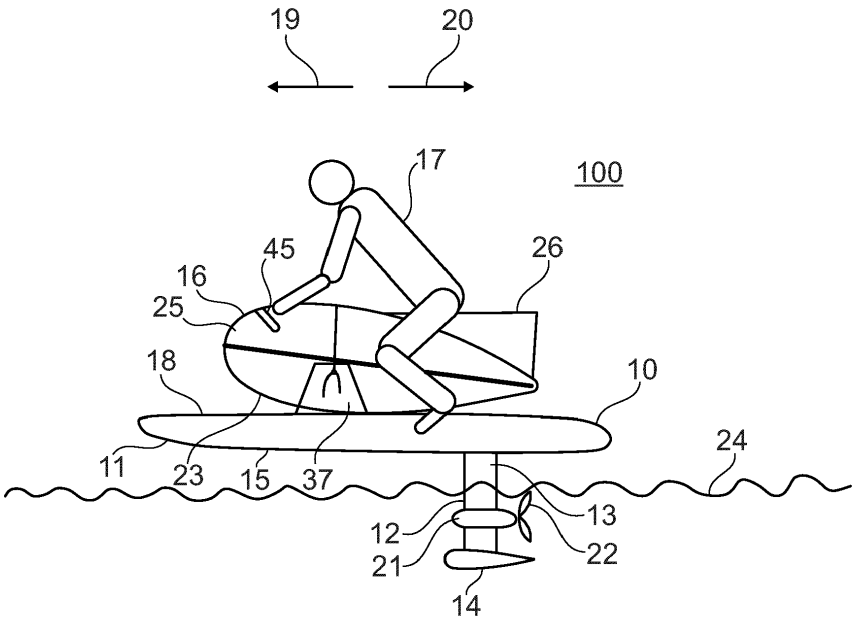

Fig. 1

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Description

[0001] The present invention relates to a foilboard, in particular an efoil, comprising a board and a hydrofoil, the hydrofoil comprising a mast and at least one wing, wherein the mast is attached to an underside of the board, wherein the foilboard further comprises a seating device for a rider to sit on.

[0002] Furthermore, the present invention relates to a seating arrangement for a foilboard comprising a seating device for a rider to sit on.

Technological Background

[0003] Foilboards, also known as e-foils, hydrofoil boards or foil surfboards, are a type of board used in watersports. A foilboard has a hydrofoil mounted underneath. The hydrofoil extends into the water. The hydrofoil design allows the foilboard and its rider to rise above the water surface, allowing for fast speeds and increased maneuverable in a wide range of surf conditions.

[0004] US 10,668,987 B1 discloses a motorized sit down hydrofoil comprising a seat with a seatbelt and bindings to secure a rider to a top of a board having a hydrofoil assembly on the bottom.

[0005] DE 101 03 126 A1 discloses a water glider for water sports, in particular a surfboard, with a gliding body, which can carry a person in gliding motion. The direction of travel of the water glider can be controlled by shifting weight. The water glider has a seat slidably arranged in a guide on the gliding body.

[0006] CA 3 146 763 A1 discloses a personal hydrofoil watercraft for being used within a body of water with a controllably adjustable center of gravity. The personal hydrofoil watercraft is formed from an enclosed hull having a flotation volume with a seating assembly and with a handle assembly. The personal hydrofoil watercraft includes a center of gravity shifting assembly for shifting a center of gravity of the personal hydrofoil watercraft.

[0007] With foilboards known in the art the rider controls the foilboard in a standing position. Thus, when the foilboard rises out of the water the rider is generally located at a height of two meters or more above the water surface. These heights can be intimidating, in particular to novice riders. Furthermore, in case the foilboard tips over a standing rider can fall off the foilboard and come into contact with the hydrofoil and in particular with the motor or propeller of the hydrofoil.

Description of the invention

[0008] It is an object of the present invention to provide a foilboard, in particular an e-foil, which can be ridden by a rider in a seating position, which has a good controllability and is save to use.

[0009] To solve the object of the present invention a foilboard, in particular an e-foil is provided, comprising a board and a hydrofoil, the hydrofoil comprising a mast and at least one wing, wherein the mast is attached to an underside of the board, wherein the foilboard further comprises a seating device for a rider to sit on, and wherein the seating device is arranged on a top side of the board, such that the seating device can be rolled and/or tilted at least in a forward direction and in a backward direction by the rider to control and/or steer the foilboard.

[0010] The hydrofoil may furthermore comprise two wings, in particular a front wing and a back wing.

[0011] When placed in water, the hydrofoil comprising the mast and the at least one wing extends into the water and below a water surface.

[0012] The forward direction preferably corresponds to the direction of travel of the foilboard when the foilboard is in use. The backward direction is then the direction opposite to the forward direction. Similarly, left and right directions or up and down directions are defined with respect to the direction of travel of the foilboard when in use.

[0013] According to the present invention the foilboard comprises a seating device for a rider to sit on so that the rider can ride the foilboard in a sitting position. A sitting position has the advantage that the rider is not so high above the water surface as compared with a standing position. This increases the confidence, in particular for novice riders, for riding the foilboard. Furthermore, the risk of injuries due to a contact with the motor and/or propeller for a rider is reduced, because the rider is not as easily separated from the foilboard when the foilboard tips over.

[0014] Furthermore according to the present invention the seating device is arranged on the top side of the board such that the seating device can be rolled and/or tilted at least in a forward direction in a backward direction by the rider to control and/or steer the foilboard.

[0015] Thus, a rider sitting on the seating device can roll and/or tilt the seating device in a forward direction and in a backward direction by shifting his own weight on the seating device. Since the rider has a more direct contact with the foilboard when sitting on the seating device his perception of the movements of the foilboard induced by rolling and/or tilting the seating device is improved, further increasing the riders confidence in the foilboard.

[0016] Furthermore, by proving a seating device which can be rolled and/or tilted in at least a forward direction and in a backward direction a rider can provide very sensitive control or steering inputs to the foilboard, improving the controllability and steerability of the foilboard.

[0017] Preferably the foilboard further comprises a motor, in particular an electric motor, and propulsion means, preferably a propeller, an impeller or a water jet, wherein the motor is configured to drive the propulsion means.

[0018] It is furthermore preferred that a rider can shift a center of gravity of foilboard and rider by rolling and/or tilting the seating device.

[0019] The rider may use his own weight to roll and/or

tilt the seating device in the forward direction and/or in the backward direction. Thus, the relative position of the seating device and the rider with respect to the board of the foilboard is changed. This change in position results in a shift of the center of gravity of foilboard and rider allowing for control inputs to the foilboard.

[0020] For example, when the rider rolls or tilts the seating device in the forward direction, the center of gravity shifts in the forward direction and the foilboard declines relative to the water surface. When the rider rolls or tilts the seating device in the backward direction the center of gravity is shifted to the rear of the foilboard and the foilboard starts to rise above the water surface.

[0021] Advantageously the seating device may have a, preferably convexly, rounded bottom surface being in contact with the top side of the board, and the seating device may be rolled and/or tilted on the rounded bottom surface in the forward direction and in the backward direction.

[0022] The seating device generally has a bottom surface and an upper surface. The rider will sit on the upper surface and the bottom surface will be in contact with the top side of the board of the foilboard. The bottom surface is preferably convexly rounded so that the seating device can at least partially roll on the top side of the foilboard.

[0023] A convexly rounded bottom surface provides for a smooth rolling or tilting movement of the seating device on the board and, thus, for sensitive and smooth control inputs to the foilboard.

[0024] It may also be preferred that the seating device is arranged on the top side of the board and configured such that the seating device can be rolled and/or tilted in a lateral direction, preferably in a right direction and/or in a left direction.

[0025] Thus, in a preferred embodiment the rider may also tilt the seating device by shifting his weight to the left and to the right allowing for further control options for the foilboard.

[0026] It may also be preferred that the rounded bottom surface has a front section, a middle section and a rear section, wherein a curvature radius of the rounded bottom surface is different between at least two, preferably between all, of the front section, the middle section and the rear section.

[0027] The front section is the section of the bottom surface which is closest to a front side of the board. Correspondingly, the rear section is the section of the rounded bottom surface that is closest to the rear side of the board. The middle section is arranged in between the front section and the rear section.

[0028] By providing a curvature radius for the rounded bottom surface with is different between at least two, preferably between all, of the front section, the middle and the rear section, the sensitivity of the foilboard to the control inputs depending of the amplitude of the roll or tilt can be adjusted.

[0029] When the contact point of the rounded bottom surface with the top side of the board is in a section having a large curvature radius the foilboard will react less strongly to a roll or tilt of the seating device as compared to a situation where the contact point of the rounded bottom surface with the top side of the board is in a section having a small curvature radius.

[0030] It is furthermore preferred that the curvature radius is configured progressively and/or continuously increasing from the front section over the middle section to the rear section.

[0031] Thus, the curvature radius of the front section of the rounded bottom surface is preferably smaller than the curvature radius of the bottom surface in the middle section and the curvature radius of the bottom surface in the middle section is preferably smaller than the curvature radius of the bottom surface in the rear section.

[0032] In this regard, it may be preferred that the curvature radius in at least a section of the front section is between 5 cm and 50 cm, preferably between 10 cm and 30 cm, furthermore preferably between 15 cm and 20 cm.

[0033] The curvature radius in at least a section of the middle section may be between 100 cm and 1.000 cm, preferably between 300 cm and 500 cm, furthermore preferably between 350 cm and 400 cm.

[0034] Further preferably the curvature radius in at least a section of the rear section may be at least 1.000 cm, preferably at least 10.000 cm, furthermore preferably essentially infinite.

[0035] Thus, when the contact point of the bottom surface with the top side of the board is in the middle section the bottom surface, the foilboard will react comparatively gently to a roll or tilt of the seating device. This allows, on the one hand, for the rider to be able to move naturally without resulting in extreme reactions of the foilboard. On the other hand the rider can steer or control the foilboard very finely. When the contact point of the bottom surface with the top side of the board is in the front section of the bottom surface a roll or tilt of the seating device will result in a more pronounced reaction of the foilboard. When the contact point of the rounded bottom surface with the top side of the board is in the rear section, the reaction to a roll or a tilt in the backwards direction is very smooth and very gentle.

[0036] In a particular preferred embodiment an end section of the rear section has a curvature radius of essentially infinite, i.e. the bottom surface in the end section of the rear section is essentially flat. The end section of the rear section is the most rearward oriented section of the rear section.

[0037] The configuration of an essentially flat end section of the rear section provides a limit stop for the seating device and thus limits the amount of roll or tilt that the seating device can be rolled or tilted backwards.

[0038] Preferably, the seating device comprises a main body and a seat body, the main body further preferably comprising the rounded bottom surface, wherein the seat body is arranged slidably, preferably in the forward direction and the backward direction, at the main body.

[0039] Thus, the seat body can be slid relative to main

body of the seating device. Allowing the seat body to be slid relative to the main body has several advantages.

[0040] First, the rider can arrange the seat body at a position relative to the main body that is most comfortable for him to sit on and to control and/or steer the foilboard. Second, having the seat body being arranged slidably with respect to the main body allows the rider to easily mount the foilboard. In general, a rider will mount the foilboard from the rear, when the foilboard sits or floats in the water. Since the seat body of the seating device is oriented towards to rear of the board of the foilboard, the seat body can present an obstacle for the rider by blocking him or by reducing the available surface on the top side in the rear section of the board for the rider to mount. Thus, before mounting the foilboard the rider can slide the seat body in the forward direction. The rider then has enough space in the rear of the board to safely mount the board. While mounting the board the rider may start the motor of the board and thereby gently increase the speed of the foilboard. When the rider is on the top side of the board he can slide the seat body in the backwards direction and then safely sit on the seat body and use the seating device to steer and/or control the board.

[0041] Furthermore, the main body may comprise side elements and at least one connection element, wherein the side elements are arranged at a distance from each other and connected to each other by the at least one connection element, such that a recess or a free space is formed between the side elements and that the seat body is arranged in the recess or in the free space.

[0042] The side elements of the main body are arranged on the left side and on the right side with respect to the forward direction and/or the direction of travel of the foilboard. The side elements are connected by the at least one connection element such that the distance between the side elements remains fixed. Because of the arrangement of the side elements at a distance to each other a free space or a recess is formed between the side elements. The recess and/or the free space is preferably configured open to an upper surface of the main body. The seat body is arranged in the free space or recess and preferably protrudes slightly upwards out of the upper surface so that a rider can sit on the seat body. The seat body is arranged in the recess or free space to be slidably in the forward direction and backward direction.

[0043] The at least one connection element may comprise at least one, preferably at least two, struts extending between the side elements.

[0044] The struts can be separate components connecting the side elements or the struts can be formed out of the material of the side elements or made integral with the side elements. The at least on connection element, in particular the struts, is/are preferably arranged in a lower region of the main body, i.e. close to the bottom surface of the main body, so that the recess or free space is accessible from the upper surface of the main body.

[0045] Particularly preferably guiding means, in particular rails or grooves, are arranged on the side elements, preferably on inner sides of the side elements, and oriented towards the recess and/or free space, wherein the guiding means are further preferably arranged horizontally, and wherein the seat body comprises guide elements, in particular wheels or protrusions, interacting with the guiding means to allow sliding the seat body, preferably in the forward direction and in the backward direction, in the recess and/or in the free space.

[0046] Thus, by the interaction of the guiding means and the guide elements a controlled sliding movement of the seat body relative to the main body is provided.

[0047] The seating device may be held on the top side of the board purely by friction between the top side of the board and the bottom surface of the seating device.

[0048] However, it may be preferred that the seating device is, preferably detachably, secured to the board.

[0049] Thus, preferably a base body is provided, the base body being arranged on and/or fixed to the board, in particular to the top side of the board, wherein the seating device, preferably the main body, is secured to the base body such that the seating device can be rolled and/or tilted in the forward direction and in the backward direction.

[0050] Thus, the seating device, in particular the main body, may be secured to the base body in such a way that the seating device is secured to the board via the base body so that it does not fall off the board but is still allowed to be tilted or rolled in the forward and in the backward direction.

[0051] The base body may be connected to the top side of the board by any suitable means. For example, the base body may be configured integral with the board. The base body can also be adhesively connected to the top side of the board.

[0052] It is also possible that the base body is detachably connected to the top side of the board. For example, the base body may be connected to the top side of the board using Velcro tape or the base body may be connected to the top side of the board using screws, bolts or the like.

[0053] In the latter case, where the base body is connected to the top side of the board using screws or bolts, it may furthermore be preferred that the screws or bolts are screwed into existing screw holes of the board. In general, a foilboard has foot straps connected to the top side of the board by screws screwed into screw holes or by clip connections or the like. For example, the screw holes can be used to attach or connect or fix the base body to the board.

[0054] Preferably, the base body is arranged between the side elements. Thus, the base body is preferably arranged in a lower part of the main body between the side elements. For this, the bottom surface of the main body may comprise an indentation, a recess or a hole or the like in which the base body is arranged.

[0055] When the base body is arranged in between the side elements lateral forces acting on the main body are

transferred to the base body and therefore into the board or the foilboard.

[0056] Furthermore, the base body may comprise on each lateral side a pin or bolt, and the seating device may comprise receptacles, in particular holes or a grooves, for the pins or bolts.

[0057] The lateral sides of the base body are the sides of the base body facing to the right direction or to the left direction. The pins or bolts engage with the receptacles, in particular with the holes or grooves, thereby securing the seating device, in particular the main body of the seating device, to the base body. The seating device can still be tilted or rolled relative to the foilboard and in particular relative to the base body. The receptacles for the pins or bolts may act as bearings, so that the seating device can rotate about the connection between the pins or bolts with the receptacles. When the seating device is configured for rolling on the top side of the board, the contact point of the bottom surface of the seating device with the top side of the board moves on the top side of the board in the forward and backward directions. Thus, it may be particularly preferred that the receptacles are formed as grooves, in which the pins can slide to allow the rolling movement of the seating device.

[0058] Preferably the receptacles are arranged on the main body, further preferably on inner sides of the side elements.

[0059] Furthermore, it may be preferred that the receptacles are configured as grooves wherein the grooves have a rounded shape, preferably a horse-shoe shape or a cycloidal shape.

[0060] When the seating device, in particular the main body, rolls on the top side of the board the contact point of the bottom surface of the seating device moves on the top side of the board to the forward direction and to the backward direction. Thereby the seating device is displaced in the front direction and in the backward direction. Simultaneously the receptacle move relative to the pins or bolts of the base body in a vertical direction. To allow this freedom of movement it is preferred that the grooves have a rounded shape.

[0061] Further preferably the seating device, preferably the main body, comprises a passageway extending from the bottom surface, preferably from the middle section of the bottom surface, to an upper surface of the seating device, preferably the main body, having a cross section equal to or larger than a cross section of the base body, such that the base body can be guided from the upper surface through the passageway to the bottom surface.

[0062] When arranging the seating device on the board of the foilboard, the seating device, in particular the main body, is positioned on the top side of the board. Then the base body is guided through the passageway from the upper surface through the seating device to the bottom surface until the base body is in contact with the top side of the board. Then the base body may be attached or fixed to the top side of the board.

[0063] Further preferably, the passageway extends between the connection elements, in particular between the struts.

[0064] Thus, the opening of the passageway in the bottom surface of the seating device may be defined by the side elements and the connection elements, in particular the struts.

[0065] Furthermore preferably, the passageway comprises base body guiding means for guiding the pins or bolts of the base body.

[0066] The base body guiding means may be configured as, preferably vertically arranged, grooves, wherein the grooves are arranged on the inner sides of the side elements, and wherein the grooves extend into the receptacles.

[0067] Thus, when the seating device, in particular the main body of the seating device, is arranged on the top side of the board the base body may be guided through the opening in the upper surface of the seating device into the passageway, thereby inserting the pins or bolts of the base body into the vertically arranged grooves. The base body is than guided down through the passageway to the bottom surface of the seating device while the pins or bolts simultaneously slide down the vertically arranged grooves. When the base body is in contact with the top side of the board through the opening of the passageway in the bottom surface, the pins or bolts enter the receptacles thereby securing the seating device on the top side of the board while still allowing a rolling or tilting movement of the seating device. In this position the base body may be connected to the top side of the board, for example via screws.

[0068] In a further preferred embodiment the seating device, preferably the main body, further preferably the side elements, comprises handle bars. Thus, when a rider sits on the seating device he can hold on to the handle bars of the seating device.

[0069] It may furthermore be preferred that at least one of the handle bars comprises control elements for controlling the motor of the foilboard and/or that at least one of the handle bars comprises a controller receptacle for a hand-held controller for the motor.

[0070] Thus, in the sitting position the rider may control the motor of the foilboard by using the control elements of the handlebars. Alternatively or additionally the foilboard may comprise a hand-held controller for the motor. A hand-held controller is in particular advantageous in the process of the rider mounting the foilboard. When the rider mounts the foilboard he usually mounts the foilboard from the rear end. When the rider is at least partially on the top side of the board he uses the hand-held controller to increase the speed of the foilboard until it stabilizes. Then the rider may climb onto the seating device and hold on to the handlebars. It is then advantageous that at least one of the handle bars has a receptacle for the hand-held controller so that the rider can hold onto the handle bars and simultaneously use the hand-held controller and/or the control elements of the handlebars to control the

motor of the foilboard.

[0071] The seating device, in particular the main body and/or the seat body, and/or the base body may be made from or comprise carbon fiber, fiber plastic, mold injected foam or IPP foam.

[0072] The main body, in particular the side elements and/or the at least one connection element may comprise an aluminum skeleton.

[0073] A further solution to the object of the present invention is the provision of a seating arrangement for a foilboard as described above. The seating arrangement comprises a seating device for a rider to sit on with a, preferably convexly, rounded bottom surface, wherein the seating device, when arranged on a top side of a board of the foilboard can be rolled and/or tilted on the rounded bottom surface in the forward direction and in the backward direction to control and/or steer the foilboard.

[0074] The seating device of the seating arrangement may be configured as one of the seating devices described above in connection with the foilboard.

[0075] Preferably, the seating device comprises a main body and a seat body, the main body comprising the rounded bottom surface, wherein the seat body is arranged slidably, preferably in the forward direction and the backward direction, at the main body.

[0076] Furthermore preferably the seating arrangement further comprises a base body that can be arranged on and/or fixed to the board, and the seating device, preferably the main body, can be secured to the base body such that the seating device can be rolled and/or tilted in the forward direction and in the backward direction.

Brief description of the figures

[0077] The invention is explained in more detail with reference to the accompanying figures.

Fig. 1 shows a foilboard with a seating device, the seating device being in a neutral position,

Fig. 2 shows the foilboard with the seating device being rolled or tilted in a forward direction,

Fig. 3 shows the foilboard with the seating device being rolled or tilted in a backward direction,

Fig. 4 shows the foilboard angled downwards with the seating device being rolled or tilted in a backward direction,

Fig. 5 shows the foilboard angled upwards with the seating device being rolled or tilted in a forward direction,

Fig. 6 shows a side view of the seating device,

Fig. 7 shows a wire drawing of the side view of the seating device,

Fig. 8 shows a wire drawing of the seating device in a perspective view,

Fig. 9 shows a perspective view of the seating device,

Fig. 10 shows a seat body of the seating device, and

Fig. 11 shows another foilboard with a seating device.

Detailed description of the figures

[0078] In the figures identical or corresponding elements are indicated with the same reference numerals.

[0079] Fig. 1 shows a foilboard 100 in accordance with the present invention. The foilboard 100 is configured as an e-foil 10 and comprises a board 11 and a hydrofoil 12. The hydrofoil 12 in turn comprises a mast 13 and a wing 14. The mast 13 is attached to an underside 15 of the board 11.

[0080] When placed in water, the hydrofoil 12 comprising the mast 13 and the wing 14 extends into the water and below a water surface 24.

[0081] The foilboard 100 further comprises a seating device 16 for a rider 17 to sit on. The seating device 16 is arranged on a top side 18 of the board 11 and can be rolled and/or tilted by the rider 17 in a forward direction 19 and in a backward direction 20 to control and/or steer the foilboard. For propulsion the foilboard 100 further comprises a motor 21 and a propeller 22.

[0082] To roll or to tilt the seating device 16 in the forward direction 19 and in the backward direction 20 the rider 17 shifts his weight in the forward direction 19 and in the backward direction 20. By rolling or to tilting the seating device 16 the center of gravity of the foilboard 100 is shifted and the foilboard 100 can be controlled and/or steered.

[0083] The seating device 16 has a convexly rounded bottom surface 23 in contact with the top side 18 of the board 11. When the rider 17 rolls or tilts the seating device 16, the seating device 16 rolls on the top side 18 of the board 11 with its rounded bottom surface 23.

[0084] Fig. 1 shows the seating device 16 in a neutral position.

[0085] In Fig. 2 rider 17 has shifted his weight to the forward direction 19 thereby rolling the seating device 16 on the rounded bottom surface 23 on the top side 18 of board 11 in the forward direction 19. In this position, the foilboard 100 will angle downward towards the water surface 24 and start to descent towards the water surface, as shown in Fig. 4.

[0086] Fig. 3 shows the rider 17 having shifted his weight in the backward direction 20 thereby rolling the seating device 16 on the rounded bottom surface 23 on the top side 18 of board 11 in the backward direction 20. In this position, the e-foilboard 100 will angle upward away from the water surface 24 and start to rise above the water surface 24, as shown in Fig. 5.

[0087] In Fig. 4 the foilboard 100 is angled downward towards the water surface 24. In this position, to stop the descent of the foilboard 100 towards the water surface 24 the rider has rolled or tilted seating device 16 into the backward direction 20.

[0088] In Fig. 5 the foilboard 100 is angled upward away from the water surface 24. In this position, to stop

the rise of the foilboard 100 away from the water surface 24 the rider 17 has rolled or tilted seating device 16 into the forward direction 19

[0089] The seating device 16 is explained in more detail with regard to Figs. 6 to 10.

[0090] Fig. 6 shows a side view of the seating device 16. Fig. 7 shows a wire drawing of the side view of the seating device. Fig. 8 show a wire drawing of the seating device 16 in a perspective view and Fig. 9 shows a perspective view of the seating device 16. The seating device 16 comprises a main body 25 and a seat body 26. In Figs. 8 and 9 the seat body 26 is not shown. The seat body 26 is shown in Fig. 10.

[0091] As shown in Fig. 6, the rounded bottom surface 23 of the seating device 16 is arranged on the main body 25. The rounded bottom surface 23 comprises a front section 23a, a middle section 23b and a rear section 23c. The curvature radius of the front section 23a, the middle section 23b and the rear section 23c are different from each other. In the front section 23a the curvature radius is comparatively small, for example about 15 cm. In the middle section 23b the curvature radius is between 350 cm and 400 cm and in the rear section 23c the curvature radius is at least 10 m. In the end section 23d of the rear section 23c the curvature radius is essentially infinite so that the end section 23d of the rear section 23c of the bottom surface 23 is an essentially flat surface 27.

[0092] The main body 25 of the seating device 16 comprises two side elements 28, which are arranged at a distance from each other and connected by connection elements 29 configured as struts 30 (Figs. 8 and 9). The connection elements 29 can be formed integral with the side elements 28. Between the side elements 28 a free space 31 is formed, in which the seat body 26 is placed. On the inner sides 32 of the side elements 28 guiding means 33 in form of horizontal grooves 34 are provided. The seat body 26 shown in Fig. 10 comprises corresponding guide elements 35 in the form of protrusions 36 which engage with the horizontal grooves 34 of the side elements 28, as shown in Fig. 7. The seat body 26 can be moved in the forward direction 19 and in the backward direction 20 by sliding the protrusions 36 of the seat body 16 in the horizontal grooves 34. In Fig. 7 the seat body 26 is shown with solid lines in a backward position. Furthermore, the seat body 26 is shown with dashed lines in a forward position.

[0093] The seating device 16, in particular the main body 25, is secured to the top side 18 of the board 11 by a base body 37. The base body 37 is fixed to the top side 18 of the board 11 (Figs. 1 to 5). The base body 37 is arranged between the inner sides 32 of the side elements 28 and comprises laterally protruding pins 38 or bolts. The pins 38 engage with receptacles 39 arranged on the inner sides 32 of the side elements 28. The receptacles 39 are formed as grooves 40 having a round horse-shoe shape. When the seating device 16 is rolled or tilted in the forward direction 19 and in the backward direction 20 the contact point of the bottom surface 23 with the top side 18 of the board 11 also moves in the forward direction 19 and in the backward direction 20. To allow this movement the pins 38 slide in the receptacles 39 on the inner sides 32 of the side elements 28. The seating device 16 and the base body 37 together form a seating arrangement 200.

[0094] The main body 25 further comprises a passageway 41 extended from the bottom surface 23 to an upper surface 42 of the main body 25. The passageway is at least partially defined by the side elements 28 and the connection elements 29 extending between the side elements 28. On the inner sides 32 of the side elements 28 base body guiding means 43 in form of vertical grooves 44 are provided. For mounting the seating device 16 on the board 11 of the foilboard 100 the main body 25 is arranged in a first step on the top side 18 of the board 11. Then the base body 37 is guided through the passageway 41 from the upper surface 42 to the bottom surface 23 of the main body 25, while the pins 38 of the base body 37 are inserted into the vertical grooves 44 and slide down the vertical grooves 44. When the base body 37 is in contact with the top side 18 of the board 11 the pins 38 enter the receptacles 39 of the main body 25. The base body can then be fixed to the board 11 using for example screws, thereby securing the main body 25 to the board 11.

[0095] The main body 25 may furthermore comprise handle bars 45 for the rider 17 to hold on during riding the foilboard (Figs. 1 to 5 and 7).

[0096] Fig. 11 shows a side view of a further embodiment of a foilboard 100 in accordance with the present invention. In contrast to the embodiment of Figs. 1 to 10, the seating device 16 of the foilboard 100 of Fig. 11 is formed as a single element. The seating device 16 of Fig. 11 is held on the top side 18 of the board 11 purely by friction between the top side 18 of the board 11 and the bottom surface 23 of the seating device 16.

List of reference numerals

[0097]

100	Foilboard
200	Seating arrangement
10	E-foil
11	Board
12	Hydrofoil
13	Mast
14	Wing
15	Underside
16	Seating device
17	Rider
18	Top side
19	Forward direction
20	Backward direction
21	Motor
22	Propeller
23	Bottom surface

23a	Front section
23b	Middle section
23c	Rear section
23d	End section
24	Water surface
25	Main body
26	Seat body
27	Flat surface
28	Side element
29	Connection element
30	Strut
31	Free space
32	Inner side
33	Guiding means
34	Horizontal groove
35	Guide element
36	Protrusion
37	Base body
38	Pin
39	Receptacle
40	Groove
41	Passageway
42	Upper surface
43	Base body guiding means
44	Vertical groove
45	Handle bar

Claims

1. Foilboard (100), in particular e-foil (10), comprising a board (11) and a hydrofoil (12), the hydrofoil (12) comprising a mast (13) and at least one wing (14), wherein the mast (13) is attached to an underside (15) of the board (11), wherein the foilboard further comprises a seating device (16) for a rider (17) to sit on, **characterized in that** the seating device (16) is arranged on a top side (18) of the board (11), such that the seating device (16) can be rolled and/or tilted at least in a forward direction (19) and in a backward direction (20) by the rider (17) to control and/or steer the foilboard.

2. Foilboard (100) according to any one of the preceding claims, **characterized in that** the seating device (16) has a, preferably convexly, rounded bottom surface (23) being in contact with the top side (18) of the board (11), and that the seating device (16) can be rolled and/or tilted on the rounded bottom surface (23) in the forward direction (19) and in the backward direction (20), and/or **in that** a rider (17) can shift a center of gravity of foilboard and rider (17) by rolling and/or tilting the seating device (16).

3. Foilboard (100) according to claim 2, **characterized in that** the rounded bottom surface (23) has a front section (23a), a middle section (23b) and a rear section (23c), wherein a curvature radius of the rounded bottom surface (23) is different between at least two, preferably between all, of the front section (23a), the middle section (23b) and the rear section (23c).

4. Foilboard (100) according to claim 3, **characterized in that** the curvature radius is configured progressively and/or continuously increasing from the front section (23a) over the middle section (23b) to the rear section (23c).

5. Foilboard (100) according to claim 3 or 4, **characterized in that** the curvature radius in at least a section of the front section (23a) is between 5 cm and 50 cm, preferably between 10 cm and 30 cm, furthermore preferably between 15 cm and 20 cm, and/or that the curvature radius in at least a section of the middle section (23b) is between 100 cm and 1.000 cm, preferably between 300 cm and 500 cm, furthermore preferably between 350 cm and 400 cm, and/or that the curvature radius in at least a section of the rear section (23c) is at least 1.000 cm, preferably at least 10.000 cm, furthermore preferably essentially infinite.

6. Foilboard (100) according to any one of the preceding claims, **characterized in that** the seating device (16) comprises a main body (25) and a seat body (26), the main body (25) preferably comprising the rounded bottom surface (23), wherein the seat body (26) is arranged slidably, preferably in the forward direction (19) and the backward direction (20), at the main body (25).

7. Foilboard (100) according to claim 6, **characterized in that** the main body (25) comprises side elements (28) and at least one connection element (29), wherein the side elements (28) are arranged at a distance from each other and connected to each other by the at least one connection element (29), such that a recess or a free space (31) is formed between the side elements (28), and that the seat body (26) is arranged in the recess or in the free space (31), and that preferably the at least one connection element (29) comprises at least one, further preferably at least two, struts (30) extending between the side elements (28).

8. Foilboard (100) according to claim 7, **characterized in that** guiding means (33), in particular rails or grooves (34), are arranged on the side elements (28), preferably on inner sides (32) of the side elements (28), and oriented towards the recess and/or free space (31), wherein the guiding means (33) are further preferably arranged horizontally, and that the seat body (26) comprises guide elements (35), in particular wheels or protrusions (36), interacting with the guiding means (33) to allow sliding the seat body (26), preferably in the forward direction (19) and the

backward direction (20), in the recess and/or free space (31).

9. Foilboard (100) according to any one of the preceding claims, further comprising a base body (37), the base body (37) being arranged on and/or fixed to the board (11), and that the seating device (16), preferably the main body (25), is secured to the base body (37) such that the seating device (16) can be rolled and/or tilted in the forward direction (19) and in the backward direction (20), and that the base body (37) is preferably arranged between the side elements (28).

10. Foilboard (100) according to claim 9, **characterized in that** the base body (37) comprises on each lateral side a pin (38) or bolt, and that the seating device (16) comprises receptacles (39), in particular holes or a grooves, for the pins (38) or bolts, wherein preferably the receptacles (39) are arranged on the main body (25), further preferably on inner sides (32) of the side elements (28), wherein still further preferably the receptacles (39) are configured as grooves (40), wherein the grooves (40) have a rounded shape, in particular a horse-shoe shape or a cycloidal shape.

11. Foilboard (100) according to claim 9 or 10, **characterized in that** the seating device (16), preferably the main body (25), comprises a passageway (41) extending from the bottom surface (23), preferably from the middle section (23b) of the bottom surface (23), to an upper surface (42) of the seating device (16), preferably the main body (25), the passageway (41) having a cross section equal to or larger than a cross section of the base body (37), such that the base body (37) can be guided from the upper surface (42) through the passageway (41) to the bottom surface (23), wherein further preferably the passageway (41) extends between the connection elements (29), in particular between the struts (30).

12. Foilboard (100) according to claim 11, **characterized in that** the passageway (41) comprises base body guiding means (43) for guiding the pins (38) or bolts of the base body (37), wherein preferably the base body guiding means (43) are, further preferably vertically arranged, grooves (44), wherein the grooves (44) are arranged on the inner sides (32) of the side elements (28), and wherein the grooves (44) extend into the receptacles (39).

13. Foilboard (100) according to any one of the preceding claims, **characterized in that** the foilboard further comprises a motor (21), preferably an electric motor (21), and propulsion means, preferably a propeller (22), an impeller or a water jet, and that the motor (21) is configured to drive the propulsion means, and/or that seating device (16), preferably the main body (25), furthermore preferably the side elements (28), comprise handle bars (45), wherein preferably at least on of the handle bars (45) comprises control elements for controlling the motor (21) of the foilboard, and/or wherein at least on of the handle bars (45) comprises a controller receptacle for a handheld controller for the motor (21).

14. Seating arrangement (200) for a foilboard (100) according to any one of the preceding claims, comprising a seating device (16) for a rider (17) to sit on with a, preferably convexly, rounded bottom surface (23), wherein the seating device (16), when arranged on a top side (18) of a board (11) of the foilboard (100) can be rolled and/or tilted on the rounded bottom surface (23) in a forward direction (19) and in a backward direction (20) to control and/or steer the foilboard (100).

15. Seating arrangement (200) according to claim 14, wherein the seating device (16) comprises a main body (25) and a seat body (26), the main body (25) comprising the rounded bottom surface (23), wherein the seat body (26) is arranged slidably, preferably in the forward direction (19) and the backward direction (20), at the main body (25), and/or wherein the seating arrangement (200) further comprises a base body (37) that can be arranged on and/or fixed to the board (11), and that the seating device (16), preferably the main body (25), can be secured to the base body (37) such that the seating device (16) can be rolled and/or tilted in the forward direction (19) and in the backward direction (20).

Amended claims in accordance with Rule 137(2) EPC.

1. Foilboard (100), in particular e-foil (10), comprising a board (11) and a hydrofoil (12), the hydrofoil (12) comprising a mast (13) and at least one wing (14), wherein the mast (13) is attached to an underside (15) of the board (11), wherein the foilboard further comprises a seating device (16) for a rider (17) to sit on, **characterized in that** the seating device (16) is arranged on a top side (18) of the board (11), such that a rider (17) sitting on the seating device (16) can roll the seating device (16) in a forward direction (19) and in a backward direction (20) by shifting his own weight on the seating device (16), so that a relative position of the seating device (16) and the rider (17) with respect to the board (11) of the foilboard is changed resulting in a shift of the center of gravity of foilboard and rider (17) allowing for control inputs to the foilboard to control and/or steer the foilboard.

2. Foilboard (100) according to any one of the preceding claims, **characterized in that** the seating device

(16) has a, preferably convexly, rounded bottom surface (23) being in contact with the top side (18) of the board (11), and that the seating device (16) can be rolled on the rounded bottom surface (23) in the forward direction (19) and in the backward direction (20).

3. Foilboard (100) according to claim 2, **characterized in that** the rounded bottom surface (23) has a front section (23a), a middle section (23b) and a rear section (23c), wherein a curvature radius of the rounded bottom surface (23) is different between at least two, preferably between all, of the front section (23a), the middle section (23b) and the rear section (23c).

4. Foilboard (100) according to claim 3, **characterized in that** the curvature radius is configured progressively and/or continuously increasing from the front section (23a) over the middle section (23b) to the rear section (23c).

5. Foilboard (100) according to claim 3 or 4, **characterized in that** the curvature radius in at least a section of the front section (23a) is between 5 cm and 50 cm, preferably between 10 cm and 30 cm, furthermore preferably between 15 cm and 20 cm, and/or that the curvature radius in at least a section of the middle section (23b) is between 100 cm and 1.000 cm, preferably between 300 cm and 500 cm, furthermore preferably between 350 cm and 400 cm, and/or that the curvature radius in at least a section of the rear section (23c) is at least 1.000 cm, preferably at least 10.000 cm, furthermore preferably essentially infinite.

6. Foilboard (100) according to any one of the preceding claims, **characterized in that** the seating device (16) comprises a main body (25) and a seat body (26), wherein the seat body (26) is arranged slidably, preferably in the forward direction (19) and the backward direction (20), at the main body (25).

7. Foilboard (100) according to claim 6, **characterized in that** the main body (25) comprises side elements (28) and at least one connection element (29), wherein the side elements (28) are arranged at a distance from each other and connected to each other by the at least one connection element (29), such that a recess or a free space (31) is formed between the side elements (28), and that the seat body (26) is arranged in the recess or in the free space (31), and that preferably the at least one connection element (29) comprises at least one, further preferably at least two, struts (30) extending between the side elements (28).

8. Foilboard (100) according to claim 7, **characterized in that** guiding means (33), in particular rails or grooves (34), are arranged on the side elements (28), preferably on inner sides (32) of the side elements (28), and oriented towards the recess and/or free space (31), wherein the guiding means (33) are further preferably arranged horizontally, and that the seat body (26) comprises guide elements (35), in particular wheels or protrusions (36), interacting with the guiding means (33) to allow sliding the seat body (26), preferably in the forward direction (19) and the backward direction (20), in the recess and/or free space (31).

9. Foilboard (100) according to any one of the preceding claims, further comprising a base body (37), the base body (37) being arranged on and/or fixed to the board (11), and that the seating device (16), preferably the main body (25), is secured to the base body (37) such that the seating device (16) can be rolled in the forward direction (19) and in the backward direction (20).

10. Foilboard (100) according to claim 9, **characterized in that** the base body (37) comprises on each lateral side a pin (38) or bolt, and that the seating device (16) comprises receptacles (39), in particular holes or a grooves, for the pins (38) or bolts, wherein preferably the receptacles (39) are arranged on the main body (25), further preferably on inner sides (32) of the side elements (28), wherein still further preferably the receptacles (39) are configured as grooves (40), wherein the grooves (40) have a rounded shape, in particular a horse-shoe shape or a cycloidal shape.

11. Foilboard (100) according to claim 9 or 10, **characterized in that** the seating device (16), preferably the main body (25), comprises a passageway (41) extending from the bottom surface (23), preferably from the middle section (23b) of the bottom surface (23), to an upper surface (42) of the seating device (16), preferably the main body (25), the passageway (41) having a cross section equal to or larger than a cross section of the base body (37), such that the base body (37) can be guided from the upper surface (42) through the passageway (41) to the bottom surface (23), wherein further preferably the passageway (41) extends between the connection elements (29), in particular between the struts (30).

12. Foilboard (100) according to claim 11, **characterized in that** the passageway (41) comprises base body guiding means (43) for guiding the pins (38) or bolts of the base body (37), wherein preferably the base body guiding means (43) are, further preferably vertically arranged, grooves (44), wherein the grooves (44) are arranged on the inner sides (32) of the side elements (28), and wherein the grooves

(44) extend into the receptacles (39).

13. Foilboard (100) according to any one of the preceding claims, **characterized in that** the foilboard further comprises a motor (21), preferably an electric motor (21), and propulsion means, preferably a propeller (22), an impeller or a water jet, and that the motor (21) is configured to drive the propulsion means, and/or that seating device (16) comprise handle bars (45), wherein preferably at least on of the handle bars (45) comprises control elements for controlling the motor (21) of the foilboard, and/or wherein at least on of the handle bars (45) comprises a controller receptacle for a handheld controller for the motor (21).

14. Seating arrangement (200) for a foilboard (100) according to any one of the preceding claims, comprising a seating device (16) for a rider (17) to sit on with a, preferably convexly, rounded bottom surface (23), wherein the seating device (16), when arranged on a top side (18) of a board (11) of the foilboard (100) can be rolled on the rounded bottom surface (23) in a forward direction (19) and in a backward direction (20) to control and/or steer the foilboard (100), wherein the seating arrangement (200) further comprises a base body (37) that can be fixed to the board (11), and that the seating device (16) can be secured to the base body (37) such that the seating device (16) can be rolled in the forward direction (19) and in the backward direction (20).

15. Seating arrangement (200) according to claim 14, wherein the seating device (16) comprises a main body (25) and a seat body (26), the main body (25) comprising the rounded bottom surface (23), wherein the seat body (26) is arranged slidably, preferably in the forward direction (19) and the backward direction (20), at the main body (25).

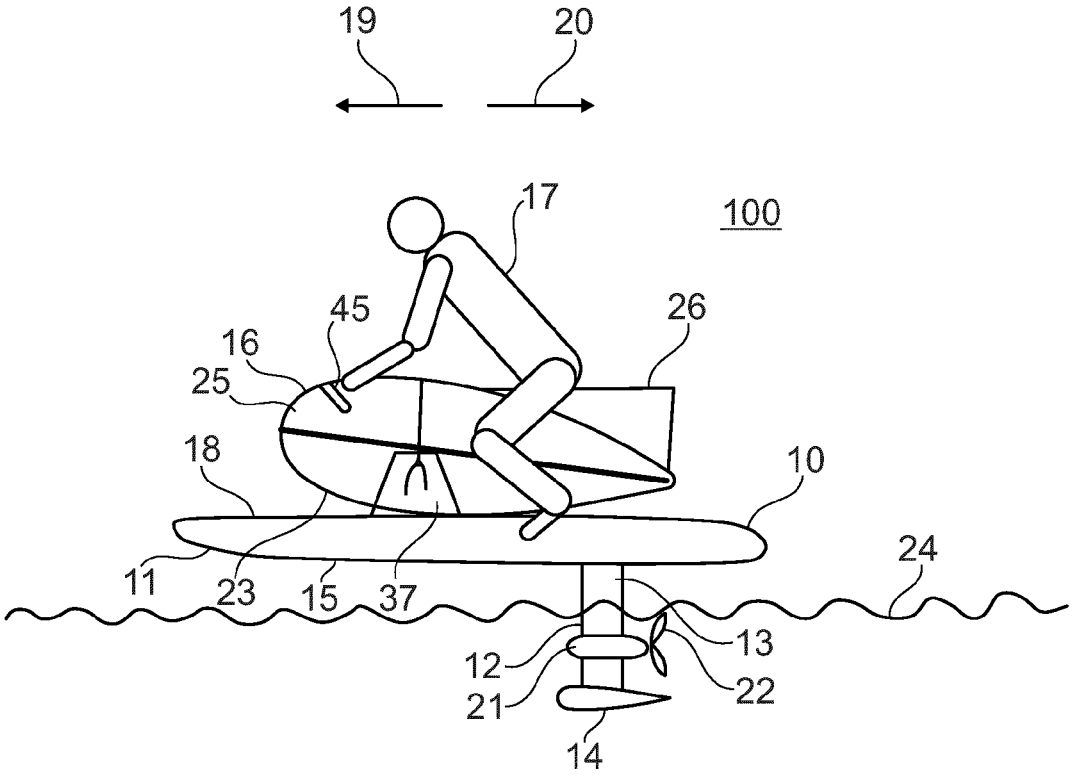
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Fig. 1

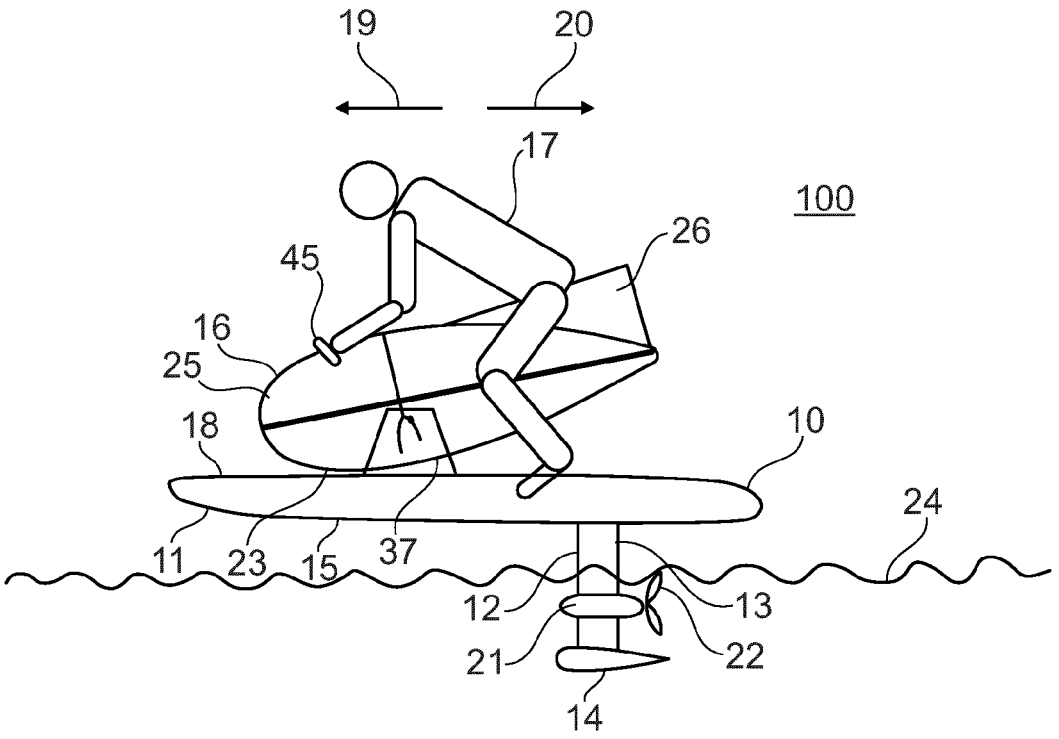
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Fig. 2

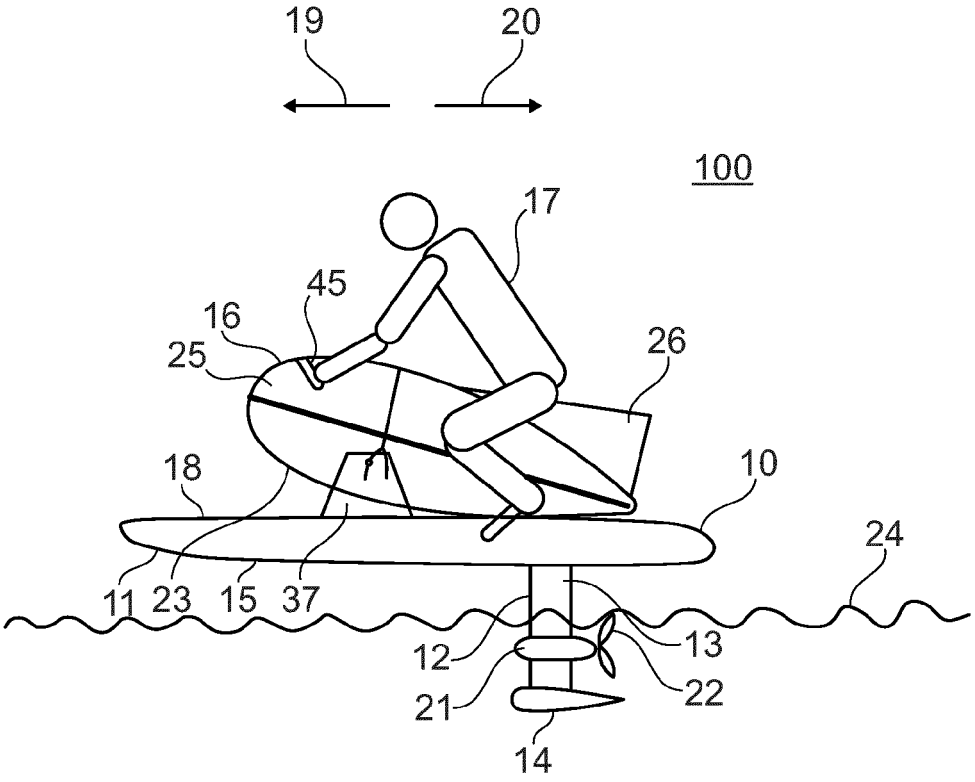
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Fig. 3

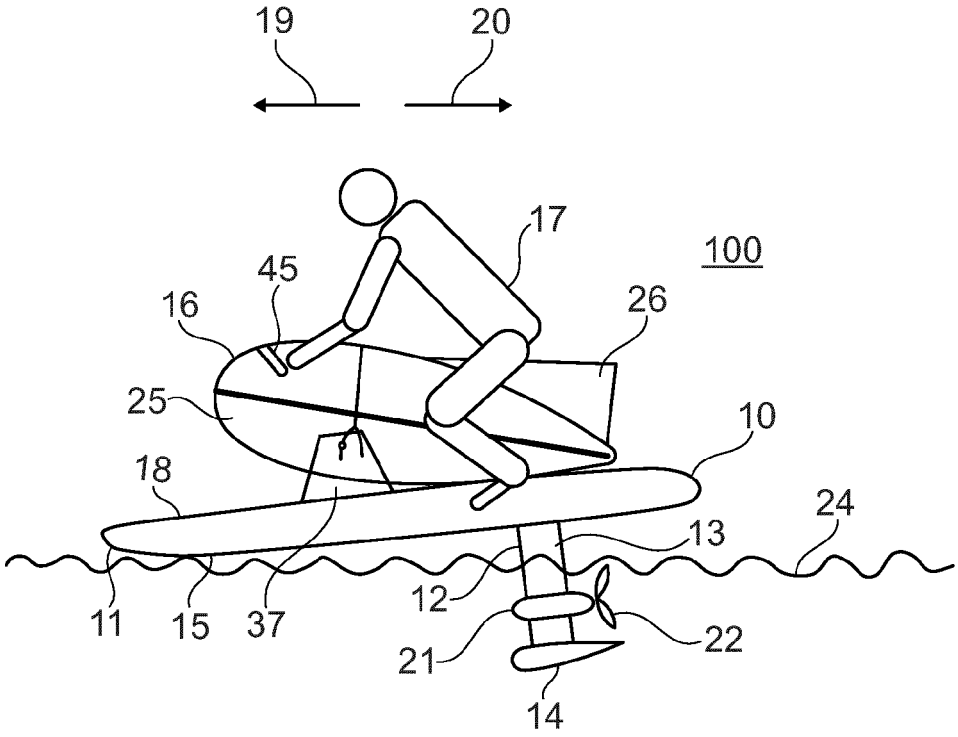
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Fig. 4

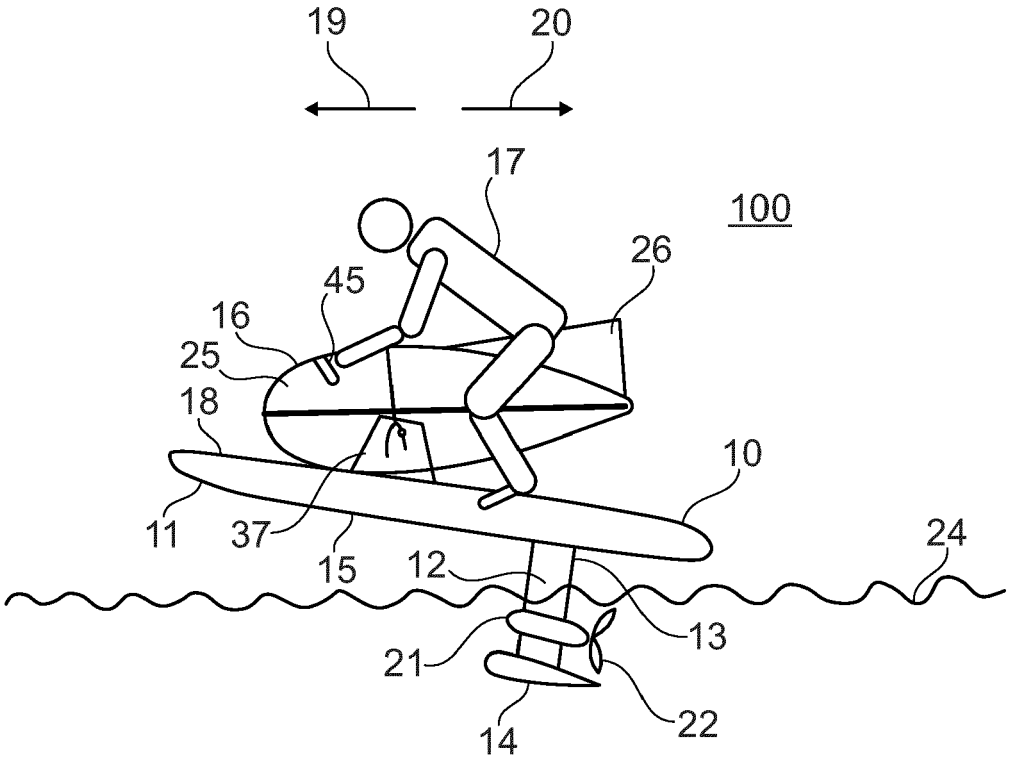
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Fig. 5

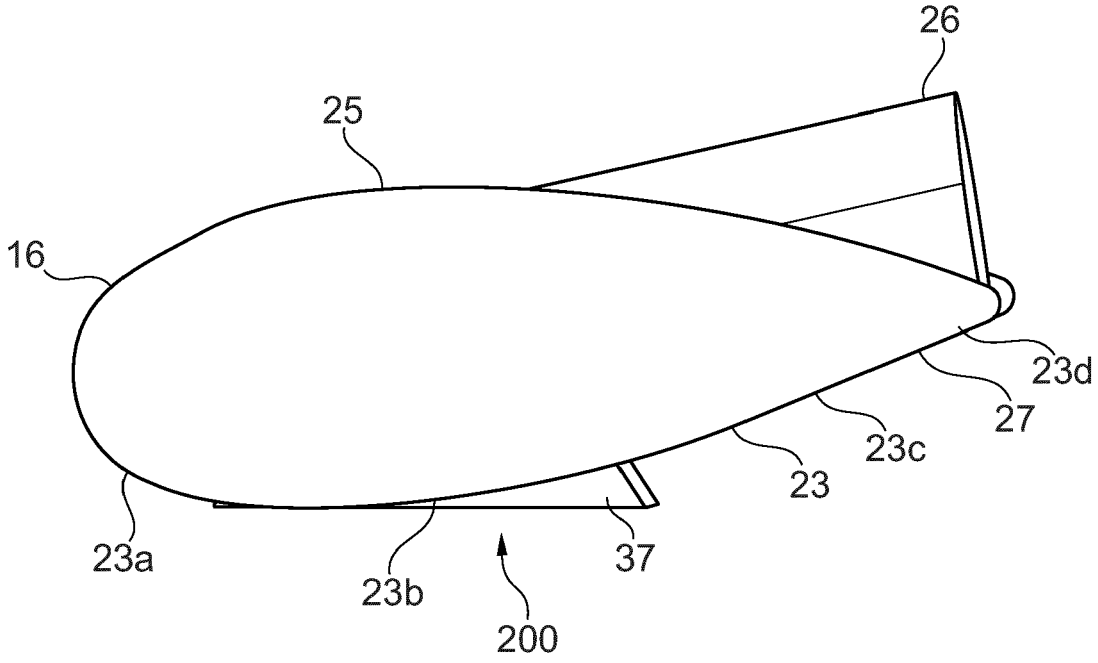
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Fig. 6

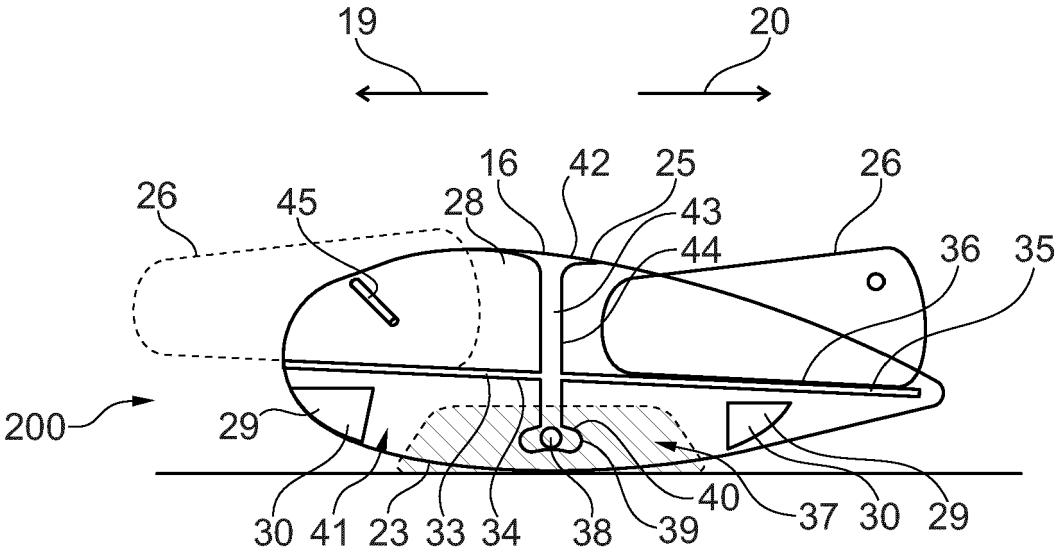
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Fig. 7

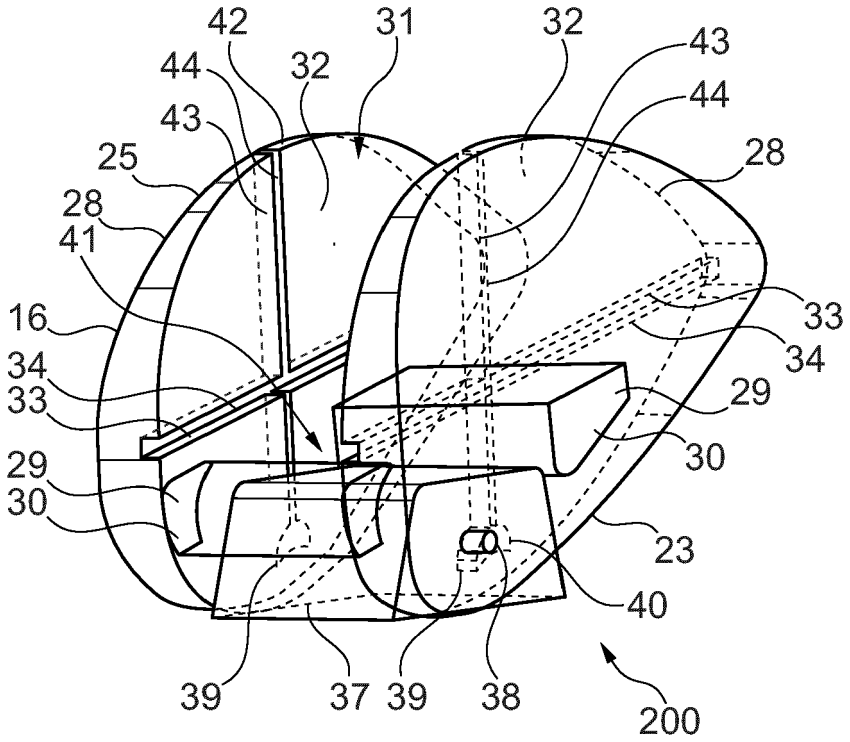
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Fig. 8

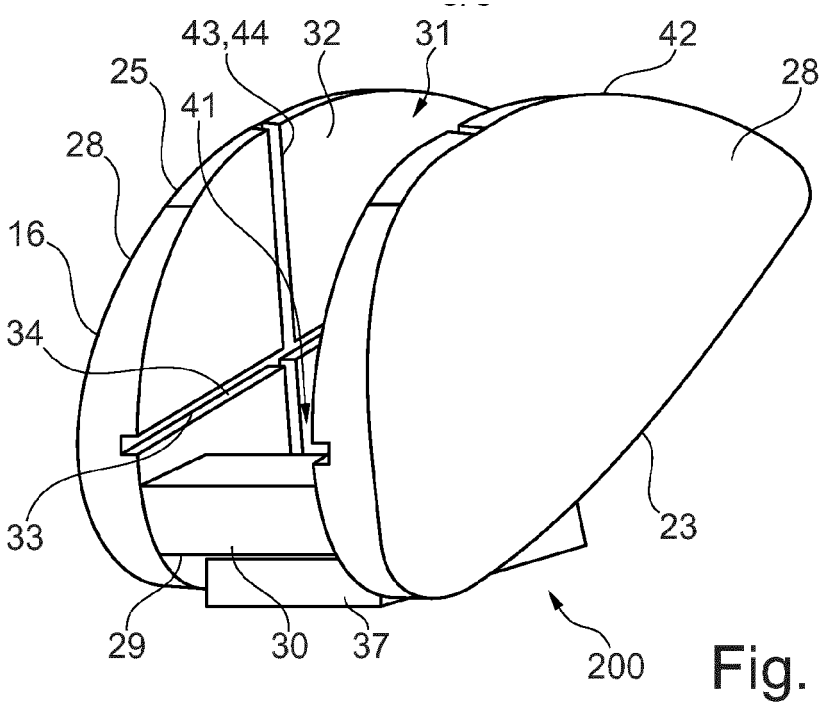

Fig. 9

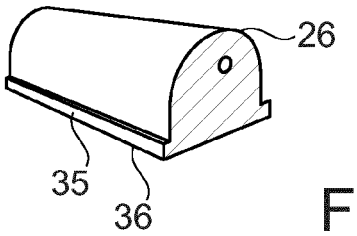

Fig. 10

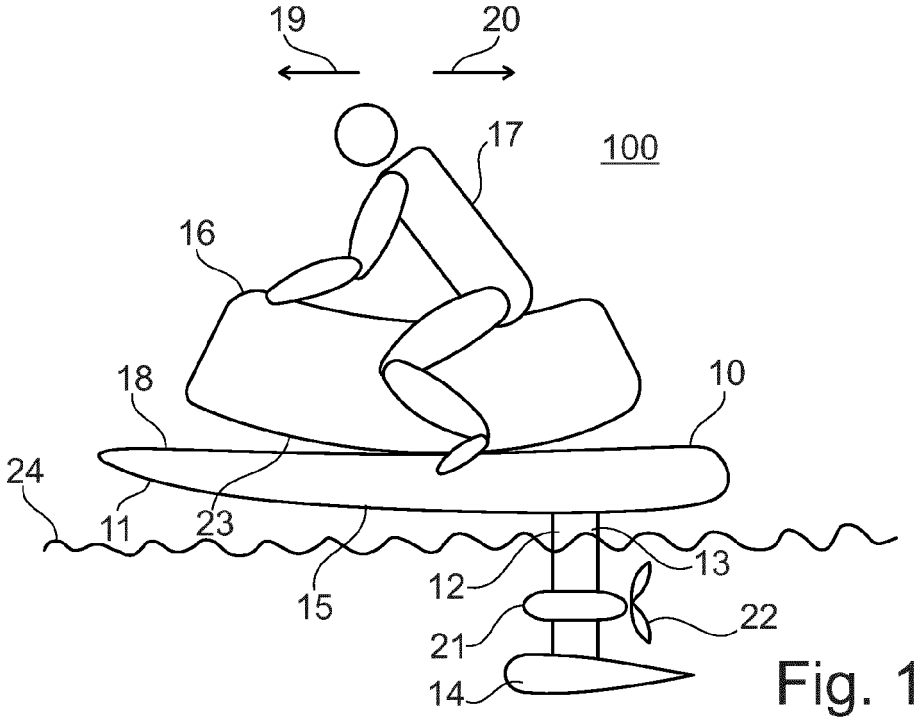

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 23 19 7402

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,D	US 10 668 987 B1 (MURPHY MICHAEL [US]) 2 June 2020 (2020-06-02)	1,2,9,13	INV. B63B32/60
A	* abstract * * column 3, lines 23-25 * * figures *	3-8, 10-12, 14,15	B63B32/70 B63B34/10 B63B32/77 B63B32/10
X	US 6 179 676 B1 (WILBORN JON D [US] ET AL) 30 January 2001 (2001-01-30)	1	
A	* abstract * * figures *	2-15	
X	US 5 443 409 A (ADAMSON KEITH [US]) 22 August 1995 (1995-08-22)	14	
A	* abstract * * figures *	1,15	
A	WO 2022/174289 A1 (FLITEBOARD PTY LTD [AU]) 25 August 2022 (2022-08-25) * abstract * * figures *	1-15	
A	US 2011/088610 A1 (WOOD BRUCE G [US]) 21 April 2011 (2011-04-21) * abstract * * figures *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)
B63B
A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 March 2024	Gardel, Antony

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 19 7402

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12-03-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 10668987 B1	02-06-2020	NONE	
US 6179676 B1	30-01-2001	NONE	
US 5443409 A	22-08-1995	NONE	
WO 2022174289 A1	25-08-2022	NONE	
US 2011088610 A1	21-04-2011	NONE	

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

REFERENCES CITED IN THE DESCRIPTION

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- DE 10103126 A1 **[0005]**
- CA 3146763 A1 **[0006]**