

(19) **DANMARK**

(10) **DK/EP 3945016 T3**



(12) **Oversættelse af
europæisk patentskrift**

Patent- og
Varemærkestyrelsen

-
- (51) Int.Cl.: **B 63 H 21/21 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2023-11-20**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2023-10-25**
- (86) Europæisk ansøgning nr.: **21188718.7**
- (86) Europæisk indleveringsdag: **2021-07-30**
- (87) Den europæiske ansøgnings publiceringsdag: **2022-02-02**
- (30) Prioritet: **2020-07-31 DE 102020120323**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
- (73) Patenthaver: **Torqueedo GmbH, Claude-Dornier-Strasse 1 , Gebäude 901, 82234 Wessling, Tyskland**
- (72) Opfinder: **Despineux, Frank , 82234 Weßling, Tyskland
Müller, Moritz , 86343 Königsbrunn, Tyskland**
- (74) Fuldmægtig i Danmark: **Plougmann Vingtoft A/S, Strandvejen 70, 2900 Hellerup, Danmark**
- (54) Benævnelse: **APPARAT TIL INDSTILLING AF EN BÅDS GEAR**
- (56) Fremdragne publikationer:
EP-A1- 3 343 311
WO-A1-2015/122876
CN-A- 109 484 603
CN-U- 210 793 603
JP-B2- 5 004 157
KR-A- 20150 134 695
US-A- 2 326 796

DescriptionTechnical field

5 The present invention relates to a device for setting the drive position of a boat, preferably for setting the drive position of an electric motor driving the boat, and a boat with such a device.

State of the Art

10 It is known to drive boats with an electric motor. It is further known to control the drive position of the electric motor of the boat drive by means of a device for setting the drive position, wherein the setting of the drive position is for example realized through setting the power and/or the torque and/or the RPM ("rounds per minute") of the electric motor

15 A device for setting the drive position can be provided directly on the electric boat drive, for example in the form of a rotary switch on a tiller of an electric outboard engine.

It is further known to provide devices for setting the drive position where a device arranged at a distance from the electric boat drive to be controlled is provided, by means of which the drive position of the electric motor of the boat drive can then be set. Such devices for setting the drive position are also described as drive lever or remote throttle.

20 Normally, a remote throttle is arranged on the control stand of a boat, so that the same can be operated easily by a skipper whilst driving. A remote throttle is in particular used when the motor is installed inaccessibly in the boat - for example, a shaft-driven integrated motor, as an integrated motor with a Z drive, as an integrated motor with a sail drive or as a pod drive arranged substantially below the boat. A remote throttle can however also be used for controlling an outboard engine. The drive position of the controlled electric drive is usually continuously variable in line with the position of the respective drive lever here.

25 Several remote throttles arranged in different positions on the boat, for example at two different control stands or on the tiller and on the control stand, can also be provided for controlling a boat drive.

Normally, such devices have a housing that is rigidly connected with the boat for setting the drive position and a manually actuatable drive lever that is pivotably fitted on

the housing. Hereby, the drive lever is fitted on one side of the housing and is for example mounted in the housing via an axis protruding into the housing, which is pivotably held in the housing, which constitutes a complex and costly connection and sealing of drive lever and housing.

5 During a pivot movement in relation to the pivot axis this axis of the drive lever acts on a drive sensor, for example in the form of a potentiometer, so that a control signal can be generated, by means of which the power electronics of the electric motor of the boat drive can then be controlled. The positioning of the drive lever accordingly allows the operator to set the drive position, at which the electric drive is to be operated. In a zero
10 position of the drive lever the electric drive stands still. By manually actuating the drive lever from the zero position, the electric drive is operated at a speed level specified in accordance with the position of the drive lever.

 Normally, such devices also include a reversing position of the drive lever for setting a reverse running of the electric drive. The reversing position can be set by moving the
15 drive lever from the zero position into a direction opposing the above mentioned forward operating range here. The drive unit, normally a propeller, of the electronic drive generates propulsion corresponding to the position of the drive lever, which acts in the opposite direction of the propulsion generated during forward driving.

 Documents CN 210 793 603 U, US 2 326 796 A and JP 5 004157 B2 disclose devices
20 which are considered part of the state of the art.

Description of the Invention

 Based on known state of the art, it is the object of the present invention to provide
25 a simplified device for setting the drive position of an electric motor of a boat.

 The object is achieved by a drive arrangement with the features of claim 1. Advantageous further embodiments result from the dependent claims, the enclosed figures and the present description.

 Accordingly, a device for setting the drive position of an electric motor of a boat,
30 having a housing with two receiving elements arranged on opposing side walls of the housing for defining a pivot axis and a drive lever that can be pivoted around this pivot axis is suggested, wherein the drive lever is received by both receiving elements.

A receiving of the drive lever with both receiving elements can realize that the drive lever itself can be implemented particularly simply and an advantageous connection with the housing can be achieved.

5 According to an exemplary embodiment, the drive lever has two identically shaped legs, which are connected with each other via a connecting bridge, wherein the two legs each have a recess. The receiving elements receive the drive lever with the recesses, so that the drive lever can be pivoted in relation to the pivot axis. The legs are preferably arranged mirror symmetrically to each other.

10 In an example, the recesses are arranged in a lower area of the legs, wherein the lower area of the legs extends substantially vertical to the pivot axis. Such a twin-leg, single-piece implementation of a drive lever allows a simple fitting of the drive lever to the housing. A complex constructive mounting of the drive lever in the housing is not necessary.

15 In other words, the pivot axis of the drive lever is formed by the geometric connection line between the two receiving elements and extends transverse to a central plane of the housing, wherein the central plane lies in the middle of two side walls opposing each other. The receiving elements are arranged to symmetrically oppose each other in relation to the central plane and form the pivot axis of the drive lever. In an exemplary embodiment, the central plane extends in a longitudinal direction of the boat
20 on which the device is arranged.

The housing describes a space for accommodating components required for the device. The housing consists of two side walls lying opposite each other, an upper side wall, a front side wall and a rear side wall. The side walls for example extend substantially parallel to the central plane. The front side wall and the rear side wall for example extend
25 substantially transverse to the central plane. The upper side wall is a wall closing off the side walls and the front and rear side walls, which close the housing off at the top. A lower side lies opposite the upper side, wherein the housing is open on the lower side, e.g. has no lower side wall.

30 The abovementioned object is also solved by a device for setting the drive position of an electric drive of a boat, having a housing with a receiving element arranged on a side wall of the housing, for defining a pivot axis, wherein the pivot axis passes through the receiving element, and a drive lever, received on the housing for pivoting around this pivot axis. According to the invention the drive lever has a leg, wherein the drive lever can be

pivoted in relation to the pivot axis, and the drive lever can be clicked onto or into the receiving element of the housing.

In this way, an advantageous implementation can also be realized with a drive lever that has only one leg.

5 In an exemplary embodiment, the receiving elements are implemented as projections in the side walls. Alternatively, the receiving elements can also be implemented as recesses, wherein the legs therefore have matching projections to engage the recesses.

10 According to the invention, the drive lever can be clicked onto the receiving elements of the housing. Alternatively, the drive lever can be clamped onto the receiving elements of the housing, e.g. the drive lever is held on the housing only due to the identically shaped legs. In an exemplary embodiment, the legs are of a flexible bending implementation for clamping the legs onto the receiving elements. This fixes the drive lever in an axial direction of the pivot axis. A simple and cost-effective connection of the
15 drive lever can be provided with such a click connection or clamping connection of the drive lever. A complex constructive mounting of the drive lever in the housing as well as mounting elements, for example for axial securing, can be omitted.

In a further exemplary embodiment, the drive lever is implemented as a single-piece. In a further exemplary embodiment, the legs are connected with the connecting
20 bridge by means of form or material closure. The legs and the connecting bridge can for example be arranged in such a way that these form a U-shape or a trapezoidal shape. In a preferred exemplary embodiment, the legs are so elastic that they can be bent easily in order to be pushed or clamped onto the receiving elements. The insides of the legs, e.g. the sides that point into the direction of the central plane, are in contact with the side
25 walls of the housing. If the legs are pushed onto the receiving elements, these will hit against the respective side wall of the housing with their inside.

In an exemplary embodiment, the insides of the legs and the areas of the side walls of the housing that are in contact with the insides of the legs are coated in such a way that the inside of the legs slide along the housing in a desired way. Alternatively, the
30 insides of the legs can also be distanced from the side walls of the housing.

According to an embodiment, at least one magnet is arranged in the drive lever and at least one sensor in the housing in order to record the position change of the drive lever in relation to the pivot axis in a contact-free way. The position change is transmitted to a

control unit. Based on the determined position of the drive lever the electric drive is controlled with a set power and/or torque and/or RPM. Correspondingly, the housing can be completely hermetically closed and/or sealed, so that the device is implemented particularly robust overall.

5 In an exemplary embodiment, the magnet is arranged concentrically to the pivot axis. If the drive lever is pivoted the (Hall) sensor calculates the rotation of the magnetic field and therefore calculates the change of the drive lever in relation to a zero position. Depending on the change of the drive lever and the change of the magnetic field resulting from the same, a power is set for the electric drive. The control unit controls the electric
10 drive according to the power setting for the calculated change rotation of the magnetic field.

 In an alternative example, the magnet is arranged eccentrically to the pivot axis. The sensor calculates the path the magnet has travelled along a circular path in relation to the pivot axis. The control unit controls the electric drive according to the power setting
15 for the calculated position change or the path travelled by the magnet. The setting of the power of the electric drive is further also to be understood as the setting of the torque and/or the RPM.

 In an exemplary embodiment, the magnet is a diametral magnet or a diametral magnetized magnet. E.g. a magnet where the magnetization occurs around the
20 circumference, so that a half-shell is magnetized as a north pole and the opposite half-shell accordingly as a south pole. This embodiment allows the magnet to be arranged concentrically to the pivot axis. The current rotation position of the drive lever can then be read out in a contact-free way by means of a Hall sensor arranged in the housing without having to produce a break-through in the housing. Correspondingly, the housing
25 can be completely hermetically closed and/or sealed, so that the device is implemented particularly robust overall. This means that complex rotation guides and rotation seals can be omitted.

 In a further alternative embodiment, the drive lever can be connected with a potentiometer. Through a pivot movement in relation to the pivot axis this axis of the
30 drive lever of the potentiometer acts in such a way that a control signal can be generated, by means of which the power electronics of the electric motor of the boat drive can then be controlled. The coupling between a potentiometer arranged in the housing and the

drive lever can for example be magnetic, so that a break-through in the housing is not necessary.

5 According to an embodiment, the recesses of the legs of the drive lever form a snap & click connection with the receiving elements. A particularly simple and cost-effective connection of the drive lever can be realized in this way. In an exemplary embodiment, the receiving elements are implemented as lugs extending along a circular path, which engage the recesses of the legs after the legs of the drive lever have been pushed or clamped onto the receiving elements. It is also possible that the lugs are evenly formed only at the end of the circular projections along the circumference.

10 According to an embodiment, the receiving elements are rigidly connected with the housing or integrally formed from the side wall of the housing. In an exemplary embodiment, the housing and the receiving elements are cast as one component. Alternatively, the receiving elements are connected with the housing by means of form or material closure.

15 According to an embodiment, a cover each is provided for every side of the device, which engages an area surrounding the recesses and/or the recess itself and/or the receiving elements after the legs of the drive lever have been clamped onto the receiving elements and close the recess. The area surrounding the recesses also has recesses arranged on a circular path, which are implemented for receiving lugs of the cover and thus for fixing the cover to the device.

20 According to an embodiment, the device has a spring element, which is implemented in a way to set the drive lever to a zero position. In a zero position of the drive lever the electric drive stands still. By manually actuating the drive lever from the zero position, the electric drive is operated at a speed level specified in accordance with the position of the drive lever. When the drive lever is let go the drive lever can be moved back into the zero position. The spring element can be implemented in such a way that it moves the drive lever back into zero position in the forward and reverse operation of the electric drive when the drive lever is not operated by a user.

25 According to an embodiment, the device has an arresting element, which is equipped to hold the drive lever in a zero position. The arresting element generates a force that will counteract the movement from the zero position with a suitably selected spring constant. In this way the user obtains haptic feedback in that the lever is moved

from the zero position. The user also obtains the haptic feedback that the zero position is reached again when moving back into said zero position.

5 The arresting element further serves to prevent that the lever accidentally moves from the selected position. The arresting element provides protection against accidental adjustments, for example triggered by vibration or swell, especially if the drive lever is in the zero position.

10 This should be prevented in particular in applications with an electric motor in order to prevent that the electric motor is actuated without the user noticing, and correspondingly in particular drains the battery unnoticed whilst the electric motor is turning slowly. With a combustion engine this will not necessarily be the case, as acoustic feedback is also always provided here.

15 In an exemplary embodiment, the arresting element presses onto the side wall when the lever is actuated. This generates a friction force, which ensures that the lever remains in the selected position when the user lets go of the lever in this setting. In a further exemplary embodiment the drive lever is not spring loaded and correspondingly remains in the position stipulated by the user due to the unavoidable friction of the components. This exemplary embodiment can also be particularly well connected with an arresting element defining the zero position.

20 The inhibition of the drive lever through friction can also be realized with a defined friction apparatus, which enables the provision of a specified haptic experience for the user, so that the same must always move the drive lever against a somewhat greater resistance.

25 According to an embodiment, the device further has an input apparatus and/or a display unit and/or a seal and/or a control unit and/or an on/off switch and/or a data cable, wherein these are arranged inside the housing.

In an exemplary embodiment, the input apparatus is a foil keyboard.

30 The display unit is for example provided for the graphic illustration of information. The speed of the boat, the charging status of the battery and the expected reach of the boat, the utilized motor power and fault notifications from the power electronics can for example be displayed by means of the display unit. The drive lever and the display unit together form a drive control unit here.

The seal is for example provided for protecting the display unit against water ingress and is arranged between the top side of the housing and the display unit, wherein

the top side of the housing has a recess for the display unit. A further seal can be provided on the underside of the display unit. A seal can also be provided between the top side of the housing and the display unit to protect the display against casting mass during a mould casting process of the housing.

5 In an exemplary embodiment, the control unit is a controller circuit board. The data cable is connected with the circuit board. The data cable transmits the power settings to the electric drive based on the position of the drive lever.

 According to an embodiment, the parts to be received by the housing are cast into the housing. The casting of the electronics of the device into the housing constitutes a
10 particular effective protection of the electronics in humid environments.

 According to another embodiment (not casted) a separate or integrated housing for the controller circuit board and/or the display unit is provided, possibly with a separate cover and a separate seal.

 According to an embodiment, an on/off switch in the form of a magnet pin, which
15 is for example in connection with a round plate in connection with the control apparatus, is provided. Once the magnet pin has been inserted into the specified space of the housing the device is switched on, or switched off, if the magnet pin is not inserted into the space. The round plate is made of a ferromagnetic material, for example of metal. A safe on/off switch can be provided in this way. The magnet pin therefore preferably serves as an
20 emergency off switch, which can for example be provided in the form of a so-called "kill switch".

 As an alternative to being inserted into the space the magnet pin can also be placed, clamped and/or magnetically held on a surface, for example a housing surface.

 In a further exemplary embodiment, a separate button can be provided on the foil
25 keyboard as an on/off switch, or a separate switch can be provided as an on/off switch for the device.

 According to an embodiment, the device can be fitted to the boat with a bracket.

 According to an embodiment, the bracket is implemented as a sheet metal structure, wherein the housing is implemented in such a way that the housing can be
30 pushed onto the bracket, e.g. that the device can for example be connected with the bracket via a snap & click connection. A rear-side screw connection is therefore not required on the bracket. In this way, the device can be mounted on the bracket in a simple way. The device can further be disconnected from the bracket or from the more easily,

which is of advantage for the device. The sealing of the housing can also be simplified in this way, as no screw holes need to be provided for a screw connection.

In a further embodiment the sheet metal structure has two lugs, which engage and arrest two recesses on the front of the housing. Alternatively, the housing can additionally
5 be connected with the bracket on the rear side.

The sheet metal structure can for example be fitted to a control stand of the boat with a screw connection, preferably with SPAX screws.

A boat with a device according to the above explanations is also suggested.

The drive lever can also have a self-arresting zero position, which can be realized
10 through form elements such as spring pieces or suchlike, which for example engage depressions. All possible shapes such as depressions, links or suchlike and all possible form elements such as wedges, cones, rollers, half-cylinders etc. are feasible. All types of spring or force elements such as helical springs, leaf springs, rubber buffers and suchlike can also be used for the "locking force".

The zero positioning mechanism can also be provided through active or passive
15 force elements such as magnets, electromagnets or other elements, which can apply a mechanical force to another element.

In one particularly advantageous embodiment a locking element (for example a
20 wedge-shaped projection) can be provided, which engages a counter-contour (for example a wedge-shaped depression). The locking element can be implemented as a leaf spring and be implemented as a single piece in one or both legs, or as a single piece with the housing. The locking element can be moulded onto one or both legs or the housing by means of an injection moulding process.

In one particularly advantageous embodiment the drive lever therefore
25 mechanically substantially consists of one or two moveable legs (levers), the fixed housing and a bracket as a possible mounting plate. All mounting and locking elements are preferably also moulded on as arresting or snap hooks by means of plastic moulding. This in particular also relates to the necessary elements of the zero position locking.

According to a further aspect of the invention a device for setting the drive position
30 of an electric drive of a boat is suggested, having a housing with a receiving element arranged on a side wall of the housing, wherein the pivot axis extends through the receiving element and vertical to the central plane, and a receptacle of a drive lever that can be pivoted around this pivot axis, wherein the drive lever is received in a receiving

element. The drive lever has a leg with a recess here, wherein the receiving element receives the drive lever via the recess, so that the drive lever can be pivoted in relation to the pivot axis. The drive lever is click-connected with the receiving elements of the housing here.

5 In an exemplary embodiment, the receiving elements have a length that is greater than the leg thickness in the direction of the pivot axis. Clickable means in this regard in particular that the receiving elements have fitting lugs. If the leg with the recess is guided across the receiving elements these will pass through the opening and the arresting lugs will pivotably arrest the leg on the housing. The leg can in particular not be pulled away
10 from the housing in a pivot axis direction in this way, but remains there until the arresting lugs are either removed or are pressed back into the recess in a radial direction to the pivot axis, so that the leg can be removed once more.

 Clickable can also mean that the receiving elements additionally press radially against the inside of the recess. This can generate friction in pivot direction. This means
15 that a force effort is required to move the lever, so that an adjustment of the lever, for example through swell or suchlike, is not possible. The shape of the receiving elements further enables a determination of possible friction generated.

 Further advantages and features of the present invention are apparent from the following description of preferred exemplary embodiments. The features described there
20 can be realized individually or in combination with one or more of the features illustrated above as long as said features do not contradict each other. The following description of preferred exemplary embodiments relates to the enclosed drawings.

Brief Description of the Figures

25 Preferred further embodiments of the invention are explained in more detail in the following description of the Figures. These show:

 Figure 1 a schematic exploded drawing of a device for setting the drive position of an electric drive according to an exemplary embodiment;

30 Figure 2a-e various views of the schematically illustrated device for setting the drive position of an electric drive according to the exemplary embodiment of Figure 1;

 Figure 3 a schematic illustration of a boat with a device for setting the drive position of an electric motor according to a further exemplary embodiment; and

Figure 4 a schematic exploded drawing of a device for setting the drive position of an electric motor according to a further exemplary embodiment.

Detailed Description of Preferred Exemplary Embodiments

5

Preferred exemplary embodiments will be described in the following with reference to the Figures. Identical or similar elements, or those producing an identical effect are identified with identical reference numbers in the Figures, and a repeated description of these elements is partly omitted to avoid redundancies.

10 Figure 1 illustrates a device 1 for setting the drive position of an electric drive of a boat according to an exemplary embodiment.

The device 1 has a drive lever 10 and a housing 14 with two opposing side walls 140, a front wall 142, a rear wall 144, a top side 146 and an underside 148.

15 Receiving elements 15a, 15b are each arranged on one of the two opposing side walls of the housing 14 on the two opposing side walls 140, wherein the receiving elements 15a, 15b are arranged opposite each other and are implemented in a way to fit the drive lever 10 to the housing to pivot around a pivot axis 17. The receiving elements 15a, 15b accordingly define a pivot axis 17 and are implemented in such a way that the drive lever 10 can be pivoted in relation to the pivot axis 17, wherein the drive lever 10 is received by both receiving elements 15a, 15b.

20 The drive lever 10 has two identically shaped legs 10a, 10b, which are connected with each other via a connecting bridge 10c, wherein the two legs 10a, 10b each have a recess 11a, 11b. The receiving elements 15a, 15b receive the legs 10a, 10b in the recesses 11a, 11b, so that the drive lever can be pivoted around the pivot axis. A twin-leg, preferably single-piece implementation of a drive lever like the one shown here allows the drive lever to be fitted to the housing in a simple way. A complex constructive mounting of the drive lever in the housing is not necessary.

25 In other words, the receiving elements 15a, 15b are arranged symmetrically opposite a central plane 19 of the housing shown in Figure 1a and form the pivot axis 17 for the drive lever. The central plane denotes the plane that lies in the centre of two side wall lying opposite each other.

30

According to a further exemplary embodiment the drive lever 10 can be clicked onto the receiving elements 15a, 15b of the housing 14, so that the drive lever 10 is fixed in the axial direction of the pivot axis 17 and can be pivoted around the pivot axis 17.

5 In an exemplary embodiment, the legs 10a, 10b as well as the handle 10c are of a flexible bending implementation in order to stretch the legs 10a, 10b onto the receiving elements 15a, 15b. A clamping effect generated by the legs 10a, 10b of the drive lever can provide a simple and cost-effective connection with a drive lever 10. A complex connection of the drive lever with the housing is omitted.

10 In Figure 1 the drive lever is shown as a U-shaped profile. The lever can however also have a trapezoidal shape. The recesses 15a, 15b are for example arranged in a lower area of the legs 10a, 10b wherein the lower area extends substantially vertical to the pivot axis 17. The drive lever 10 is further illustrated as a single-piece component. As shown in Figure 1 the drive lever 10 resembles a clamp, quasi in the form of "headphones", which can be clamped onto the receiving elements of the housing.

15 The recesses 15a, 15b of the legs 10a, 10b are each implemented circular or as cylindrical recesses in the lower area of the leg. The radius of the recess 11a, 11b is implemented in such a way that it equals the radius of the receiving element 15a, 15b in such a way that the legs 10a, 10b can be pushed or clamped onto the receiving elements, so that the recesses 11a, 11b of the legs 10a, 10b of the drive lever 10 are in contact in a way that the drive lever can be pivoted in relation to the pivot axis 17. The clamping effect of the legs 10a, 10b and/or the pre-tensioning of the spring element (not shown) secure the drive lever against a loosening of the drive lever 10 along the axial direction of the pivot axis 17. The insides of the legs are preferably spaced apart from the side walls of the housings 14.

25 In a preferred embodiment the receiving elements 15a, 15b are cylindrical or hollow cylindrical projections, at the ends of which lugs are formed and circumferentially evenly distributed. The lugs have a hook-shaped form and engage behind the recess and additionally block the legs against displacement in an axial direction of the pivot axis 17 after the legs 10a, 10b have been pushed or clamped onto the receiving elements. The receiving elements 15a, 15b are preferably rigidly connected with the housing or
30 integrally formed from the side wall of the housing 14.

The housing and the drive lever are preferably produced by means of a moulding process, for example injection moulding. In an alternative exemplary embodiment, the

housing is produced by means of a 3D printing method. The drive lever is for example also produced by means of a 3D printing method.

The area surrounding the recesses 11a, 11b on the circumference side has further evenly distributed recesses 13a -n. The recesses 13a -n serve for pushing a cover 32 onto
5 the lower area of the legs 10a, 10b.

A cover each is preferably provided for every side of the device 1, which engages the area surrounding the recesses 11a, 11b and/or the recess itself and/or the receiving elements 15a, 15b after the legs 10a, 10b of the drive lever 10 have been clamped onto the receiving elements 15a, 15b and close the recess. Figure 2c shows the drive lever 10
10 from the side in viewing direction of a side wall of the housing 14. The cover 32 closes the recesses of the legs after the drive lever 10 has been clamped or clicked onto the receiving elements 15a, 15b of the housing 14.

The cover 32 has a circular shape corresponding to the lower area of the legs 10a, 10b with lugs 32a -n projecting transverse from the circular plane of the cover on the circumference side. The lugs are implemented in a way that they engage the recesses 13a
15 -n and cover the lower area of the legs 10a, 10b. The cover 32 further has a cone-shaped projection 33, which extends coaxially along a central line of the circular plane of the cover. The cone-shaped projection serves to prevent that the lugs 32a -n are put under too much strain when a force is applied from the side, e.g. in the direction of the central plane 19. If a force is for example applied to the lever from the side, the cone-shaped
20 projection prevents that a leg of the lever jumps off the receiving elements.

The recesses 11a, 11b of the legs 10a, 10b of the drive lever 10 with the receiving elements 15a, 15b form a snap & click connection. A simple connection with the housing 14 can be provided with such an implementation of the drive lever 10. A complex
25 connection of the drive lever 10 with the housing 14 is omitted.

As shown in Figure 1 the device 1 further has an input apparatus 16 and/or a display unit 20 and/or a seal 22 and/or a control unit 24 and/or an on/off switch 24 and/or a data cable 28, wherein these are arranged inside the housing 14.

At least one magnet 12 is arranged in the drive lever 10 and at least one sensor (not
30 shown) is furthermore arranged in the housing 14 as shown by way of example in Figure 1 in order to record the position change of the drive lever 10 around the pivot axis 17. The position change is transmitted to a control unit 24 here, which sets the drive position of the electric drive 102 (see Figure 3) based on the position change of the drive lever 10.

Based on the calculated position of the drive lever the electric drive is controlled with a specified power and/or torque and/or RPM. As shown here the at least one magnet 12 is arranged concentric to the pivot axis. When the drive lever 10 is pivoted the sensor calculates the rotation of the magnetic field of the magnet 12. The control unit 24 controls
5 the electric drive 102 according to the power specified in relation to the calculated rotation change of the magnetic field of the magnet 12. The transmission of the signal of the power specified is transmitted to the electric drive (see Figure 3) of the data cable 28.

In the exemplary embodiment shown in Figure 1 the input apparatus is preferably a foil keyboard arranged on the top side of the housing 14 (see also Figure 2a). The top
10 side of the housing has a recess, which is implemented in such a way that the display unit 20, preferably a fully graphic display, is visible. The foil keyboard has a transparent area here, which substantially equals the size of the display unit 20.

A seal 22 is preferably provided to protect the display unit against water ingress 20. The seal 22 is arranged between the top side of the housing and the display unit 20. The
15 display unit 20 and the foil keyboard 16 are connected with the control unit 24, preferably the controller circuit board. The control unit 24 is also implemented for calculating the position change of the at least one magnet 12 and for transmitting a power specification based on the same to the electric drive. The input apparatus 16 and/or the display unit 20 and/or the seal 22 and/or the control unit 24 are arranged in the housing and connected
20 to the housing with fitting means 30. Alternatively, the parts to be received by the housing are cast into the housing. Casting the electronics of the device into the housing enables a particularly efficient protection of the electronics in aggressive environments, for example salt water.

Shown as a further example the on/off switch 18 is a magnet pin (see also Figure 2b
25), which is in magnetic connection with a round plate 34 connected with a control apparatus. Once the magnetic pin 18 is inserted into the specified space of the housing the device is switched on, or switched off, if the magnet pin 18 is not inserted into the space. The round plate 34 is made of a ferromagnetic material, preferably metal. A safe on/off switch can be provided in this way.

30 The device can furthermore be fitted to the boat 100 via a bracket 26 (see also Figure 3). As illustrated in Figure 1a and Figure 2d the bracket is implemented as a sheet metal structure, wherein the housing 14 is implemented in such a way that the housing

14 can be pushed onto the bracket 26. In this way, the device can be mounted on the bracket in a simple way.

Figure 2e shows a perspective view according to an exemplary embodiment of the device.

5 Like Figure 1, Figure 4 shows a device with just one leg of the drive lever. The leg 10 has a recess 11 a, which can be guided across the receiving element 15 a. The receiving element 15a has arresting lugs at the tips of the illustrated tabs. When the recess 11a is moved across the receiving element 15a the illustrated tabs are first radially bent in the direction of the pivot axis by the special, tapered shape of the arresting lugs. As soon as 10 the recess 11a has been completely moved over the receiving element 15a the tabs move radially outwards, as no radial force is applied to the arresting lugs anymore. At the same time, it is realized that the arresting lugs fix the axial position of the leg 10. The tabs of the receiving element 15a further effect a radial outward force, so that friction or a frictional force is generated between the inside of the recess 11a and the receiving element 15a. 15 The leg can therefore be moved only once the frictional force has been overcome by a user. This prevents that the leg is for example actuated during a strong swell. A frictional force further enables a more precise adjustment of forward propulsion, as the returning force forwards a haptic feedback regarding the leg position to the user.

Where applicable all individual features illustrated in the exemplary embodiments 20 can be combined with and/or exchanged for each other without leaving the scope of the invention.

List of reference numerals

25	1	Control apparatus
	10	Drive lever
	10a, 10b	Leg
	10c	Connecting bridge
	11a, 11b	Recess
30	12	Magnet
	13a -n	Recesses
	14	Housing
	15a, 15b	Receiving element

	16	Input apparatus
	17	Pivot axis
	18	Switch
	20	Display unit
5	22	Seal
	24	Control unit
	26	Bracket
	28	Data cable
	30	Fitting means
10	32	Cover
	32a -n	Lugs
	34	Round plate
	100	Boat
	140	Side wall
15	142	Front wall
	144	Rear wall
	146	Top wall

Patentkrav

1. Apparat (1) til indstilling af gearet i en båds elektriske drev med et hus (14) med to på over for hinanden liggende sidevægge (140) i huset (14) anbragte optageelementer (15a, 15b) til definition af en svingakse (17) og et om denne
5 svingakse (17) svingbart gashåndtag (10), idet gashåndtaget (10) er optaget på de to optageelementer (15a, 15b),
kendetegnet ved, at
gashåndtaget (10) kan klikkes på eller i husets (14) optageelementer (15a, 15b).
- 10 2. Apparat (1) ifølge krav 1, **kendetegnet ved, at** gashåndtaget (10) har to ben (10a, 10b) med samme form, der er forbundet med hinanden over et forbindelsesstykke (10c), idet de to ben (10a, 10b) hver især har en udsparring (11a, 11b), idet optageelementerne (15a, 15b) optager gashåndtaget (10) i udsparringerne (11a, 11b), således at gashåndtaget (10) kan svinges om
15 svingaksen (17).
3. Apparat (1) ifølge krav 1, **kendetegnet ved, at** gashåndtaget (10) har to ben (10a, 10b) af samme form, der er forbundet med hinanden over et forbindelsesstykke (10c), idet de to ben (10a, 10b) hver især har et fremspring,
20 idet fremspringene griber ind i optageelementerne (15a, 15b) og optager gashåndtaget, således at gashåndtaget (10) kan svinges om svingaksen (17).
4. Apparat (1) til indstilling af gearet i en båds elektriske drev med et hus (14) med et på en sidevæg (140) i huset (14) anbragt optageelement (15a) til
25 definition af en svingakse (17), idet svingaksen (17) forløber gennem optageelementet (15a), og et gashåndtag (10), der holdes på huset (14) svingbart om denne svingakse (17), **kendetegnet ved, at** gashåndtaget (10) har et ben (10a), idet gashåndtaget (10) kan svinges om svingaksen (17), og gashåndtaget (10) kan klikkes på eller i husets (14) optageelement (15a).
30
5. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** der i gashåndtaget (10) er anbragt mindst en magnet (12) og i huset (14) mindst en sensor til at registrere gashåndtagets (10) svingstilling om svingaksen (17).

6. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** gashåndtaget (10) er udformet i et stykke.

7. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** 5 gashåndtagets (10) bens (10a, 10b) udsparinger (11a, 11b) eller bens (10a) udsparing (11a) danner en snap & click-forbindelse med optageelementerne (15a, 15b) eller optageelementet (15a).

8. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** 10 optageelementerne (15a, 15b) eller optageelementet (15a) er stift forbundet med huset (14) eller dannet i et stykke i husets sidevæg.

9. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** der på hver side af apparatet er anbragt et dæksel (32), som griber ind
15 - i et område, der omgiver udsparingerne (11a, 11b), og/eller i udsparingerne (11a, 11b) selv og/eller i optageelementerne (15a, 15b), efter at gashåndtagets (10) ben (10a, 10b) er klemt på optageelementerne (15a, 15b), og lukker udsparingerne (11a, 11b), eller
20 - i et område, der omgiver udsparingen (11a), og/eller i udsparingen (11a) selv og/eller i optageelementet (15a), efter at gashåndtagets (10) ben (10a) klikket på optageelementet (15a), og lukker udsparingen (11a).

10. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** apparatet har et fjederelement eller klinkeelement, der er udformet til at holde
25 gashåndtaget (10) i en nulstilling.

11. Apparat (1) ifølge et af de foregående krav **kendetegnet ved, at** apparatet endvidere har en liste af elementer, der omfatter en indlæsningsindretning (16) og/eller en visningsenhed (20) og/eller en pakning (22) og/eller en styreenhed
30 (24) og/eller en afbryder (18) og/eller et datakabel (28), idet disse er anbragt inde i huset og holdes af huset.

12. Apparat (1) ifølge krav 11, **kendetegnet ved, at** de elementer, der skal rummes i huset (14), er støbt i huset (14).

13. Apparat (1) ifølge krav 11 eller 12, **kendetegnet ved, at** afbryderen (18) er en magnetstift, der står magnetisk i forbindelse med en med styreindretningen i forbindelse stående rondel.

5 **14.** Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** apparatet (1) kan fastgøres til en båd over en holder (26).

15. Apparat (1) ifølge et af de foregående krav, **kendetegnet ved, at** holderen (26) er udformet som en metalplade- eller kunststofstruktur, idet huset (14) er
10 udformet således, at huset (14) kan stikkes på holderen (26).

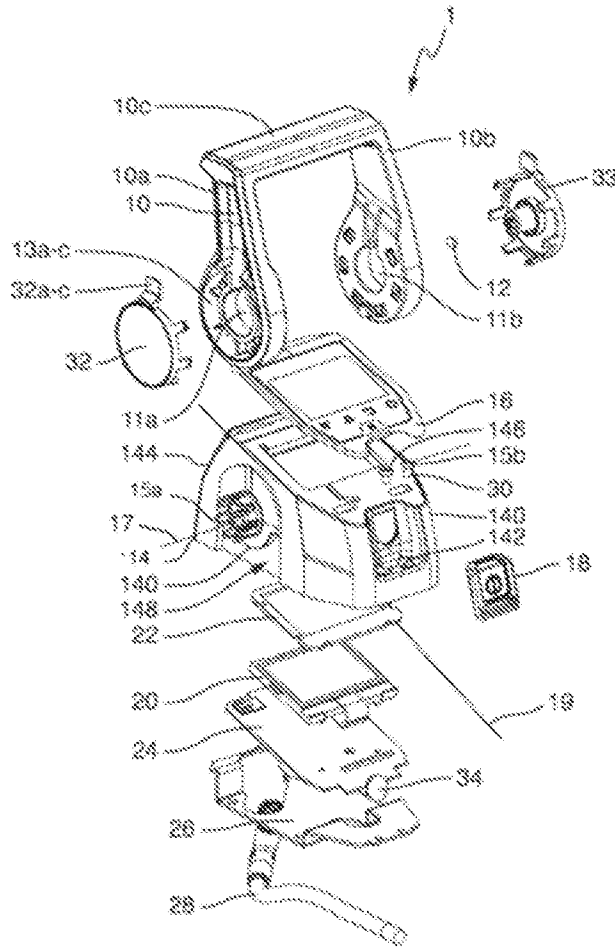


Fig. 1

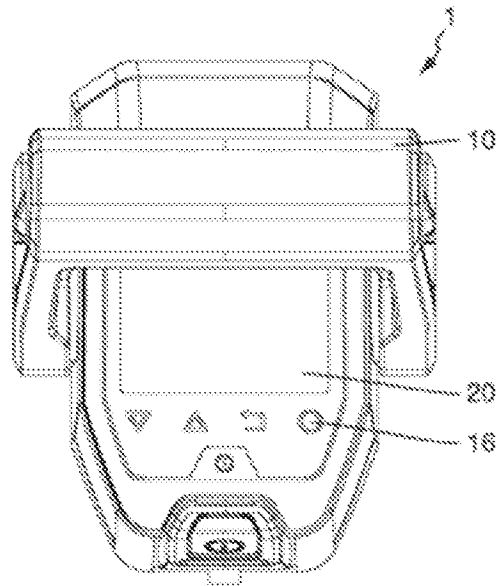


Fig. 2a

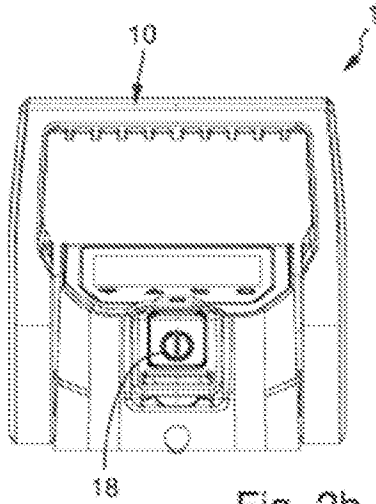
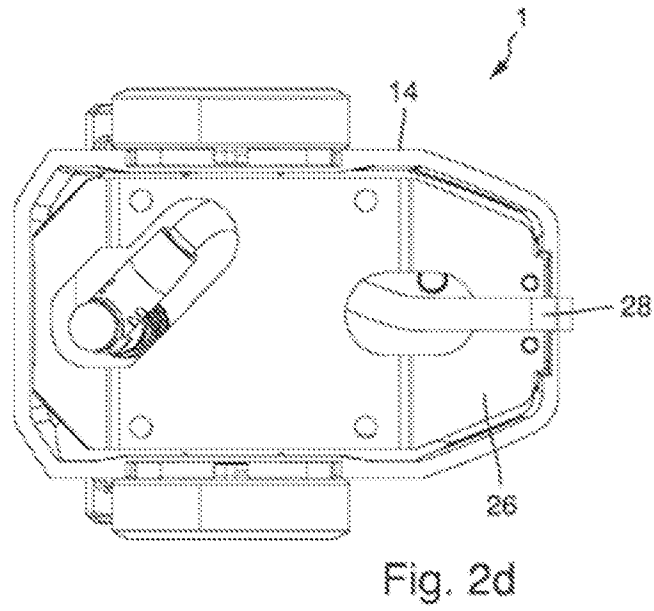
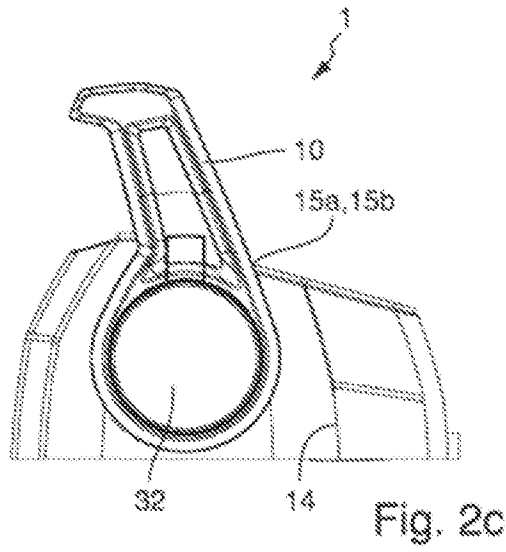


Fig. 2b



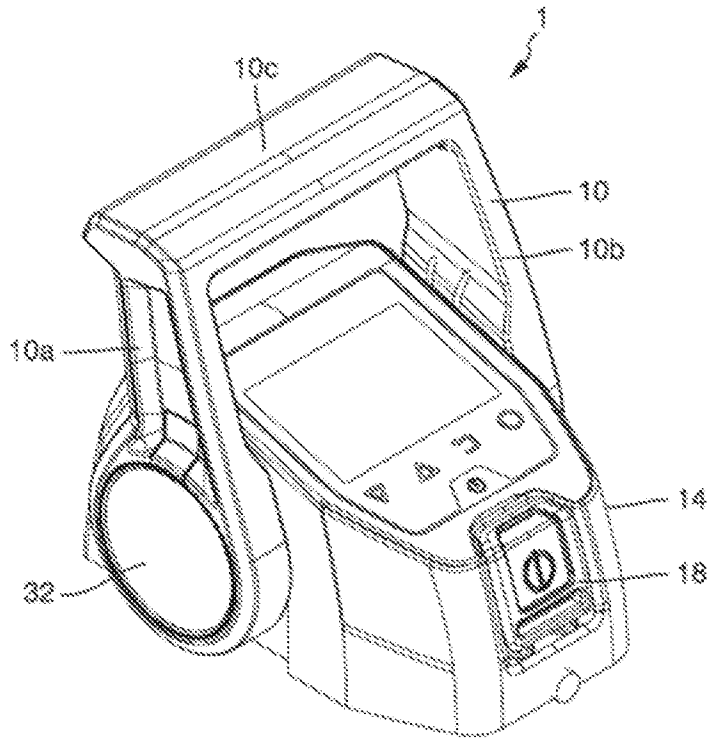


Fig. 2e

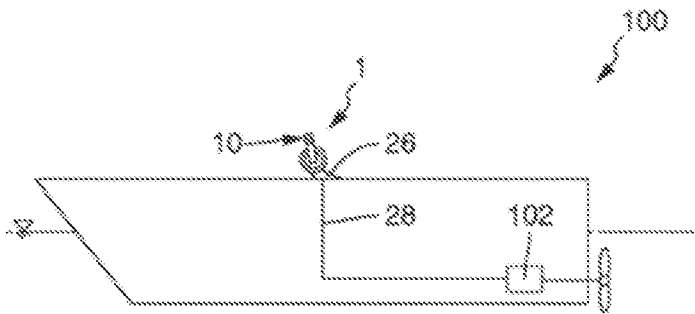


Fig. 3

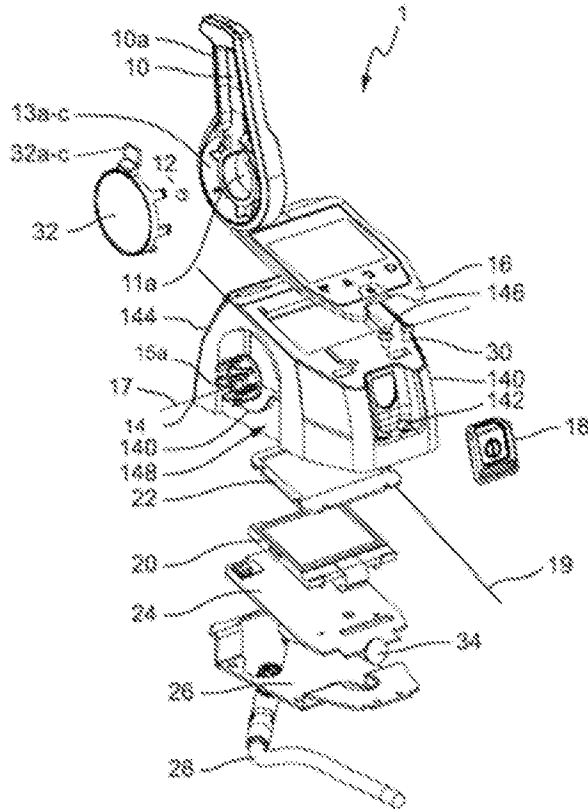


Fig. 4