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(54) **Motorized board with viewer**

(57) A motorized board watercraft (1) with viewer (11) comprises an electric motor (13) and means for actuating and directioning the motorized watercraft (1) having a rotating push-button knob (22) allowing to re-unite in a single actuation all controls necessary to the navigation,

easily usable by remaining in prone lying position onto the board, by observing the seabed through the viewer, the knob (22) being connected to an actuation line (24) constituted by a pneumatic duct and directioning tie rods (28) associated to the rotation of said knob (22) and connected to a directional device.

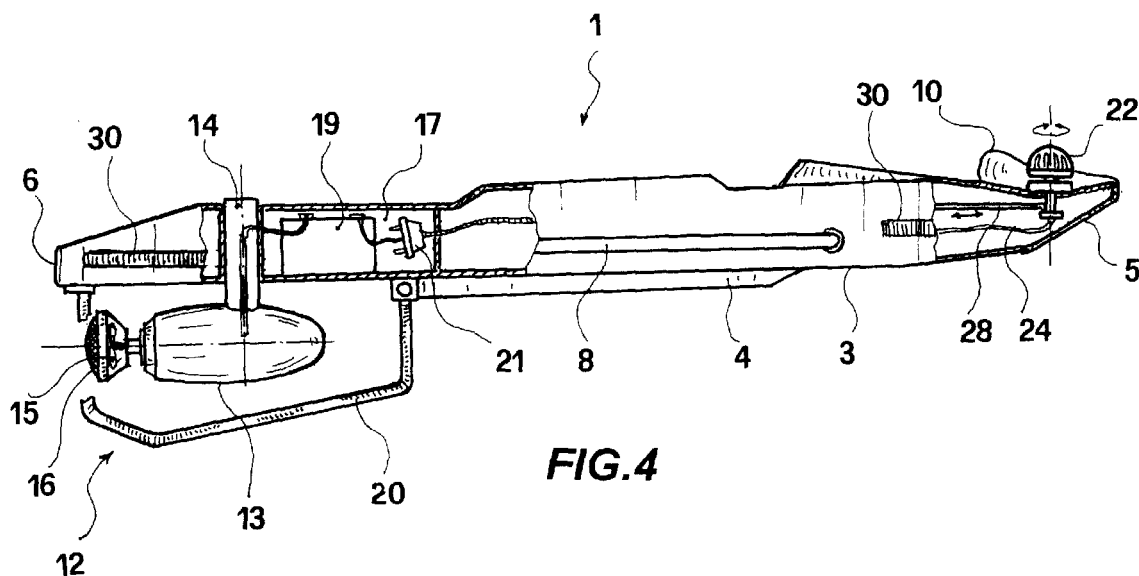


FIG. 4

Description

[0001] The present invention relates to a motorized watercraft, of the type shaped like a board and equipped with a viewer to observe the seabed.

[0002] In particular, it is of the type suitable to be used by beach-goers wishing to explore the seabed near the coast, at the same time being able to have a resting base at their disposal allowing them to rest, take the sun, rest objects and so on.

[0003] The presence of a motorized system has to be meant as a replacement of the human propulsion, performed with flippers or oars, and thus it allows a low cruising speed.

[0004] However, it is meant that the use of the watercraft is not limited to what above described, but it can also be used as a resting, safety, rescue or working platform.

[0005] The known watercrafts, however, do not offer particular flexibility and manoeuvrability features and they can be considered like toys or little more, as simple inflatable mattresses with, added, limited propulsion capabilities.

[0006] Furthermore, they do not lend themselves to the use of a viewer which requests the user to assume a prone position to direct the face and the eyes towards the seabed.

[0007] It is meant, however, that the wished use flexibility has to be combined with the maximum safety.

[0008] The technical problem underlying the present invention consists in proposing a motorized watercraft allowing to overcome the drawbacks mentioned with reference to the state of art.

[0009] Such problem is solved by a motorized watercraft, substantially shaped like a board and equipped with a viewer arranged through the thickness thereof or at an edge thereof, comprising an electric motor and means for actuating and directing the motorized watercraft, which characterizes in that said actuating means and directing means have:

- a rotating push-button knob;
- an actuating line constituted by a pneumatic duct; and
- directing tie rods associated to the rotation of said knob and connected to a directional device, wherein the lowering of the push-button knob determines an overpressure in said pneumatic duct which acts onto the actuator of a micro-switch which closes the motor supply circuit and wherein the raising of the push-button knob consequently determines the automatic opening of the supply circuit and the interruption of the motor operation, being provided spring means which keeps said push-button knob in raised position due to the lack of the active intervention of a user.

[0010] According to a preferred embodiment of the above-defined watercraft, the motor is mounted on a rotating support so as to constitute itself said directional device. Alternatively, said tie rods could be connected to one ore more rudder blades.

[0011] It is further meant that under motor in general one ore more motors are meant, each one arranged for actuating one ore more blades or propulsive wheels.

[0012] In the preferred and more simplified version, the watercraft has a single steerable motor which actuates a blade protected by a protection cage, arranged at a median axis and the rear portion of the board, projecting below the board itself.

[0013] The use of a rotating push-button knob allows uniting in a single actuation all controls necessary to the navigation. Furthermore, they can be easily used by remaining in prone lying position, by observing the seabed through the viewer.

[0014] Conveniently, such push-button knob will be arranged at the front end of the board, in case on the right side.

[0015] An embodiment example of the board watercraft according to the present invention will be described hereinafter by way of example and not for limitative purposes, by referring to the enclosed drawings, wherein :

- figure 1 shows a perspective view of a board watercraft according to the present invention;
- figure 2 shows a top plan view and a partial cross view of the board watercraft of figure 1, so as to make visible the inner actuations;
- figure 3 shows a bottom plan view and a partial cross view, with the same purposes of figure 2;
- figure 4 shows a side view in longitudinal section, with the same above purposes; and
- figures 5A and 5B show a side view and a partial cross view of a detail of the board watercraft of the preceding figures, in two different operating positions.

[0016] By referring to the figures, a board watercraft is designated as a whole with 1. It is shaped substantially like a board, wherein under board an elongated body with reduced thickness is meant, with an upper surface 2 or bridge apt to receive a lying person and a lower surface 3 destined to be wet and apt to operate as keel which has, to this purpose, a pair of longitudinal ribs 4 which can operate as drifts.

[0017] The board body further has a front end 5, bevelled at the edges, a rear end 6 and side edges 7 thereat suitable handles 8 are formed.

[0018] In the portions not comprising the handle 8, the edge 7 has rubber strips 31 functioning as fender.

[0019] The board body can be made of any suitable

material, preferably scratch-resistant and anti-shock. For example, it can be made of an injection moulded or fibreglass plastic material or other impregnated-fibre-based material, such as for example carbon fibres.

[0020] Preferably, the board body is a hollow casing. However, it could be also filled up with a filling material with low density, for example a foam with closed cells such as polystyrene to guarantee the floating even in case of piercing the casing.

[0021] It is further meant that the board body could be also implemented by an inflatable assembly, in case with rigid portions, even to guarantee a reduced volume when not used.

[0022] In the present example, the upper surface 2 has a corrugated portion 9 with anti-sliding function and a headrest 10 at the front end 5.

[0023] However, it is meant that said upper surface 2, in order to be more comfortable for the user, can have even padded or inflatable portions, recesses to receive objects such as drink containers or personal object holding casings and so one.

[0024] The edges 7 can be equipped with hooks for hanging bag-like containers, nets, etc., or rings to tie up ropes or even anti-shock paddings.

[0025] The watercraft 1 further has a viewer 11, in particular implemented by an opening through the thickness of body of the board equipped with a specific glass.

[0026] The viewer can assume different shapes and functions. For example, it could be substantially constituted by a simple reclosable opening, arranged to fittingly receive a mask device with ergonomic shape, suitable to receive the face of an observer and equipped with dark inner surfaces and a viewing glass.

[0027] The viewer can even be simply constituted by a through, in case reclosable, opening, therethrough the user can position so as to observe the seabed with a diver mask. An analogous effect can be obtained by modifying the shape of the front end 5.

[0028] The watercraft 1 is motorized, that is it has one or more motors activating a screw or blade propeller.

[0029] In the present example, the watercraft 1 comprises a propulsion device 12 having an electric motor 13 protected by a specific sealed casing, rotatably fastened to the lower surface 3 of the watercraft 1 by means of a specific pin 14 hinged in the thickness of the board body.

[0030] The sealed casing has a hydrodynamic shape, whereas the electric motor 13 can be of the simpler direct current type, with a single operating regime. It is meant however that more sophisticated solutions are possible.

[0031] A screw 15, protected by a protection cage 16, is connected to the shaft of the motor 13.

[0032] Therefore, it is meant that the rotation of the pin 14 involves the waving of the motor 13 and of the screw 15, which then operate, by cooperating with said drifts 4, even as rudder.

[0033] In the present embodiment example, two protection bars 20, fastened to the lower surface 3 of the

watercraft 1, shaped so as to protect the device 12 from impacts with the seabed or rocks, are positioned on the sides of the propulsion device 12.

[0034] It is meant however that a solution with separated blade and rudder is possible, or the use of several motors, for example two motors positioned laterally, or a different positioning of the motor, in case inside the board body, and of the blade, connected through a suitable motion transmission kinematic chain.

[0035] In the present example, the pin 14 is tubular, to allow the passage of electric connection cables.

[0036] To this purpose, the watercraft 1 comprises an inner compartment 17, closed by a suitable door 18 arranged on said upper surface 2, conveniently positioned near said rear end 6.

[0037] The inner compartment 17 receives a battery 19, or more batteries in series, conveniently of the rechargeable and removable type.

[0038] On the same surface of the watercraft 1, solar photovoltaic cells can be provided to contribute to recharge the battery 19.

[0039] On the connection there is a micro-switch 21 of the type keeping the electric circuit open if not actively actuated.

[0040] To actuate and direct the propulsion device 12 actuation means and directioning means are provided, which will be described hereinafter.

[0041] They comprise a rotating push-button knob, designated as a whole with 22, of the type suitable to be grasped by a user's hand, with a shape substantially like a stud and apt to be pressed opposed to not represented spring elastic members.

[0042] The rotation and the pressure of the knob 22 cause two different effects.

[0043] The knob 22 comprises a stem 23 acting as rotation knob and receiving, inside thereof, a piston sliding inside the cylinder.

[0044] The stem 23 is connected to an actuation line 24 constituted by a pneumatic duct, that is a flexible small tube filled up with a fluid which could be air or water. Said cylinder and said piston are arranged at one end of the duct 24, so that the pressure of the knob 22 causes the formation of an overpressure in said duct 24. At the opposite end of the duct 24 and additional (not represented) cylinder-piston assembly is provided, with an operating extension in contact with the actuation push-button of said microswitch 21.

[0045] Therefore, the lowering of the push-button knob 22 determines an overpressure in said pneumatic duct 24 which acts on the actuator of the microswitch 21 which closes the supply circuit of the motor 13.

[0046] Furthermore, the raising of the push-button knob 22 determined consequently the automatic opening of the supply circuit and the interruption of the operation of the motor 13.

[0047] Therefore, the operation of the motor 13 fulfils all safety requirements, as it is possible only when the user exerts an active intervention and it ceases when the

knob is released, thanks to the spring means which keeps said push-button knob 22 in raised position when the user active intervention is missing.

[0048] Furthermore, sensors could be provided authorizing the motor operation when the user is actually lying on the board, in order to avoid that the pressure on the knob exerted by a person in water could actuate the motor.

[0049] As anticipated previously, the same push-button knob 22 can be rotated around the stem thereof and it has, in a specific closed inner compartment 25, even accessible from the lower surface 3 through a front small door 26, a proximal lever 27 which in turn is connected to directioning tie rods 28 which are associated to the rotation of said knob 22.

[0050] In general, they are connected to a directional device, for example a rudder blade or directly, as in the present example, to the propulsion device 12 which can be oriented.

[0051] To this purpose, said tie rods 28 are connected to a specific distal lever 29 through a skid 30, the distal lever 29 acting onto the pin 14 supporting said motor 13.

[0052] The use of a rotating push-button knob allows re-uniting in a single actuation all controls necessary to the navigation. Furthermore, they can be easily used by remaining in prone lying position, by observing the seabed through the viewer 11.

[0053] Conveniently, such push-button knob 22 is arranged at the front end of the board, in case on the right side to ease the use with the right hand even if, obviously, it is possible any other positioning.

[0054] Warning lights or other indicators can be provided to signal the battery charging status and in particular the fact that half charge has been reached, that the exhaustion thereof is approaching, to allow the user to have available an energy quantity sufficient to get back on to a landing stage.

[0055] To this purpose, an auxiliary battery can be provided which has to be activated by the user upon signalling the exhaustion of the main battery.

[0056] In this way, the user will be forcedly informed of the fact that the remaining energy has to be used for the return travel.

[0057] In order to fulfil additional and contingent needs, a person skilled in the art could introduce several additional modifications and variants to the above-described watercraft, all within the protection scope of the present invention, as defined by the enclosed claims.

Claims

1. A motorized watercraft (1), substantially shaped like a board and equipped with a viewer (11) arranged through the thickness thereof or at an edge thereof, comprising an electric motor (13) and means for actuating and directioning the motorized watercraft (1) **characterized in that** said actuation means and di-

rectioning means have:

- a rotating push-button knob (22);
- an actuation line (24) constituted by a pneumatic duct; and
- directioning tie rods (28) associated to the rotation of said knob and connected to a directional device, wherein the lowering of the push-button knob (22) determines an overpressure in said pneumatic duct (24) which acts on the actuator of a microswitch (21) which closes the supply circuit of the motor (13), and wherein the raising of the push-button knob (22) consequently determines the automatic opening of the supply circuit and the interruption of the operation of the motor (13), being provided spring means which keeps said push-button knob (22) in raised position when a user active intervention is missing.

2. The watercraft (1) according to claim 1, wherein the viewer (11) is implemented by an opening through the thickness of the watercraft (1), equipped with a specific glass.
3. The watercraft (1) according to claim 2, wherein said opening is arranged to receive a mask device with ergonomic shape, suitable to receive the face of an observer and equipped with dark inner surfaces and with a viewing glass.
4. The watercraft (1) according to anyone of the preceding claims, comprising a propulsion device (12) with an electric motor (13) protected by a specific sealed casing, revolvingly fastened to the lower surface (3) of the watercraft (1) by means of a specific pin (14), a blade (15), protected by a protection cage (16), being connected to the shaft of the motor (13), the rotation of the pin (14) involving the waving of the motor (13) and of the blade (15), which then operate as rudder.
5. The watercraft (1) according to claim 4, wherein two respective protection bars (20), fastened to said lower surface (3), shaped so as to protect the propulsion device (12) from impacts with the seabed or rocks, are positioned on the sides of the propulsion device (12).
6. The watercraft (1) according to anyone of the preceding claims, wherein the electric motor (13) is fed by one or more batteries (19) arranged in a sealed compartment (17) obtained in the watercraft thickness, of rechargeable and removable type.
7. The watercraft (1) according to anyone of the preceding claims, wherein rotating push-button knob (22) has a shape substantially like a stud and it is

apt to be pressed in opposition to spring elastic members and it comprises a stem (23) acting as rotation pin and receiving, inside thereof, a piston sliding inside the cylinder connected to the actuation line (24), an additional cylinder-piston assembly being provided at the opposite end of the duct (24) with an extension operating in contact with the actuation push-button of said microswitch (21). 5

8. The watercraft (1) according to anyone of the preceding claims, wherein sensors are provided authorizing the operation of the electric motor (13) when the user is actually lying onto the board. 10

9. The watercraft (1) according to anyone of the preceding claims, wherein the push-button knob (22) has a proximal lever (27) which, in turn, is connected with the directioning tie rods (28) which are associated to the rotation of said knob (22), the tie rods (28) being connected to a specific distal lever (29) acting onto the directional device. 15 20

10. The watercraft (1) according to anyone of the preceding claims, wherein the push-button knob (22) is arranged at the front end (5) of the board, in case on the right side. 25

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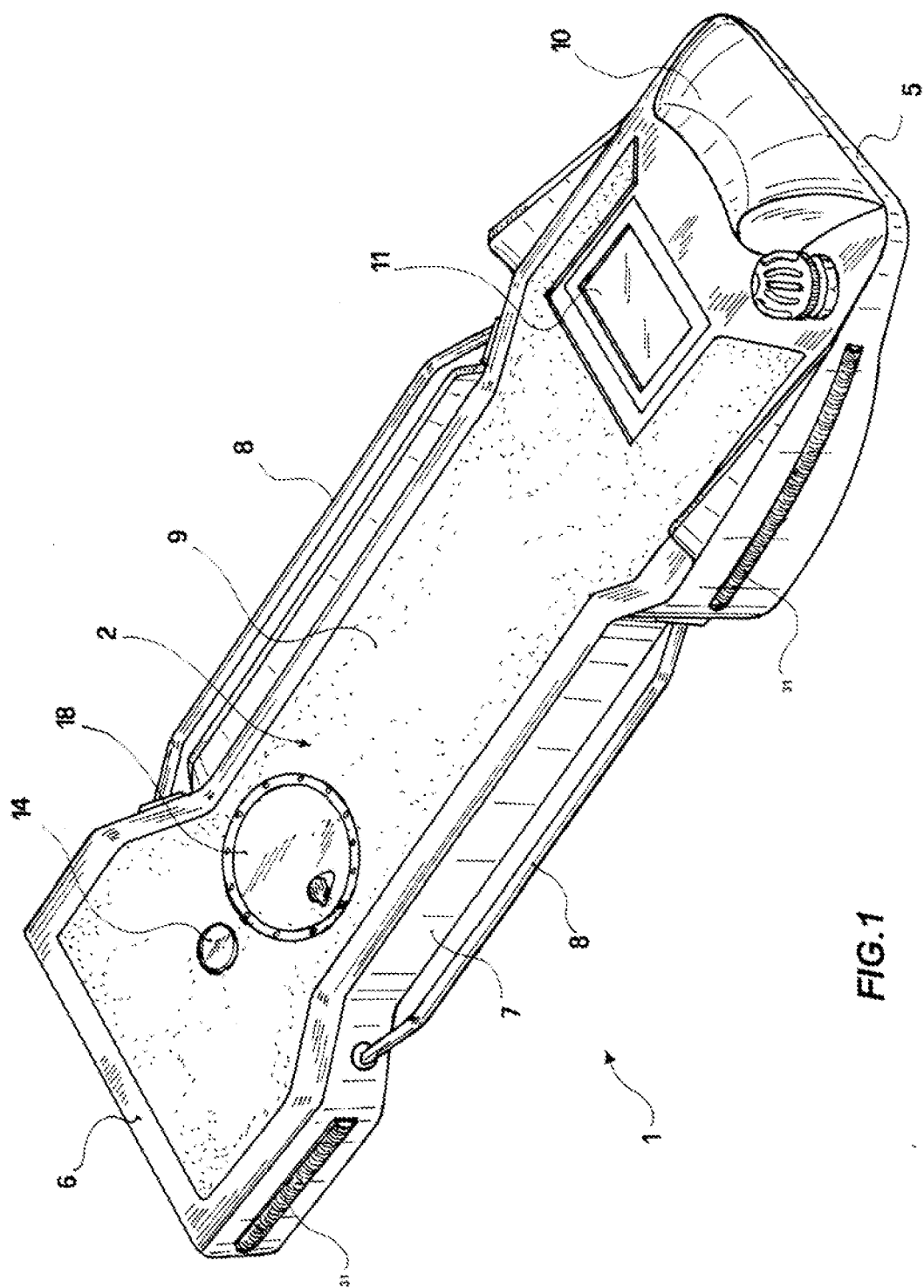
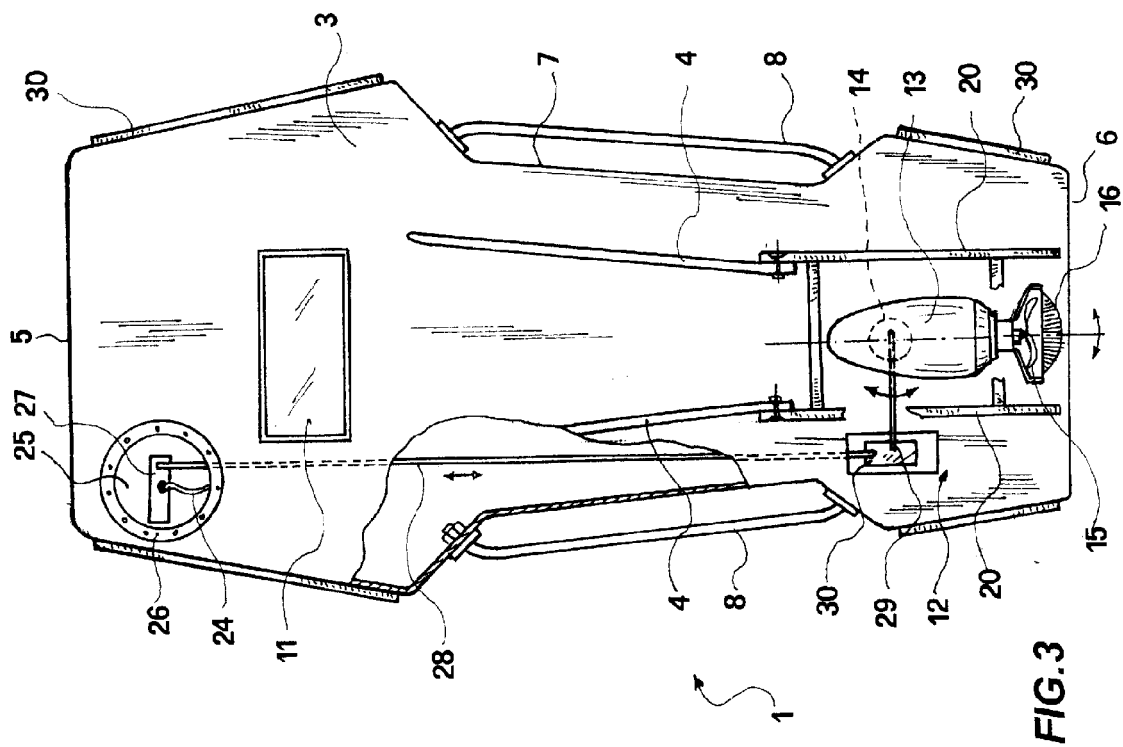
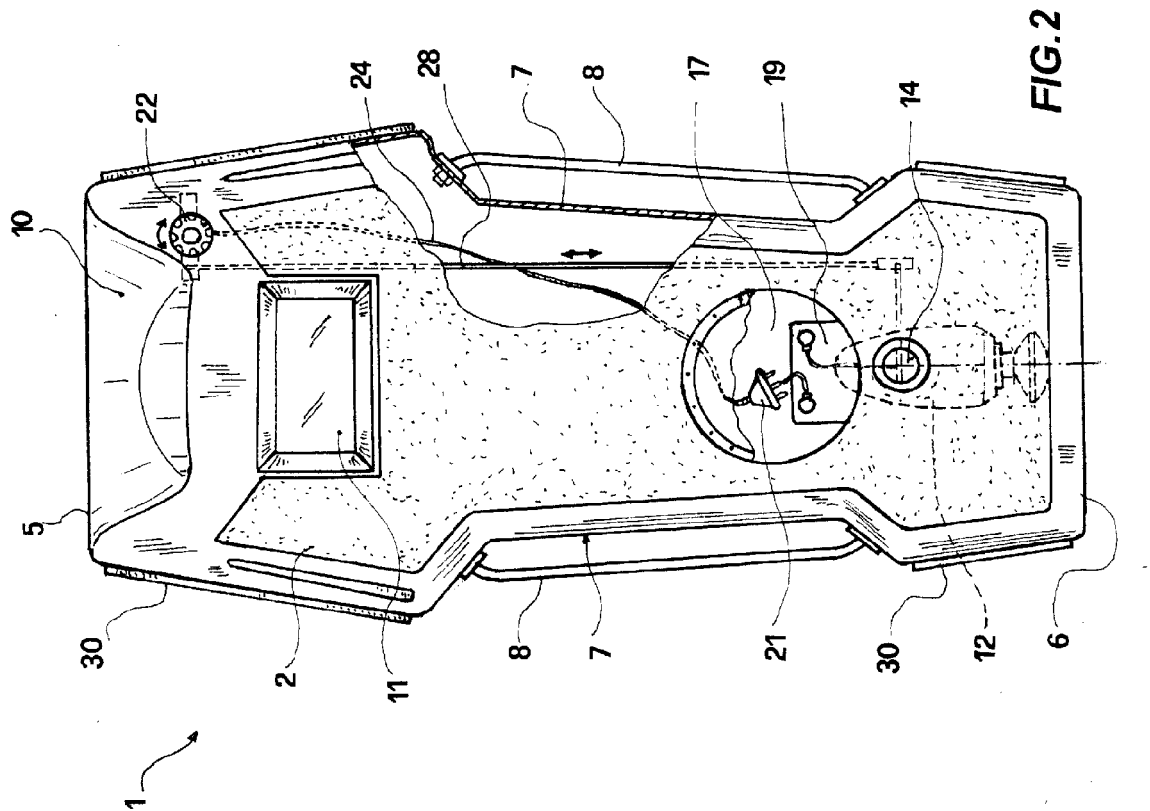
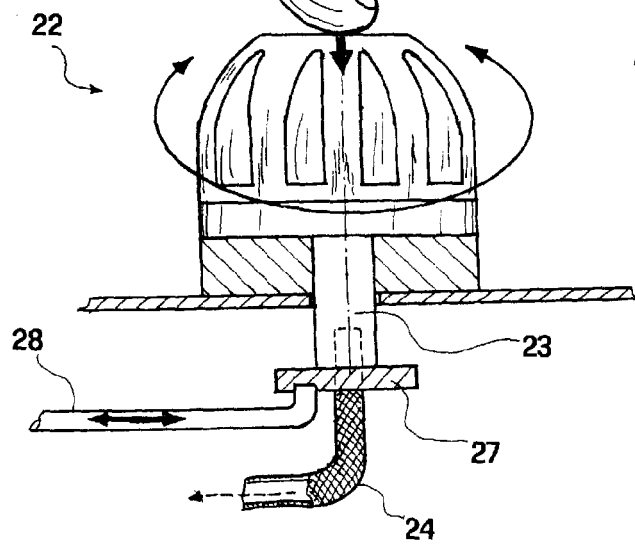
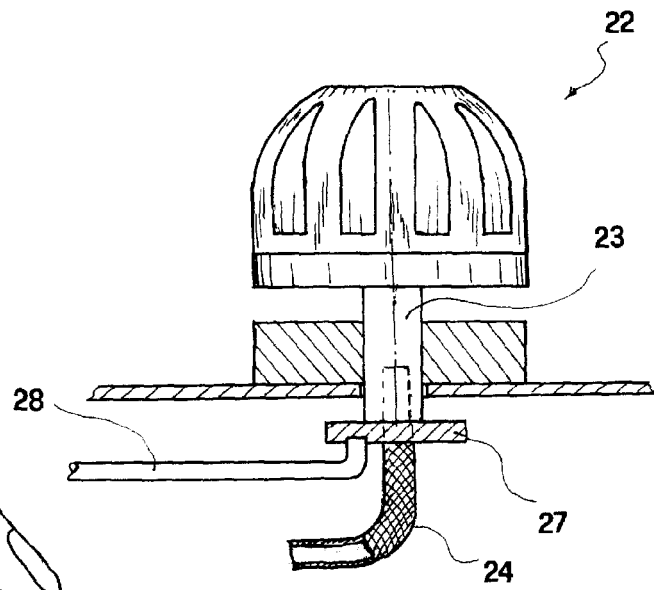
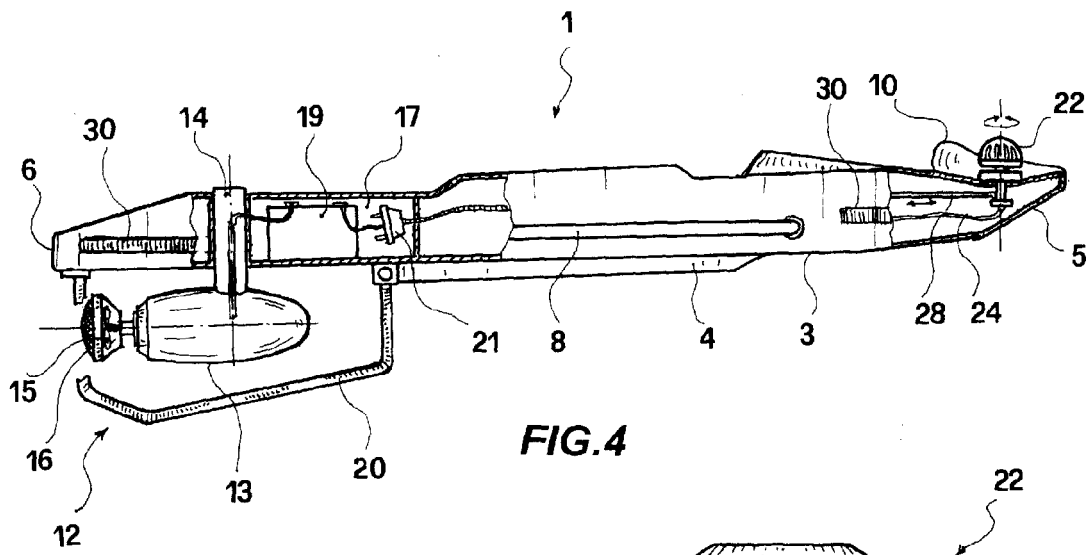


FIG.1







EUROPEAN SEARCH REPORT

Application Number
EP 10 16 6230

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	US 3 585 961 A (GLOVER GUY ALAN) 22 June 1971 (1971-06-22) * abstract * * figures *	1	ADD. B63H25/10 B63H25/12
A	US 2009/093174 A1 (RUI YUTING [US]) 9 April 2009 (2009-04-09) * abstract * * figures *	1	
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A	FR 2 182 235 A1 (NORBURY SAMUEL [GB]) 7 December 1973 (1973-12-07) * claims 1,10 * * figures *	1	TECHNICAL FIELDS SEARCHED (IPC) B63B B63C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 September 2010	Examiner Gardel, Antony
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04C01)

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

EP 10 16 6230

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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