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(54) **HANDLING DEVICE TO HANDLE FLOATING MEANS OF TRANSPORT OF PERSONS**

(57) Described is a handling device (1) to handle floating means of transport of persons comprising a watertight containment body (10), said containment body (10) comprising a motor (2), a battery (3) operatively con-

nected to said motor (2), a command and control unit of said motor and engagement means (4), said device (1) also comprising a control rod (5).

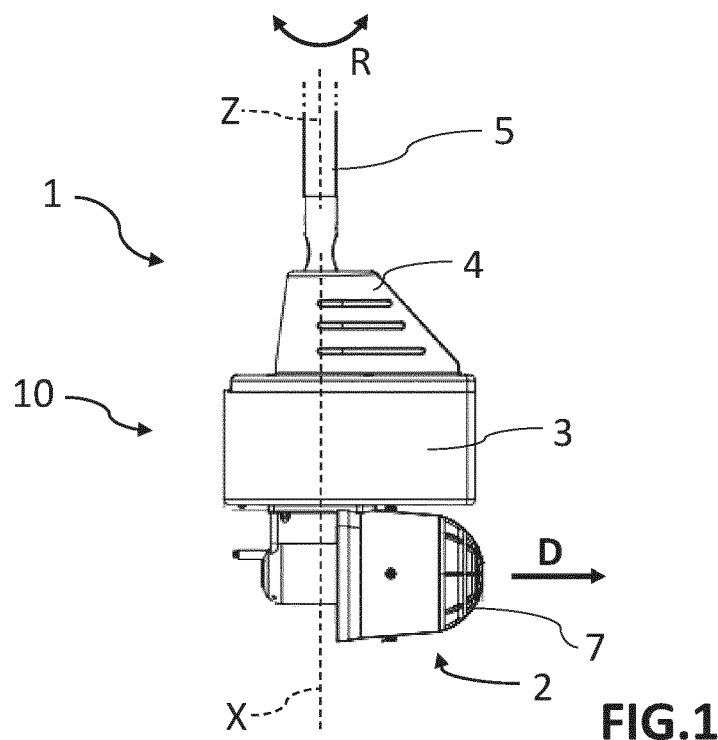


FIG.1

Description

[0001] This invention relates to a device to handle floating means of transport of persons.

[0002] In particular, the invention relates to a device for handling floating means of transport such as, for example SUPs (Stand Up Paddle Boards), canoes, kayaks, boats or the like.

[0003] The use of SUPs is currently increasingly widespread.

[0004] The term SUP means a means for carrying out a sports activity which is now increasingly widespread in every corner of the world in which the outside conditions make it possible, that is to say, where there is a area of water which can be swum in.

[0005] More in detail, this sports activity consists in the use of a board substantially shaped like a surfboard, and a paddle or oar, in such a way that a user, moving the board manually, can impart directionality and propulsive force to the board, whilst standing on it.

[0006] Although it is an efficient and fun activity it is not always enjoyed since at times and for certain users or conditions of the water it is particularly tiring.

[0007] In this regard, SUPs are currently known, although they are not very widespread, which comprise a motorised unit positioned below the hull of the SUP.

[0008] Such types of currently known motorised SUPs comprise a board (similar to a surfboard) on which an electric motor is located on the lower surface (that is to say, the one designed to be immersed in water).

[0009] The motor is controlled and operated by the user.

[0010] In particular, the electric motor receives the signal by means of physical wiring which terminates on a transceiver unit located on the upper surface of the board (that is to say, the one not designed to be immersed in water).

[0011] The transceiver unit is in turn connected with the user by physical or wireless wiring.

[0012] The battery and the control unit of the motor are also located on the upper surface of the board, that is to say, spaced away from the motor.

[0013] This type of SUP, and in particular the system for moving the SUP (electric motor plus remote control), certainly represents a good solution to the above-mentioned drawbacks, but is not free of drawbacks.

[0014] In fact, the need for wiring renders the SUP not always safe and practical to use.

[0015] In effect, it is known that during the activities in water the wiring determines an element of risk both for the safety of the user and in terms of potential damage to the wiring with consequent malfunctions of the movement system.

[0016] Another drawback of the prior art handling systems is due to the fact that they often do not allow the possibility of choosing between navigation with an on-board motor and navigation with an outboard motor.

[0017] In this context, the technical purpose which

forms the basis of the invention is to propose a device to handle floating means of transport of persons which overcomes the above-mentioned drawbacks of the prior art.

[0018] In particular, the aim of the invention is to provide a device to handle floating means of transport of persons which is easy and practical to use.

[0019] A further aim of the invention is to provide a device to handle floating means of transport of persons which is safe and free from risks due to the presence of wiring as occurs in the prior art.

[0020] A further aim of the invention is to provide a device to handle floating means of transport of persons which does not comprise elements fixed on the upper or lower surface of the means of transport.

[0021] According to the invention, these aims and others are achieved by a device to handle floating means of transport of persons comprising the technical features described in the accompanying claims.

[0022] The technical features of the invention, according to the above-mentioned aims, are clearly described in the appended claims and its advantages are apparent from the detailed description which follows, with reference to the accompanying drawings which illustrate a nonlimiting example embodiment of it, and in which:

- Figure 1 is a schematic side view of a first embodiment of a device to handle floating means of transport of persons according to the invention,
- Figure 2 is a schematic rear view of the device of Figure 1,
- Figure 3 is a schematic top view of the device of Figure 1,
- Figure 4 is a schematic side view of a second embodiment of a device to handle floating means of transport of persons according to the invention,
- Figure 5 is a schematic rear view of the device of Figure 4,
- Figure 6 is a schematic top view of the device of Figure 4,
- Figure 7 is a schematic rear view of a third embodiment of a device to handle floating means of transport of persons according to the invention,
- Figure 8 is a schematic side view of the device of Figure 7,
- Figure 9 is a perspective side view of the device of Figure 7 and
- Figure 10 is a schematic side view of a particular condition of use of the device of Figure 7.

[0023] With reference to the accompanying drawings, the numeral 1 denotes in its entirety a device to handle floating means of transport of persons made in accordance with the invention, hereinafter also referred to simply as the device 1.

[0024] The device 1 according to the invention comprises a sealed containment body 10 and having a longitudinal axis of extension X.

[0025] The sealed containment body 10 means that

the body 10 is impermeable to the passage of any external liquid.

[0026] The containment body 10 comprises a motor 2.

[0027] Advantageously, the motor 2 comprises a propeller 6 configured to protrude from the containment body 10 and generate the propulsive force.

[0028] In particular, the propeller 6 is designed to allow a thrust in a direction D perpendicular to the longitudinal axis of extension X of the containment body 10.

[0029] Advantageously, the propeller 6 is oriented in such a way as to guarantee a thrust in a direction parallel to the desired direction of travel.

[0030] Advantageously, moreover, the containment body 10 comprises an element 7 for protecting the propeller 6.

[0031] This protective element 7 is essential for protecting the propeller 6 from any impacts and, above all, for protecting persons and animals from possible accidents due to contact with the propeller.

[0032] Advantageously, the protective element 7 is of the cage type.

[0033] Advantageously, the motor 2 has a torque of 4.8 kg.

[0034] According to a further embodiment, the motor 2 has a torque of 10.0 kg.

[0035] The containment body 10 also comprises a battery 3 operatively connected to the motor 2.

[0036] With reference to Figures 1 to 3, the battery 3 (and in particular a portion containing it forming part of the body 10) is positioned above the motor 3 (and in particular above a portion containing it, again forming part of the body 10) along a longitudinal direction of extension defined by the axis X.

[0037] According to another embodiment, shown in Figures 4 to 6, a containing portion of the motor 2 is at least partly recessed in a containing portion of the battery 3.

[0038] This further embodiment makes it possible to obtain a more compact containment body 10 in such a way as to optimise the overall dimensions and the hydrodynamic capacity.

[0039] Advantageously, the battery 3 has a capacity of 5Ah.

[0040] The containment body 10 comprises a command and control unit for the motor 2, not illustrated in the drawings.

[0041] Moreover, the containment body 10 also comprises engagement means 4.

[0042] With reference to the accompanying drawings, the engagement means 4 are positioned above the battery 3, along a longitudinal direction of extension defined by the axis X.

[0043] Advantageously, the engagement means 4 are connected to the battery 3 in a removable fashion.

[0044] The device 1 according to the invention also comprises a control rod 5 having a longitudinal axis of extension Z.

[0045] In particular, the longitudinal axis of extension

Z of the rod 5 is parallel to the longitudinal axis of extension X of the containment body 10, when the device 1 is configured as an onboard motor, as for example shown in Figures 7 and 8.

[0046] In particular, according to the invention, in the onboard motor configuration, for example, the rod 5 is designed to pass through an opening made on the floating means of transport in such a way as to immerse the containment body 10 in a volume of water beneath the floating means of transport.

[0047] Substantially, when the device 1 acts as an onboard motor, a user is able to control the floating means of transport (for example, an SUP or stand-up paddle board) keeping the rod 5 in the configuration aligned with the containment body 10.

[0048] When the device 1 is configured as an onboard motor, the direction D of thrust of the propeller 6 is substantially perpendicular to the longitudinal axis of extension Z of the rod 5.

[0049] Advantageously, when the device 1 acts as an onboard motor, a user is able to control the floating means of transport by standing on it and rotating the rod 5 relative to the axis Z.

[0050] When the device 1 is configured as an outboard motor, as shown in Figure 10, the longitudinal axis of extension Z of the rod 5 is substantially perpendicular (or in any case inclined) to the longitudinal axis of extension X of the containment body 10.

[0051] When the device 1 acts as an outboard motor, the direction D of thrust of the propeller is substantially parallel to the longitudinal axis of extension Z of the rod 5.

[0052] Advantageously, when the device 1 acts as an outboard motor, a user is able to control the floating means of transport whilst sitting on an intermediate portion of it, in such a way that the rod 5 is directed parallel to the floating means of transport, and the containment body 10 is immersed in water outside the space occupied by the floating means of transport itself.

[0053] The control rod 5 is stably connected to the engagement means 4 of the containment body 10, in such a way that a rotation R of the rod 5 relative to the axis X of the containment body 10 corresponds to a same rotation R of the containment body 10.

[0054] In particular, this allows a user to impart the desired direction to the floating means of transport by manoeuvring the control rod 5.

[0055] According to the further embodiment shown in Figures 7-10, the containment body 10 comprises a rotation joint 19 interposed between the engagement means 4 and the battery 3.

[0056] The joint 19 advantageously comprises a rotation pin 9 in such a way as to allow the control rod 5 to rotate R' about an axis Y of the pin 9.

[0057] This allows the rod 5 to be inclined by a predetermined angle relative to the containment body 10, that is to say, relative to the motor 2.

[0058] Advantageously, the joint 19 also comprises blocking means 20 designed to block the rotation R' in

one of a plurality of possible angular positions of the control rod 5 with respect to the containment body 10.

[0059] The blocking means 20 comprise, for example, snap-on portions of the male or female type or of the type comprising in a movable blocking element.

[0060] According to this solution, therefore, it is possible to block the reciprocal position between the control rod 5 and the containment body 10 in a plurality of positions corresponding to respective angular positions.

[0061] Advantageously, for an angle of 90 degrees between the rod 5 and the containment body 10, the device 1 according to the invention may act as an outboard motor (Figure 10).

[0062] In this regard, the joint 19 also comprises an end of stroke portion 22 corresponding to the 90° portion between the control rod 5 and the containment body 10.

[0063] Advantageously, the above-mentioned command and control unit comprises a gyroscope and an accelerometer designed to detect, respectively, the direction and the speed of rotation R of the control rod 5 relative to the axis X.

[0064] In particular, the term "gyroscope" means a sensor which is able to detect the angular speed, that is to say, the variation of the angle of rotation per unit of time.

[0065] Moreover, the term "accelerometer" means a sensor which is able to detect and/or measure the acceleration by calculating the force measured relative to the mass of the object.

[0066] In other words, the command and control unit translates a pulse coming from the rotation R of the control rod 5 into a control signal of the motor 2 in such a way as to determine the desired speed.

[0067] Advantageously, the gyroscope and an accelerometer are configured to determine at least three different levels of drive speed of the motor 2 based on the direction and speed of rotation of the control rod 5 relative to the axis X.

[0068] The device 1 according to the invention also comprises at least one LED designed to flash with different frequencies depending on the respective set speed level of the motor 2.

[0069] This allows a user to keep under control the set speed level at all times.

[0070] The control unit also comprises at least one humidity sensor designed to recognize whether the containment body 10 is immersed in water in such a way as to consequently activate the motor 2, or, vice versa, deactivate the motor 2 if the containment body 10 is not immersed in water.

[0071] Advantageously, the device is switched off after the containment body 10 has remained for a predetermined period of time outside the water.

[0072] The command and control unit also comprises a sensor designed to measure the current absorbed by the motor 2.

[0073] Advantageously, the sensor is of the shunt resistor or Hall effect resistor or current transformer type.

[0074] In particular, information can be obtained from

the measurement of the current necessary for controlling (speed, torque) and protecting the motor in the event of a fault (fault management).

[0075] Advantageously, the control rod 5 comprises manual control means 21 for activating and adjusting the motor 2.

[0076] Advantageously, moreover, the manual control means 21 are designed to manually adjust the speed level.

[0077] Advantageously, the containment body 10 comprises an external connector 8 for recharging the battery 3.

[0078] Advantageously, moreover, the containment body 10 has a portion having a hydrodynamic, substantially teardrop-shaped, section, inside of which are positioned the above-mentioned engagement means 4, the command and control unit and the battery 3.

[0079] This allows the resistance of the water to be reduced to a minimum.

[0080] The movement device according to the invention for floating means of transport of persons overcomes the above-mentioned drawbacks and brings important advantages.

[0081] A first advantage is due to the fact that the device to handle floating means of transport of persons according to the invention is able to provide a solution which is safe and practical to use.

[0082] In particular, this solution makes it possible to eliminate the presence of cables on the surface (both above and below) of the floating means of transport in question.

[0083] The absence of wiring provides an optimum degree of safety to the device, both for the safety of the user and for the device itself.

[0084] A further advantage is due to the fact that the invention provides a device to handle floating means of transport of persons which is able to guarantee to the user a high degree of comfort in use and a wide freedom of action.

[0085] In effect, the total absence of devices fixed on the floating means of transport of persons allows the overall dimensions on the means to be considerably reduced in such a way as to guarantee to the user an optimum space for action.

[0086] A further advantage of the device to handle floating means of transport of persons according to the invention is due to the fact that it guarantees a convenient and simple use both as an outboard motor and as an onboard motor.

Claims

1. A handling device (1) to handle floating means of transport of persons comprising a containment body (10) which is watertight and has a longitudinal axis of extension (X), said containment body (10) comprising:

- a motor (2) comprising a propeller (6);
- a battery (3) operatively connected to said motor (2);
- a command and control unit of said motor (2);
- engagement means (4),

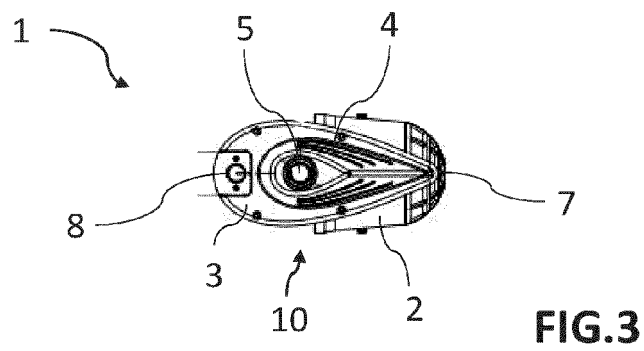
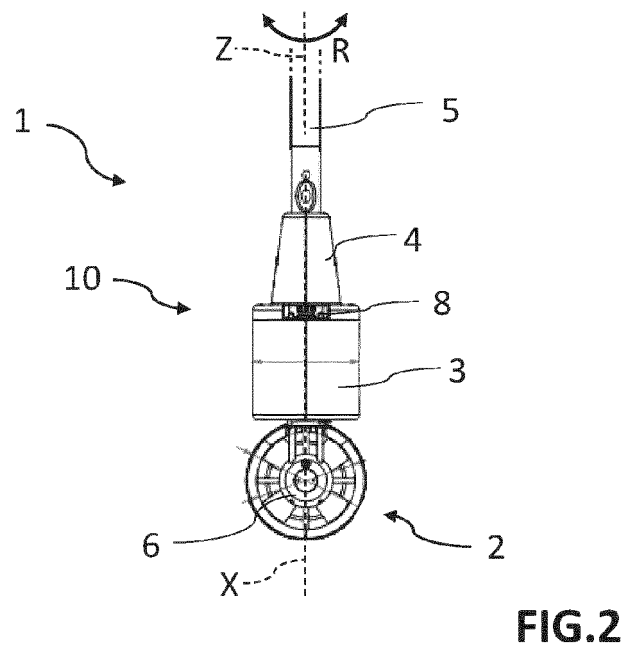
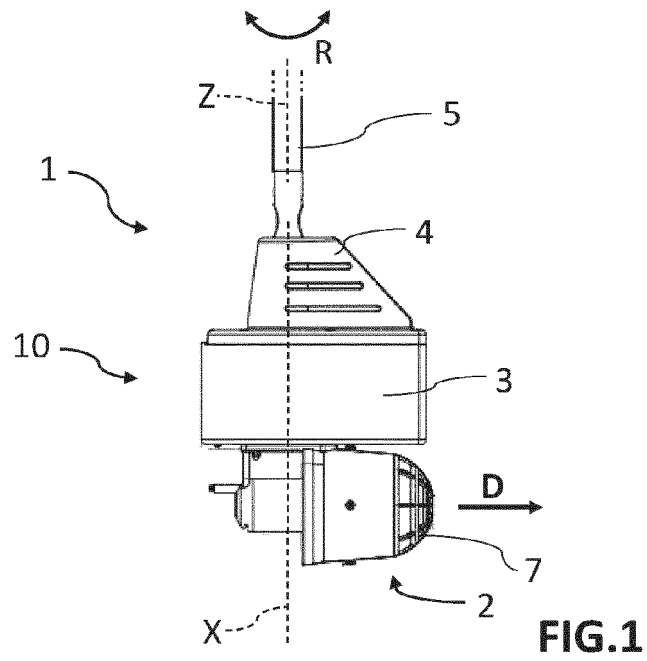
said device (1) further comprising a control rod (5) having a longitudinal axis of extension (X) and stably connected to said engagement means (4) of said containment body (10) so that a rotation (R) of said rod (5) with respect to said axis (X) of said containment body corresponds to an equal rotation (R) of said containment body (10),

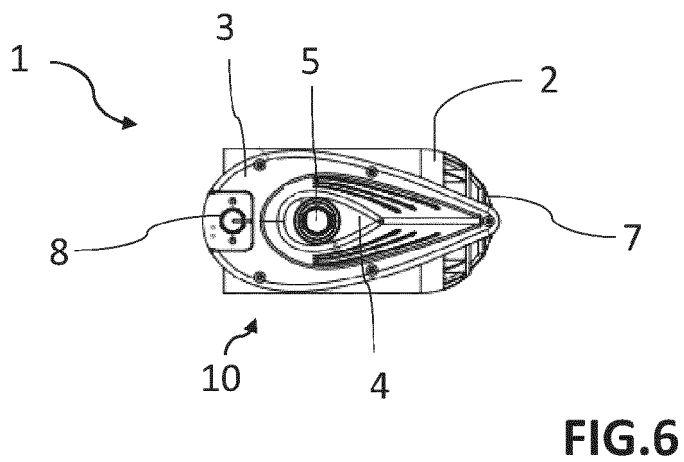
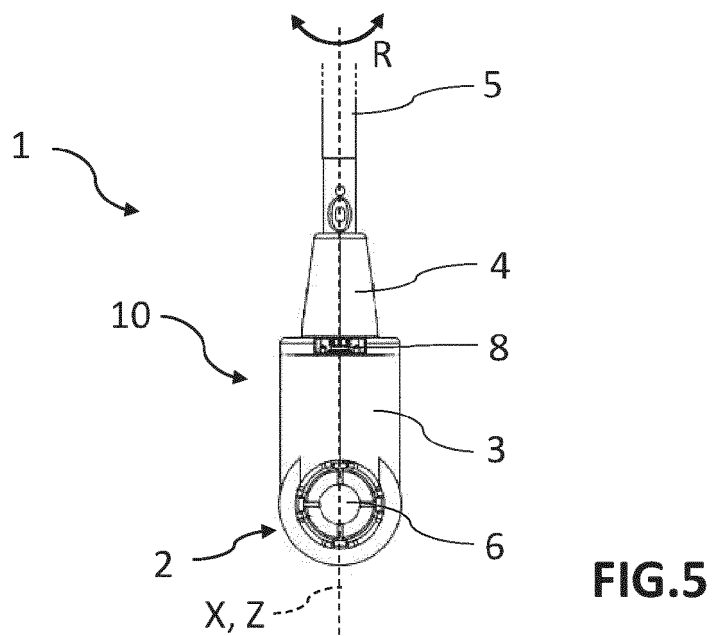
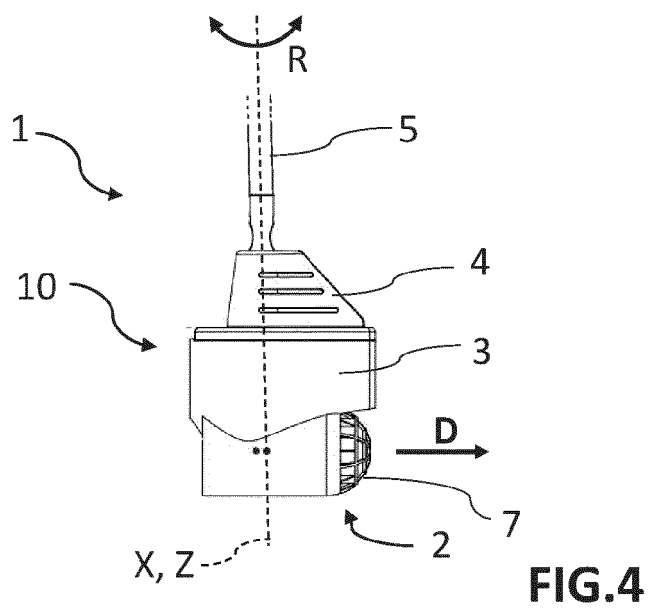
said device (1) being **characterised in that** the propeller (6) is designed to allow a thrust in a direction (D) perpendicular to said longitudinal axis of extension (X) of said containment body (10).

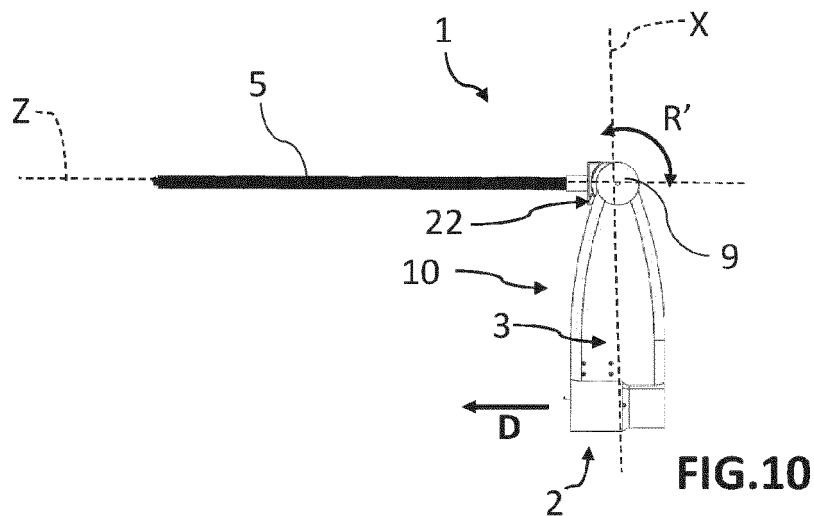
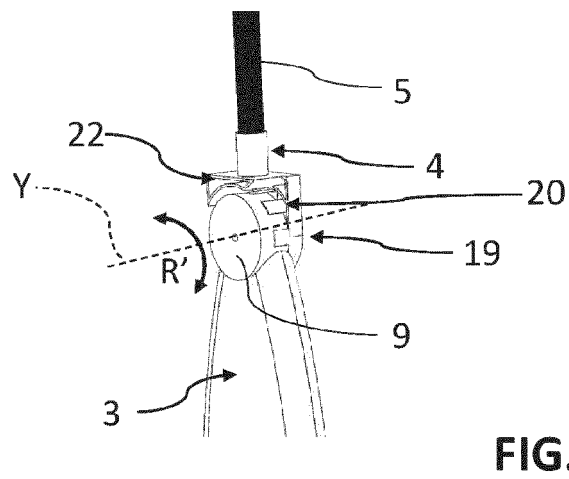
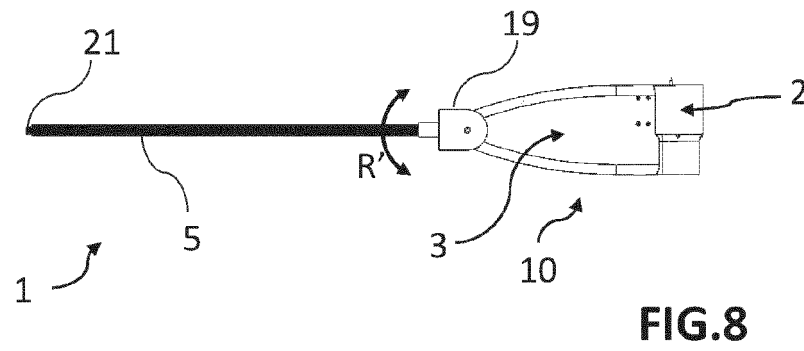
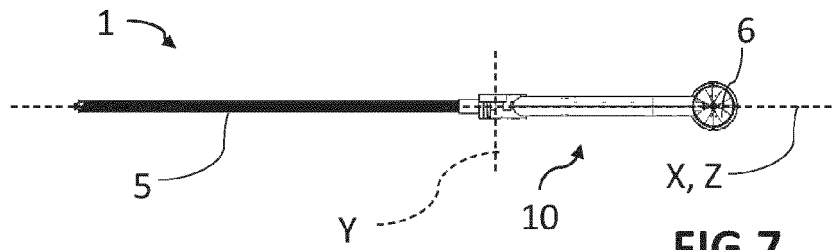
2. The device (1) according to claim 1, **characterised in that** said propeller (6) protrudes from said containment body (10). 20
3. The device (1) according to any one of the preceding claims, **characterised in that** said command and control unit comprises a gyroscope and an accelerometer designed to detect respectively the direction and the speed of said rotation (R) of said control rod (5) with respect to said axis (X). 25
4. The device (1) according to the preceding claim, **characterised in that** said gyroscope and said accelerometer are configured to determine at least three different levels of drive speed of said motor (2) according to the direction and speed of rotation of said control rod (5) with respect to said axis (X). 30 35
5. The device (1) according to the preceding claim, **characterised in that** it comprises at least one LED designed to flash with different frequencies depending on the respective set speed level of said motor (2). 40
6. The device (1) according to any one of the preceding claims, **characterised in that** said command and control unit comprises at least one humidity sensor designed to recognize whether said containment body (10) is immersed in water so as to consequently activate said motor (2), or, vice versa, deactivate said motor (2) if said containment body (10) is not immersed in water. 45 50
7. The device (1) according to any one of the preceding claims, **characterised in that** said command and control unit comprises a sensor designed to measure the current absorbed by said motor (2). 55
8. The device (1) according to any one of the preceding claims, **characterised in that** said containment

body (10) has at least one portion having a hydrodynamic section, substantially teardrop-shaped, within which said engagement means, said command and control unit and said battery are arranged.

9. The device (1) according to any one of the preceding claims, **characterised in that** said containment body (10) comprises a rotation joint (19) interposed between said engagement means (4) and said battery (3) and designed to allow said control rod (5) a rotation (R') about an axis (Y) of said rotation joint (19). 10
10. The device (1) according to the preceding claim, **characterised in that** said joint (19) comprises a pivot (9) having a rotation axis coincident with said axis (Y) and blocking means (20) designed to block said rotation (R') in one among a plurality of possible angular positions of said control rod (5) with respect to said containment body (10). 15 20
11. The device (1) according to any one of the preceding claims, **characterised in that** said control rod (5) comprises manual control means (21) to activate and adjust said motor (2). 25
12. The device (1) according to any one of the preceding claims, **characterised in that** said longitudinal axis of extension (Z) is parallel to said longitudinal axis of extension (X) of said containment body (10) when said device (1) is configured as an onboard motor. 30
13. The device (1) according to any one of the preceding claims, **characterised in that** said longitudinal axis of extension (Z) is perpendicular to said longitudinal axis of extension (X) of the containment body (10) when said device (1) is configured as an outboard motor. 35 40 45 50









EUROPEAN SEARCH REPORT

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Place of search The Hague		Date of completion of the search 7 December 2023	Examiner Daehnhardt, Andreas
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