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(54) **ELECTRIC SHAVER**

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RASOIR ÉLECTRIQUE

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to an electric shaver comprising at least one cutter unit, a drive unit for driving said at least one cutter unit and a display device for displaying information. The present invention also relates to a method for controlling such electric shaver.

BACKGROUND OF THE INVENTION

[0002] Electric shavers usually have one or more cutter elements driven by an electric drive unit in an oscillating manner where the cutter elements reciprocate under a shearfoil, wherein such cutter elements or undercutters may have an elongated shape and may reciprocate along their longitudinal axis. Other types of electric shavers use rotatory cutter elements which may be driven in an oscillating or a continuous manner. Said electric drive unit may include an electric motor or an electric-type linear motor, wherein the drive unit may include a drive train having elements such as an elongated drive transmitter for transmitting the driving motion of the motor to the cutter element, wherein the motor may be received within the handle portion of the shaver or in the alternative, in the shaver head thereof.

[0003] Such drive units are sometimes operable in different operation modes, wherein for example the cutter speed or oscillation frequency may be varied to increase shaving efficiency in a fast mode or highspeed mode, whereas power consumption may be reduced in a slow mode or low speed mode. Depending on the fittings of the shaver, other operation modes may be offered and may include a long-hair cutting mode in which the drive unit, in addition to or in the alternative to driving the at least one cutter unit, may drive a long hair cutter, or a fluid application mode in which a lubricating applicator such as a spray nozzle may be activated, or a ventilating mode in which a ventilator may be driven by the drive unit to generate airflow to achieve cooling or cleaning.

[0004] So as to give a user the option to choose between those different operation modes, the shaver may be provided with a mode input element such as a touch button, a toggle switch or a gesture sensor to allow the user to input a respective mode command switching the shaver's drive unit and/or a control unit into the desired operation mode. For example, document US 2015/0246454 A shows an electric shaver operable in more than one operating mode, wherein a mode input element is provided for switching the driving unit into different operation modes. Sometimes switching between different operation modes may be effected automatically, for example the aforementioned low speed mode may be chosen automatically when the battery charging level becomes low.

[0005] In order to give the user feedback which operation mode has been selected, such shavers may have a display device for displaying information about such operation mode. For example, the selected cutter speed may be indicated, or the activation of functional accessories such as the aforementioned fluid applicator or airflow generator may be displayed.

[0006] In addition or in the alternative to displaying such information on the operation mode, other information may be displayed by such display devices. For example, the charging status of a battery or accumulator of the shaver may be indicated, or the shaving time may be displayed, wherein such additional information also may be displayed when the shaver or the drive unit thereof is inactive. For example, it has been suggested to extend the activity of the display to a period of some seconds after switching off the shaver so that, for example, the battery charge level is indicated for some seconds after switching off the shaver and thereafter, fading out to the idle mode in which no information is displayed. Document WO 98/25736 A suggests to display certain shaver information on the shaver's charging/cleaning station which is provided with a display for displaying such data and communicates with the shaver for receiving user data from the shaver. It also has been suggested that the sleeping display can be waked up when the power button of the shaver is briefly touched. Document US2011010876 discloses an electric toothbrush displaying information switched automatically. Document EP2218559A1 discloses a wet razor and an electric toothbrush allowing to display information serially or sequentially.

[0007] Sometimes such shavers may be provided with additional personal care tools such as a skin treatment unit or a long-hair cutter unit or a beard trimmer. Such skin treatment units may comprise, for example, tooling elements such as a peeling tool, a massage brush or vibration elements for enhancing blood circulation. Such skincare tools can be fixedly or releasably attached to the head portion of the device. For example, document WO 2009/027928 A discloses a personal care appliance having a head provided with coupling means for coupling different types of tools with the drive transmitter, such tools including a vibrating safety razor, a hair trimming device and a comb attachment.

SUMMARY OF THE INVENTION

[0008] It is an objective underlying the present invention to provide for an improved electric shaver avoiding at least one of the disadvantages of the prior art and/or further developing the existing solutions. A more particular objective underlying the invention is to provide for an improved displaying of information to the user.

[0009] A further objective underlying the invention is to provide for an improved control of information to be displayed to the user without sacrificing easy handling of the shaver. More particularly, a self-explaining, intuitive handling and use of the information functions of the shaver should be achieved.

[0010] A still further objective underlying the invention is to provide for an improved multipurpose personal care appliance offering improved operation of various tool elements such as a short-hair cutter, a long-hair cutter or a skin treatment unit.

[0011] To achieve at least one of the aforementioned objectives according to the invention, an electric shaver with the features of claim 1 is provided. This objective is according to the invention also addressed by a method with the features of claim 14. Advantageous embodiments are disclosed by the features of claims 2-13.

[0012] In particular the shaver's display device is provided with an automatic switching mode in which different sets of information are displayed automatically one after the other under control of a timer. Such automatic switching mode keeps the user informed of any relevant information and, in addition, makes the user learn to know the shaver's different information functions and different sets of information.

[0013] Such automatic switching mode of the display device is activated in response to presence of a parameter indicative of the user being attentive and receptive and/or in response to a parameter indicative of a certain operational phase or status of the electric shaver. In particular, said automatic switching mode is activated when the electric shaver is switched off and/or the drive unit becomes inactive. In the alternative or in addition, the automatic switching mode of the display device is activated when the sleeping shaver is touched or an object such as a finger or a hand is approaching the sleeping shaver.

[0014] According to a further aspect, it is suggested to give the user the option to perceive different sets of information even when the shaver is switched off and/or the shaver's drive unit is inactive. More particularly, the electric shaver is configured to allow the user to select a specific one of a plurality of different sets of information. According to a first aspect, different functions are assigned to the electric shaver's mode input element in dependency of the electric shaver being switched on or switched off. When the electric shaver is switched on and/or the shaver's drive unit is active, said mode input element is configured to switch the driving unit into different operation modes, whereas, when the electric shaver is switched off and/or the shaver's drive unit is inactive, said mode input element is configured to switch the display device into different display modes for displaying different sets of information. Such double function of the mode input element allows for a natural, intuitive handling of the shaver as a user knowing the input element may be used to change the drive unit's operation modes when the shaver is switched on, naturally will use such mode input element to change the display modes of the display device when the shaver is inactive or switched off. In addition, due to such double function of the mode input element no additional button or key is necessary to switch the display modes and thus, space can be saved and an easy structure of the shaver's input element can be maintained.

[0015] These and other advantages become more apparent from the following description giving reference to the drawings and possible examples.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

Fig. 1: a perspective view of an electric shaver comprising a handle and a shaver head connected thereto, wherein a display device of the shaver includes a display on the handle,

Fig. 2: a schematic view of the shaver's display in different display modes, illustrating the display's transition when the shaver is turned on,

Fig. 3: a schematic view of the shavers's display in further different display modes to further illustrate the display devices automatic switching mode, wherein a transition of the display is shown when the shaver's drive unit is switched off,

Fig. 4: a schematic view of the shaver's display in still further display modes to further illustrate the automatic switching mode of the display device, wherein a transition between two further display modes is shown after having switched off the shaver's drive unit,

Fig. 5: a schematic view of the shaver's display and the shaver's mode input element, wherein use of such mode input element is illustrated when the shaver is switched off, wherein different display modes of the display as selected by the mode input element are illustrated,

Fig. 6: a schematic view of the shaver's display in further different display modes as selected by the mode input element when the shaver's drive unit is inactive.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The electric shaver offers comfortable ways of communicating relevant information to the user, wherein according to one aspect the user actively may select the relevant information from a plurality of sets of information offered to be displayed. According to another aspect, the shaver may automatically display different sets of information to the user at a convenient point of time once a user is attentive and ready to perceive such information.

[0018] More particularly, according to a first aspect, the mode input element which is configured to switch the active shaver into different operation modes, is also configured to switch the display device into different display

modes for displaying different sets of information when the drive unit is inactive and/or the shaver is sleeping. Thus, the mode input element is given a second function in addition to its genuine function of controlling the operation mode of the active shaver.

[0019] When the shaver is active and/or the drive unit is switched on, the mode input element may control the drive unit to operate either in a lower speed mode in which the cutter unit is driven at a lower speed and/or at a lower oscillation frequency, or in a highspeed mode in which the cutter unit is driven at a higher speed and/or at a higher oscillation frequency. Intermediate speed modes providing for cutter speeds and/or cutter oscillation frequencies between the aforementioned highspeeds and low speeds also may be provided and switched on by the mode input element.

[0020] In addition to such speed control function, the input mode element also may be configured to control other grooming functions of the shaver. For example, the mode input element may activate a long-hair cutter to be driven by the drive unit. In addition or in the alternative to such long-hair cutting mode, the mode input element also may switch the shaver to operate in a short-hair shaving mode in which only the aforementioned at least one cutting unit is operated, wherein the long-hair cutter is switched into its inactive state. Other grooming functions such as applying lubricating and/or cooling fluid onto the skin, or blowing cooling/cleaning air onto the skin and/or onto the shaver head may be available, wherein the mode input element may be configured to activate the applicator providing for such function such as a fluid applicator and/or an airflow generator.

[0021] In addition to such control of the operation modes, the mode input element may be configured to switch the display device of the shaver into different display modes to display different sets of information. In particular, so as to be able to offer different sets of information, the shaver may be provided with a plurality of detectors for detecting respective information and/or parameters indicative of such information. For example, the display device may be connected to a charging level detector for detecting the charging level of an accumulator or battery of the shaver. A corresponding charge level signal provided by the charging level detector may be stored in a memory to which the display device has access and/or may be provided online to the display device. When the mode input element is used to switch to a charging level display mode, the mode input element may interact with the display device and/or a display controller thereof and/or said memory so as to make the display device to display the information on the charging level on the basis of the charging level signal of the detector.

[0022] In addition to or in the alternative, a shaving time and/or shaving run detector may be provided for detecting the shaving time and/or the number of shaving runs performed since a last cleaning run. The shaving time signal and/or shaving run signal provided by the detector may be stored in a memory to which the display device has access and/or may be provided directly to the display device, wherein the mode input element may be configured to switch the display device into a shaving time and/or shaving run display mode in which the display device and/or a display controller thereof effects displaying of a shaving time information and/or shaving run information on a display.

[0023] In addition or in the alternative, a cleaning status detector may detect the cleaning status of the shaver, wherein such detector may detect, for example, the time expired since a last cleaning cycle and/or the amount of hairdust residuing in the shaver head and/or any other parameter indicative of the cleaning status. Again, such cleaning signal provided by the cleanig detector may be stored in a memory to which the display device has access and/or may be provided directly to the display device and/or a display controller thereof when the mode input element switches the display device into a cleaning status display mode so that the corresponding cleaning information is displayed.

[0024] In addition to or in the alternative, there may be also a wear detector for detecting wear and tear of the cutter unit, wherein such wear detector may detect the number of shaving runs since the last replacement of the cutter unit and/or the frictional resistance of the cutter unit when oscillating, i.e. the oscillation resistence and/or driving power necessary to drive the cutter unit, and/or any other parameter indicative of wear and tear of the cutter unit. The wear signal of such wear detector may be stored in a memory and/or directly provided to the display device when the display device and/or a display controller thereof is caused by the input mode element to display a wear information on the basis of such wear signal.

[0025] Said mode input element may include a touch key or touch button which may be realized as a mechanical button or as a softkey in terms of, for example, a touch screen button so that the mode input element may be activated by pressing or touching the touchkey. Such touchkey or touchbutton may be configured to provide for a switch forward and switch backward function so that it is possible to switch from a first mode to a second mode and from a second mode to a first mode. For example, the touchkey may be configured to differentiate between one click and two clicks as it is known from a computer mouse. Touching the key only once may, for example, provide for the aforementioned forward switching, whereas touching the key twice within a predetermined time may provide for the backward switching.

[0026] In addition or in the alternative to such touchkey, the mode input element may include a gesture detector for detecting a finger gesture such as a finger wiping so as to allow for browsing through the various display modes by finger gestures. Such gesture detector also may be configured to provide for a forward switching and backward switching, wherein, for example, the direction of the finger wiping may be used to differentiate between backward and forward switching, wherein for example

finger movements from left to right may be associated with forward switching whereas movements from the right to the left may provide for backward switching.

[0027] According to a further aspect, the mode input element may include a toggle switch button for toggling from one operation to another operation mode of the drive unit and toggling from one display mode to another display mode of the display device. If there are three or more operation modes or three or more display modes, toggling can be effected in a sort of circular fashion so that activating the toggle switch button a plurality of times effects switching from mode one to mode two to mode three to mode n and, when the last mode n is reached, further activation of the toggle switch button may cause switching from mode n to mode one again. In addition or in the alternative, such toggle switch button may be configured to provide for forward switching and backward switching as explained before.

[0028] According to a still further aspect, the mode input element may include a signal receiver and/or may be configured to be responsive to a received signal so as to switch the display modes and/or the motor operation modes and/or other functional operation modes in response to a received signal. Such mode switching signal may come from various electronic circuits and/or devices. In particular, the mode switch element may be responsive to a signal coming from an external device such as the shaver charging and/or cleaning station or an electronic communication device such as a smartphone, a tablet or a laptop, thus allowing control of the display modes and/or motor operation modes and/or other functional operation modes by means of an external device.

[0029] The mode switch element also may receive a signal from a configuration detector detecting the configuration of the shaver and/or skincare device, wherein such configuration detector may detect, for example, the position and/or connection of a long-hair cutter, a beard trimmer and/or a skin treatment unit such as a brush or peeling device. If for example, a peeling device is attached to the shaver head and/or moved into an active position, the mode switch element may switch the motor into a corresponding skin treatment mode to drive such skin treatment unit appropriately and/or may switch the display into a skin treatment display mode indicating relevant information about skin treatment.

[0030] The aforementioned mode input element may include a software module and/or a hardware module responsive to and/or processing such mode input signals and/or mode switching signals. More particularly, a micro controller may be provided for receiving the aforementioned signals and controlling the drive unit's motor and/or the display device in such different modes in response to the received signals, wherein such micro controller may include the aforementioned software and/or hardware elements.

[0031] The function associated with the mode input element may be determined in different ways or on the basis of different parameters. For example, the activation status of the drive unit, for example power consumption of the motor of the drive unit may be used as parameter on the basis of which the function of the mode input element may be determined. For example, a detector may detect when the drive unit is active and working, wherein on the basis of a corresponding signal from such detector, the mode input element may be configured to switch the aforementioned operation modes of the shaver. On the other hand, when the detector does not provide such signal or provides for an inactive signal indicating the drive unit is not working and/or the shaver has been switched off, the mode button may be configured to switch the display modes. Thus, the mode input element may be responsive to a detector signal indicative of the shaver being active or sleeping and/or indicative of the drive unit being switched on or switched off.

[0032] In addition to or in the alternative to the mode input element being responsive to the working/sleeping status of the drive unit or the shaver, a shifting element can be provided for shifting the function of the mode input element from being configured to switch the operating modes to being configured to switch the displaying modes. Such shifting element gives the user the option to actively change the functions of the mode input element irrespective of the working/sleeping status of the shaver and could include, for example, a touchkey or touchbutton. It also would be possible that the shifting element and/or shifting function is integrated into the mode input element in terms of, for example, a detector for detecting activation time of the mode input element. For example, a brief, normal touching or klicking of the mode input element can be interpreted as a command for switching the operation mode or the display mode depending on the working/sleeping status of the shaver, whereas on the other hand, a longer touching of the mode input element exceeding a predetermined period of time, for example three seconds, could be interpreted as a command for shifting the function of the mode input element. For example, when the shaver is active and the drive unit works, pressing the mode input element for more than three seconds could be interpreted as a command for shifting into the display mode function allowing to shift the display modes of the display device.

[0033] The display device is configured to be operable in an automatic switching mode in which different sets of information are displayed one after the other under control of a timer so that each of the available sets of information or each of a predetermined subgroup of the available sets of information is displayed for a predetermined period of time one after the other on a display.

[0034] Such automatic switching mode of the display device can be activated in different ways and may form an aspect of a shaver which does not have and does not need the aforementioned mode input element, but nevertheless may have such mode input element. According to a further aspect, activation is effected at a point of time where the user is attentive and, under normal circumstances, may perceive the automatically displayed infor-

mation. For example, an activator may activate the automatic switching mode in response to a switching off signal indicating switching off the drive unit and/or indicating transition of the drive unit from being active to being inactive, and/or in response to a switch on signal indicating switching on the drive unit and/or indicating transition of the drive unit from being inactive to being active.

[0035] In the alternative or in addition, said automatic switching mode may be activated one an object such as a finger or a hand touches the sleeping shaver and/or approaches the sleeping shaver. To detect such approach, the shaver, in particular the shaver handle may be provided with a detector or sensor device capable of detecting an object such as a finger or a hand approaching the shaver. Such detector may include a touch sensor and/or an opticle sensor or any other sensor capable of detecting a finger in its neighborhood.

[0036] The display device may include a display on the shaver handle, wherein such display may include, for example, an LED display device or other suitable display types.

[0037] In order to achieve a space-saving display arrangement, the display device may include at least one display field which is used for displaying information relative to the operation modes as well as information relative to other aspects of the shaver such as the aforementioned charging level, shaving time, cleaning status or wear and tear status. For example, such display field may be configured to display pictograms such as a cascade or row of display points or LEDs.

[0038] In addition to a display provided on the electric shaver itself, a display may be provided on a cleaning and/or loading station configured to receive and/or be connected to the electric shaver so as to charge the shaver's battery and/or clean the shaver, wherein a fluid may be applied to the shaver head to clean the shaver. Such cleaning and/or charging station may include a display device configured to communicate with the electric shaver at least when the shaver is docked into the station so as to display the aforementioned information. The display at the cleaning and/or charging station may be controlled by means of the shaver's mode input element and/or in the aforementioned automatic switching mode automatically switching from one display mode to another display mode .

[0039] The display device of the cleaning and/or charging station may be controlled from the shaver and/or by means of input elements at the station itself. To allow for control of the station's display from the shaver, the shaver and the station may be provided with data communication interfaces which may include physical connection elements that can be brought into contact with each other when the shaver is docked into the station, and/or wireless communication elements such as bluetooth or other nearfield communication interfaces.

[0040] According to a further aspect, the electric shaver may provide for automatic indication of the shaver head's dirt status. Cut hair or other debris such as dust or dirt is usually accumulated within the interior space of the shaver head below the shaver head's cutter unit. From time to time, such interior space of the shaver head needs to be cleaned. To remind the user of cleaning when it is necessary or to automatically control and/or initiate such cleaning, the shaver may be provided with a dirt measurement unit measuring at least one parameter that is related to the dirt status and/or the amount of dirt accumulated in the shaver head.

[0041] For example, said measurement unit may measure relevant parameters such as shaving time and/or shaving resistance and/or frictional resistance of a cutter element and/or power consumption of the drive unit during shaving and/or contact pressure (as users tend to increase contact pressure when shaving performance decreases) and/or electrical signals of sensor elements such as electric resistance sensors responsive to hair/dust coating or optical sensors, or other parameters indicative of debris in the shaver head.

[0042] A micro controller may analyse such measured parameters to determine the dirt status of the shaver head and may cause an indicating means to give a user an indication signal or information about the dirt status which may be, for example, displayed on the aforementioned display device. In addition or in the alternative, the micro controller may provide a signal to the cleaning station to automatically initiate a cleaning cycle in response to the determined dirt status and/or a signal to a smart phone to display the dirt status there.

[0043] These and other features become more apparent from the example showing in the drawings. As can be seen from Fig. 1, the shaver 1 may have a shaver housing forming a handle 2 for holding the shaver, which handle may have different shapes such as - roughly speaking - a substantially cylindrical shape or box shape or bone shape allowing for economically grabbing the shaver.

[0044] On one end of the shaver 2, a shaver head 3 is attached to the handle, wherein the shaver head 3 may be slewably supported about one or more slewing axes.

[0045] The shaver head 3 includes at least one cutter unit 4 which may include a cutter element or undercutter reciprocating under a shearfoil. The shaver head 3 may also include a long hair cutter 8 as it is shown by Fig. 1.

[0046] So as to drive such cutter unit 4 and the long hair cutter 8, a drive unit 5 may include a motor that can be received within the handle 2 and can be connected to the cutter unit 4 and the long hair cutter 8 by means of a transmitter or drive train extending from the motor to the cutter unit.

[0047] As can be seen from Fig. 1, an ON-OFF switch or power switch 17 may be arranged at the handle 2, for example on a front side of said handle 2. By means of such power switch 17, the drive unit 5 may be started and switched off again.

[0048] As can be seen from figures 2 to 6, the shaver 1 further includes a display 18 which may be provided on the handle 2, for example on a front side thereof. Such

display 18 may be part of a display device 6 further including additional electronic components or other elements such as a display controller 11, a memory, power supply components etcetera.

[0049] The display 18 may include a first display field 18a comprising an LED cascade and a second or further display field 18b where symbols and/or pictograms indicative of the type of information to be displayed can be shown and displayed, cf. figures 3 and 4.

[0050] As can be seen from Fig. 5, the shaver 1 may further include a mode input element 7 in terms of, for example, a touchbutton 16 which may be positioned in the neighborhood of the power switch 17.

[0051] As illustrated by the figures, the display device 6 may work in an automatic mode and in addition, in a manually controlled mode. For example, when starting the shaver 1 by touching the power switch 17, the display 18 may show a cascade of light signals so as to indicate that the shaver is wakening up. For example, after starting with only one light blinking or lighting, the number of the lighting LEDs may be increased one by one until all LED of the cascade are lightening.

[0052] After such initialization procedure or in the alternative thereto, the display 18 may display the battery level, wherein the number of the cascade bars lightening may correspond to the battery level, cf. Fig. 2.

[0053] As can be seen from Fig. 3, the display 18 may continue to display the battery level for a predertermined period of time after the shaver has been switched off. For example, the battery status may be shown automatically for three seconds, cf. Fig. 3 right side.

[0054] According to an aspect, the display 18, after switching off the shaver, does not only show the charging level, but automatically switches into other display modes to display other sets of information. Such automatic switching mode of the display device 6 may have been activated by an activator 10 in response to a parameter indicating switching off the shaver. Such activator may be responsive to a detector signal or a parameter indicative of switching off the shaver.

[0055] In addition or in the alternative, the automatic switching mode of the display device 6 also may be activated by said activator 10 in response to a parameter indicating approximation of an object or subject to the shaver 1, in particular a finger or a hand portion approaching or touching the shaver 1. Thus, the activator 10 may be configured to responsive, when the shaver is sleeping, to a detector signal of an approximation detector or contact sensor 19.

[0056] As can be seen from Fig. 4, due to such automatic switching mode, the display 18 may display, after having displayed the charging level, the cleaning status, cf. Fig. 4 left side and thereafter, the cutter unit's status, cf. Fig. 4 right side. Such automatic switching of the display modes may be effected under time control of a timer 9.

[0057] As can be seen from figures 3 to 4, the display 18 may indicate in its second display field 18 b the type of information displayed, wherein a respective information type symbol such as a battery, cleaning fluid drops or a foil cassette symbol or other pictograms may be shown.

[0058] As can be seen from figures 5 and 6, the display modes of display device 6 also can be switched manually by means of using the aforementioned mode input element 7 which, in its genuine function may be use to switch the operation modes of the active shaver such as cutting speed, oscillation frequency etcetera. When the shaver is sleeeping and/or has been switched off, the display also may go into a sleeping mode, cf. Fig. 5 left side. When activating or touching the mode input element 7, the display is wakening up and first may show the battery charging level, cf. Fig. 5 right side.

[0059] By means of touching or activating the mode input element 7 once again or further times, the display device 6 is caused to switch into other display modes to display other sets of information such as the cleaning status, cf. Fig. 6 left side and the cutter unit status, cf. Fig. 6 right side.

[0060] As can be seen from Fig. 3, the shaver 1 further may be provided with a dirt measurement unit 20 for measuring parameters relevant to the dirt status, wherein such measurement unit 20 may include a voltage and/or current detector for detecting power consumption of the drive unit during shaving and/or a time measurement means for measuring shaving time, for example.

[0061] A micro controller 21 may receive signals indicative of such parameters and may analyse such signals to determine the dirt status, wherein indicating means 22 such as the described display device 6 may be controlled by the micro controller 21 to indicate to a user the dirt status. In addition or in the alternative, such dirt status information may be communicated to a charging and/or cleaning station to automatically initiate a cleaning cycle in response to the dirt status.

[0062] The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm."

Claims

1. Electric shaver, comprising at least one cutter unit (4), a drive unit (5) for driving said at least one cutter unit (4) and a display device (6) for displaying shaver information, **characterized in that** said display device (6) is configured to be operable in an automatic switching mode in which different sets of information are displayed one after the other under control of a timer (9) wherein said drive unit (5), when being active, is operable in more than one operation mode, wherein a mode input element (7) is provided for

switching the driving unit (5) into different operation modes and wherein said mode input element (7) includes at least one push button (17) configured to change its functionality depending from an ON/OFF status of the drive unit (5).

2. Electric shaver according to the preceding claim wherein an activator (10) is provided for activating said automatic switching mode, wherein said activator (10) is responsive to a switching off-signal indicating switching off the drive unit and/or indicating transition of the drive unit (5) from being active to being inactive, and/or responsive to a switching on-signal indicating switching on the drive unit and/or indicating transition of the drive unit (5) from being inactive to being active.

3. Electric shaver according to claim 1 or 2, wherein a detector (19) is provided for detecting objects or subjects touching and/or approximating the shaver (1), wherein an/the activator (10) is provided for activating said automatic switching mode, wherein said activator (10) is configured to be responsive, when said shaver is sleeping, to a touching/approximation signal of said detector (19) to activate the automatic switching mode when an object or subject is touching and/or approximating the shaver (1).

4. Electric shaver according to claim 1, wherein said mode input element (7) is configured to be responsive to a signal received from at least one of the following: an external control device, a smartphone, a shaver charging and/or cleaning station, a mode input button (16), a power ON/OFF button, a shaver and/or skincare configuration detection unit for detecting the type of attachment attached to the shaver's handle (3), a wake up sensing unit for detecting a waking up situation, and a timer.

5. Electric shaver according to claim 4, wherein said operation modes of the drive units (5) include at least one of the following:

- a lower speed mode in which said cutter unit (4) is driven at a lower speed,
- a higher speed mode in which said cutter unit (4) is driven at a higher speed,
- a long-hair cutting mode in which a long-hair cutter (8) is driven by said drive unit (5), and
- a short-hair shaving mode in which only said at least one cutting unit (4) is driven by said drive unit (5),
- a brush attachment mode in which a skin treatment unit attachable to the electric shaver is driven by said drive unit (5),
- a beard trimmer attachment mode in which a beard trimmer unit is driven by said drive unit (5).

6. Electric shaver according to one of the preceding claims 4 or 5, wherein said different display modes include at least one of the following:

- a charge information mode in which the charging status of an accumulator is displayed,
- a shaving time and/or shaving runs information mode in which the shaving time and/or the number of shaving runs performed since a last cleaning run is displayed,
- a cleaning information mode in which a cleaning status of the shaver is displayed, and
- a cutter unit wear information mode in which wear of the cutter unit (4) is displayed.

7. Electric shaver according to one of the preceding claims, wherein said display device (6) is under control of an electronic controller (11) which is connected to at least one detector (12, 13, 14, 15) for providing at least one detector signal indicative of an information to be displayed, wherein said controller (11) is responsive to a signal from said mode input element (7) to display said information on the basis of the received detector signal indicative of said information when said mode input element (7) has been activated to request displaying of said information.

8. Electric shaver according to one of the preceding claims, wherein said mode input element (7) includes

- a toggle switch button (16) for toggling from one operation mode to another operation mode of the drive unit (5) and toggling from one displaying mode to another displaying mode of said display device (6), and/or
- a touch screen input element and/or
- a gesture detector for detecting a finger gesture.

9. Electric shaver according to one of the preceding claims, wherein said display device (6) includes a first display field (18a) indicative of a value and/or an amount of an information, and a second display field (18b) indicative of the type of information, wherein said display device (6) is configured to activate and/or operate said first display field in combination with different types of information displayed by said second information field.

10. Electric shaver according to one of the preceeding claims, wherein said display device (6) includes a display (18) arranged at a handle (2) of the shaver (1) and/or is configured to control and communicate with an external display separate from said handle (2).

11. Electric shaver according to any of the preceding claims, wherein said at least one cutter unit (4) in-

cludes an undercutter and an uppercutter moveable relative to each other in order to cut hair between said undercutter and uppercutter, wherein said cutter unit (4) forms a part of a shaver head (3) having an interior space in which such cut hair or other debris or dirt is accumulated, wherein a dirt measurement unit (20) is provided for measuring a parameter that is related to the accumulated dirt, wherein a micro controller (21) is configured to receive a signal from said dirt measurement unit (20) and to calculate a dirt status of the shaver head (3) in response to said received signal, wherein an indicating means (22) is provided for indicating information relating to the dirt status of the shaver head to a user

12. Electric shaver according to the preceding claim, wherein said dirt measurement unit (20) is configured to measure at least one of the following parameters: shaving time, shaving resistance, shaving power consumption of the drive unit (5) during shaving time, cleaning time, cleaning liquid or moisture inside the shaver head, and/or wherein the indicating means (22) includes at least one of the following: the display device (6), a sound generator, a signal generator for generating a communication signal to be communicated to an external electronic device.

13. Electric shaver according to claim 1, wherein said handle (2) is provided with an ON/OFF power button, a motor for driving a moveable tool element in the head (3) via a drive transmitter, wherein said head (3) is provided with at least one coupling means for coupling different types of tool elements with the drive transmitter, said tool elements comprising at least two of the following tool elements: a skincare unit, a long-hair cutting unit, a beardtrimming unit, a brush, and a short hair cutting unit, wherein at least one mode button (16) is provided for changing operating parameters of said motor, wherein said at least one mode button (16) is configured to indicated upon activation at least one of the aforementioned tool elements at the display device (6).

14. A method for controlling an electric shaver and/or an electronic device connected thereto, said shaver (1) comprising at least one cutter unit (4) and a drive unit (5) for driving said at least one cutter unit (4) and a display (9), wherein said drive unit (5), when being active, is operable in more than one operation mode, wherein a mode input element (7) is provided for switching the driving unit (5) into different operation modes and wherein said mode input element (7) includes at least one push button (17) configured to change its functionality depending from an ON/OFF status of the drive unit (5), the method comprising:

- displaying a first set of shaver information when said drive unit (5) is active on said display device (6),
- automatically switching the display device (6) into different display modes by means of timer (9) when the shaver (1) and/or the drive unit (5) is inactive and/or when said drive unit (5) is active to display a plurality of sets of shaver information one after the other.

Patentansprüche

1. Elektrorasierer, umfassend mindestens eine Schneideeinheit (4), eine Antriebseinheit (5) zum Antreiben der mindestens einen Schneideeinheit (4) und eine Anzeigevorrichtung (6) zum Anzeigen von Rasiererinformationen,
dadurch gekennzeichnet, dass die Anzeigevorrichtung (6) konfiguriert ist, um in einem automatischen Schaltmodus betreibbar zu sein, in dem verschiedene Sätze von Informationen nacheinander unter Steuerung eines Zeitgebers (9) angezeigt werden, wobei die Antriebseinheit (5), wenn sie aktiv ist, in mehr als einem Betriebsmodus betreibbar ist, wobei ein Modus-Eingabeelement (7) zum Umschalten der Antriebseinheit (5) in verschiedene Betriebsmodi bereitgestellt wird und wobei das Modus-Eingabeelement (7) mindestens einen Drucktaster (17) einschließt, der konfiguriert ist, um seine Funktionalität abhängig von einem EIN/AUS-Zustand der Antriebseinheit (5) zu ändern.

2. Elektrorasierer nach dem vorstehenden Anspruch, wobei ein Aktivator (10) zum Aktivieren des automatischen Schaltmodus bereitgestellt ist, wobei der Aktivator (10) auf ein Abschaltsignal reagiert, wodurch das Abschalten der Antriebseinheit angezeigt wird und/oder der Übergang der Antriebseinheit (5) von aktiv zu inaktiv angezeigt wird, und/oder auf ein Einschaltsignal reagiert, wodurch das Einschalten der Antriebseinheit angezeigt wird und/oder der Übergang der Antriebseinheit (5) von inaktiv zu aktiv angezeigt wird.

3. Elektrorasierer nach Anspruch 1 oder 2, wobei ein Detektor (19) zum Erfassen von Objekten oder Subjekten, die den Rasierer (1) berühren und/oder sich diesem annähern, bereitgestellt ist, wobei ein/der Aktivator (10) zum Aktivieren des automatischen Schaltmodus bereitgestellt ist, wobei der Aktivator (10) konfiguriert ist, um, wenn sich der Rasierer im Ruhemodus befindet, auf ein Berührungs-/Annäherungssignal des Detektors (19) zu reagieren, um den automatischen Schaltmodus zu aktivieren, wenn ein Objekt oder Subjekt den Rasierer (1) berührt und/oder sich diesem annähert.

4. Elektrorasierer nach Anspruch 1, wobei das Modus-Eingabeelement (7) zum Reagieren auf ein Signal

konfiguriert ist, welches von mindestens einem der Folgenden empfangen wurde: einer externen Steuervorrichtung, einem Smartphone, einer Rasiererlade- und/oder -reinigungsstation, einer Modus-Eingabetaste (16), einer EIN/AUS-Taste, einer Erkennungseinheit für die Rasierer- und/oder Hautpflegekonfiguration zum Erkennen der Art der an dem Rasierergriff (3) angebrachten Befestigung, einer Aufwach-Sensoreinheit zum Erkennen einer Aufwachsituation und einem Zeitgeber.

5. Elektrorasierer nach Anspruch 4, wobei die Betriebsmodi der Antriebseinheiten (5) mindestens einen der Folgenden einschließen:

- einen Niederdrehzahlmodus, in dem die Schneideeinheit (4) bei einer niedrigeren Drehzahl angetrieben wird,
- einen Hochdrehzahlmodus, in dem die Schneideeinheit (4) bei einer höheren Drehzahl angetrieben wird,
- einen Langhaar-Schneidemodus, in dem ein Langhaarschneider (8) von der Antriebseinheit (5) angetrieben wird, und
- einen Kurzhaar-Rasiermodus, in dem nur die mindestens eine Schneideeinheit (4) von der Antriebseinheit (5) angetrieben wird,
- einen Bürstenbefestigungsmodus, in dem eine Hautbehandlungseinheit, die an dem Elektrorasierer befestigt werden kann, von der Antriebseinheit (5) angetrieben wird,
- einen Barttrimmer-Befestigungsmodus, in dem eine Barttrimmereinheit von der Antriebseinheit (5) angetrieben wird.

6. Elektrorasierer nach einem der vorstehenden Ansprüche 4 oder 5, wobei die unterschiedlichen Anzeigemodi mindestens einen der Folgenden einschließen:

- einen Ladeinformationsmodus, in dem der Ladestatus eines Akkumulators angezeigt wird,
- einen Rasierzeit- und/oder Rasierrunden-Informationsmodus, in dem die Rasierzeit und/oder die Anzahl der seit einem letzten Reinigungsdurchlauf durchgeführten Rasierrunden angezeigt werden,
- einen Reinigungsinformationsmodus, in dem ein Reinigungsstatus des Rasierers angezeigt wird, und
- einen Schneideeinheit-Verschleißinformationsmodus, in dem der Verschleiß der Schneideeinheit (4) angezeigt wird.

7. Elektrorasierer nach einem der vorstehenden Ansprüche, wobei die Anzeigevorrichtung (6) durch eine elektronische Steuerung (11) geregelt wird, welche mit mindestens einem Detektor (12, 13, 14, 15) zum Bereitstellen von mindestens einem Detektorsignal, das auf eine anzuzeigende Information hinweist, verbunden ist, wobei die Steuerung (11) auf ein Signal von dem Modus-Eingabeelement (7) reagiert, um die auf dem empfangenen Detektorsignal basierende Information anzuzeigen, das auf eine anzuzeigende Information hinweist, wenn das Modus-Eingabeelement (7) zur Anforderung der Anzeige der Informationen aktiviert wurde.

8. Elektrorasierer nach einem der vorstehenden Ansprüche, wobei das Modus-Eingabeelement (7) Folgendes einschließt

- eine Umschalttaste (16) zum Umschalten von einem Betriebsmodus in einen anderen Betriebsmodus der Antriebseinheit (5) und zum Umschalten von einem Anzeigemodus in einen anderen Anzeigemodus der Anzeigevorrichtung (6), und/oder
- ein Touchscreen-Eingabeelement und/oder
- einen Gestendetektor zum Erfassen einer Fingergeste.

9. Elektrorasierer nach einem der vorstehenden Ansprüche, wobei die Anzeigevorrichtung (6) ein erstes Anzeigefeld (18a), welches auf einen Wert und/oder eine Menge von Informationen hinweist, und ein zweites Anzeigefeld (18b), welches auf die Art von Informationen hinweist, wobei die Anzeigevorrichtung (6) zum Aktivieren und/oder Betreiben des ersten Anzeigefelds in Kombination mit verschiedenen Arten von durch das zweite Informationsfeld angezeigten Informationen konfiguriert ist, einschließt.

10. Elektrorasierer nach einem der vorstehenden Ansprüche, wobei die Anzeigevorrichtung (6) eine Anzeige (18) einschließt, die an einem Griff (2) des Rasierers (1) angeordnet ist und/oder konfiguriert ist, um eine externe Anzeige, die von dem Griff (2) getrennt ist, zu steuern und damit zu kommunizieren.

11. Elektrorasierer nach einem der vorstehenden Ansprüche, wobei die mindestens eine Schneideeinheit (4) ein Untermesser und ein Obermesser einschließt, die relativ zueinander beweglich sind, um Haare zwischen dem Untermesser und dem Obermesser zu schneiden, wobei die Schneideinheit (4) einen Teil eines Rasierkopfes (3) mit einem Innenraum bildet, in dem sich solche geschnittenen Haare oder andere Rückstände oder Schmutz ansammeln, wobei eine Schmutzmesseinheit (20) zum Messen eines Parameters bereitgestellt ist, der sich auf den angesammelten Schmutz bezieht, wobei ein Mikroregler (21) konfiguriert ist, um ein Signal von der Schmutzmesseinheit (20) zu empfangen und einen Schmutzzustand des Rasierkopfes (3) als Reaktion auf das empfangene Signal zu berechnen, wobei ein

Anzeigemittel (22) bereitgestellt ist, um einem Benutzer Informationen über den Schmutzzustand des Rasierkopfes anzuzeigen

12. Elektrorasierer nach dem vorstehenden Anspruch, wobei die Schmutzmesseinheit (20) konfiguriert ist, um mindestens einen der folgenden Parameter zu messen: Rasierzeit, Rasierwiderstand, Rasierstromverbrauch der Antriebseinheit (5) während der Rasierzeit, Reinigungszeit, Reinigungsflüssigkeit oder Feuchtigkeit innerhalb des Rasierkopfes, und/oder wobei das Anzeigemittel (22) mindestens eines von Folgenden einschließt: die Anzeigevorrichtung (6), einen Tongenerator, einen Signalgenerator zum Erzeugen eines Kommunikationssignals, das an eine externe elektronische Vorrichtung zu kommunizieren ist.

13. Elektrorasierer nach Anspruch 1, wobei der Griff (2) mit einer EIN/AUS-Taste, einem Motor zum Antreiben eines beweglichen Werkzeugelements in dem Kopfstück (3) mittels eines Antriebsüberträgers versehen ist, wobei das Kopfstück (3) mit mindestens einem Kupplungsmittel zur Kupplung verschiedener Arten von Werkzeugelementen mit dem Antriebsüberträger versehen ist, wobei die Werkzeugelemente mindestens zwei der folgenden Werkzeugelemente umfassen: eine Hautpflegeeinheit, eine Langhaar-Schneideeinheit, eine Barttrimmereinheit, eine Bürste, und eine Kurzhaar-Schneideeinheit, wobei mindestens eine Modus-Taste (16) zum Ändern der Betriebsparameter des Motors bereitgestellt ist, wobei die mindestens eine Modus-Taste (16) konfiguriert ist, um nach Aktivierung mindestens eines der oben erwähnten Werkzeugelemente an der Anzeigevorrichtung (6) anzuzeigen.

14. Verfahren zum Steuern eines Elektrorasierers und/oder einer damit verbundenen elektronischen Vorrichtung, wobei der Rasierer (1) mindestens eine Schneideeinheit (4) und eine Antriebseinheit (5) zum Antreiben der mindestens einen Schneideeinheit (4) und eine Anzeige (9) umfasst, wobei die Antriebseinheit (5), wenn sie aktiv ist, in mehr als einem Betriebsmodus betreibbar ist, wobei ein Modus-Eingabeelement (7) zum Umschalten der Antriebseinheit (5) in verschiedene Betriebsmodi bereitgestellt ist und wobei das Modus-Eingabeelement (7) mindestens einen Drucktaster (17) einschließt, der konfiguriert ist, um seine Funktionalität abhängig von einem EIN/AUS-Zustand der Antriebseinheit (5) zu ändern, wobei das Verfahren Folgendes umfasst:

- Anzeigen eines ersten Satzes von Rasiererinformationen, wenn die Antriebseinheit (5) auf der Anzeigevorrichtung (6) aktiv ist,
- automatisches Umschalten der Anzeigevorrichtung (6) in verschiedene Anzeigemodi mittels eines Zeitgebers (9), wenn der Rasierer (1) und/oder die Antriebseinheit (5) inaktiv sind und/oder wenn die Antriebseinheit (5) aktiv ist, um mehrere Sätze von Rasiererinformationen nacheinander anzuzeigen.

Revendications

1. Rasoir électrique, comprenant au moins une unité de coupe (4), une unité d'entraînement (5) pour entraîner ladite au moins une unité de coupe (4) et un dispositif d'affichage (6) pour afficher les informations du rasoir, **caractérisé en ce que** ledit dispositif d'affichage (6) est configuré pour pouvoir fonctionner dans un mode de commutation automatique où différents ensembles d'informations sont affichés l'un après l'autre sous la commande d'une minuterie (9), dans lequel ladite unité d'entraînement (5), lorsqu'elle est active, peut fonctionner dans plus d'un mode de fonctionnement, dans lequel un élément d'entrée de mode (7) est fourni pour commuter l'unité d'entraînement (5) dans différents modes de fonctionnement et dans lequel ledit élément d'entrée de mode (7) comporte au moins un bouton poussoir (17) configuré pour changer sa fonctionnalité en fonction d'un état Marche/Arrêt de l'unité d'entraînement (5).

2. Rasoir électrique selon la revendication précédente, dans lequel un activateur (10) est prévu pour activer ledit mode de commutation automatique, dans lequel ledit activateur (10) est sensible à un signal d'arrêt indiquant un arrêt de l'unité d'entraînement et/ou indiquant une transition de l'unité d'entraînement (5) d'un état actif à un état inactif, et/ou sensible à un signal de mise en marche indiquant une mise en marche de l'unité d'entraînement et/ou indiquant une transition de l'unité d'entraînement (5) d'un état inactif à un état actif.

3. Rasoir électrique selon la revendication 1 ou 2, dans lequel un détecteur (19) est prévu pour détecter des objets ou des sujets touchant et/ou approchant le rasoir (1), dans lequel un/l'activateur (10) est prévu pour activer ledit mode de commutation automatique, dans lequel ledit activateur (10) est configuré pour être sensible, lorsque ledit rasoir est en veille, à un signal de toucher/approche dudit détecteur (19) pour activer le mode de commutation automatique lorsqu'un objet ou un sujet touche et/ou approche le rasoir (1).

4. Rasoir électrique selon la revendication 1, dans lequel ledit élément d'entrée de mode (7) est configuré pour être sensible à un signal reçu à partir d'au moins l'un parmi ce qui suit : un dispositif de commande externe, un téléphone intelligent, un socle de chargement et/ou de nettoyage du rasoir, un bouton d'en-

trée de mode (16), un bouton d'alimentation Marche/Arrêt, une unité de détection de configuration de rasoir et/ou des soins de peau pour détecter un type d'accessoire fixé à la poignée du rasoir (3), une unité de détection de réveil pour détecter une situation de réveil, et une minuterie.

5. Rasoir électrique selon la revendication 4, dans lequel lesdits modes de fonctionnement des unités d'entraînement (5) comportent au moins l'un parmi ce qui suit :

- un mode de vitesse inférieure où ladite unité de coupe (4) est entraînée à une vitesse inférieure,
- un mode de vitesse supérieure où ladite unité d'organe de coupe (4) est entraînée à une vitesse supérieure,
- un mode de coupe de poils longs où un dispositif de coupe de poils longs (8) est entraîné par ladite unité d'entraînement (5), et
- un mode de rasage de poils courts où seule ladite au moins une unité de coupe (4) est entraînée par ladite unité d'entraînement (5),
- un mode de fixation de brosse où une unité de traitement de peau pouvant être fixée au rasoir électrique est entraînée par ladite unité d'entraînement (5),
- un mode de fixation de tondeuse où une unité tondeuse à barbe est entraînée par ladite unité d'entraînement (5).

6. Rasoir électrique selon l'une des revendications 4 ou 5, dans lequel lesdits différents modes d'affichage comportent au moins l'un parmi ce qui suit :

- un mode d'information de charge où l'état de charge d'un accumulateur est affiché,
- un mode d'information de temps de rasage et/ou d'opération de rasage où le temps de rasage et/ou le nombre d'opérations de rasage effectués depuis une dernière opération de nettoyage sont affichés,
- un mode d'information de nettoyage où un état de nettoyage du rasoir est affiché, et
- un mode d'information d'usure de l'unité de coupe où l'usure de l'unité de coupe (4) est affichée.

7. Rasoir électrique selon l'une des revendications précédentes, dans lequel ledit dispositif d'affichage (6) est sous la commande d'un dispositif de commande électronique (11) qui est connecté à au moins un détecteur (12, 13, 14, 15) pour fournir au moins un signal de détecteur indiquant une information à afficher, dans lequel ledit dispositif de commande (11) est sensible à un signal dudit élément d'entrée de mode (7) pour afficher ladite information sur la base du signal de détecteur reçu indiquant ladite information lorsque ledit élément d'entrée de mode (7) a été activé pour demander l'affichage de ladite information.

8. Rasoir électrique selon l'une des revendications précédentes, dans lequel ledit élément d'entrée de mode (7) comporte

- un bouton de commutation à bascule (16) pour basculer d'un mode de fonctionnement à un autre mode de fonctionnement de l'unité d'entraînement (5) et pour basculer d'un mode d'affichage à un autre mode d'affichage dudit dispositif d'affichage (6), et/ou
- un élément d'entrée d'écran tactile et/ou
- un détecteur de geste destiné à détecter un geste des doigts.

9. Rasoir électrique selon l'une des revendications précédentes, dans lequel ledit dispositif d'affichage (6) comporte un premier champ d'affichage (18a) indiquant une valeur et/ou une quantité d'une information, et un second champ d'affichage (18b) indiquant un type d'information, dans lequel ledit dispositif d'affichage (6) est configuré pour activer et/ou faire fonctionner ledit premier champ d'affichage en combinaison avec différents types d'informations affichées par ledit second champ d'informations.

10. Rasoir électrique selon l'une des revendications précédentes, dans lequel ledit dispositif d'affichage (6) comporte un affichage (18) agencé au niveau d'une poignée (2) du rasoir (1) et/ou est configuré pour commander et communiquer avec un affichage externe distinct de ladite poignée (2).

11. Rasoir électrique selon l'une quelconque des revendications précédentes, dans lequel ladite au moins une unité de coupe (4) comporte une lame inférieure et une lame supérieure mobiles l'une par rapport à l'autre afin de couper les poils entre lesdites lame inférieure et lame supérieure, dans lequel ladite unité de coupe (4) forme une partie d'une tête de rasoir (3) ayant un espace intérieur où de tels poils coupés ou autres débris ou saletés sont accumulés, dans lequel une unité de mesure de saleté (20) est prévue pour mesurer un paramètre qui est lié à la saleté accumulée, dans lequel un microdispositif de commande (21) est configuré pour recevoir un signal de ladite unité de mesure de saleté (20) et pour calculer un état de saleté de la tête de rasoir (3) en réponse audit signal reçu, dans lequel un moyen d'indication (22) est prévu pour indiquer des informations relatives à l'état de saleté de la tête de rasoir à un utilisateur

12. Rasoir électrique selon la revendication précédente,

dans lequel ladite unité de mesure de saleté (20) est configurée pour mesurer au moins l'un parmi les paramètres suivants : temps de rasage, résistance au rasage, consommation d'énergie de l'unité d'entraînement pour le rasage (5) pendant le temps de rasage, temps de nettoyage, liquide de nettoyage ou humidité à l'intérieur de la tête de rasoir, et/ou dans lequel le moyen d'indication (22) comporte au moins l'un parmi ce qui suit : le dispositif d'affichage (6), un générateur de son, un générateur de signal pour générer un signal de communication à communiquer à un dispositif électronique externe.

13. Rasoir électrique selon la revendication 1, dans lequel ladite poignée (2) est pourvue d'un bouton d'alimentation Marche/Arrêt et d'un moteur pour entraîner un élément d'outil mobile dans la tête (3) par l'intermédiaire d'un émetteur d'entraînement, dans lequel ladite tête (3) est pourvue d'au moins un moyen de couplage pour coupler différents types d'éléments d'outil avec l'émetteur d'entraînement, lesdits éléments d'outil comprenant au moins deux parmi les éléments d'outil suivants : une unité de soins de peau, une unité de coupe de poils longs, une unité tondeuse à barbe, une brosse, une unité de coupe de poils courts, dans lequel au moins un bouton de mode (16) est fourni pour modifier des paramètres de fonctionnement dudit moteur, dans lequel ledit au moins un bouton de mode (16) est configuré pour indiquer lors d'une activation au moins un des éléments d'outil susmentionnés au niveau du dispositif d'affichage (6).

14. Procédé de commande d'un rasoir électrique et/ou d'un dispositif électronique connecté à celui-ci, ledit rasoir (1) comprenant au moins une unité de coupe (4), une unité d'entraînement (5) pour entraîner ladite au moins une unité de coupe (4) et un afficheur (9), dans lequel ladite unité d'entraînement (5), lorsqu'elle est active, peut fonctionner dans plus d'un mode de fonctionnement, dans lequel un élément d'entrée de mode (7) est fourni pour commuter l'unité d'entraînement (5) dans différents modes de fonctionnement et dans lequel ledit élément d'entrée de mode (7) comporte au moins un bouton poussoir (17) configuré pour changer sa fonctionnalité en fonction d'un état Marche/Arrêt de l'unité d'entraînement (5), le procédé comprenant :

- l'affichage d'un premier ensemble d'informations du rasoir lorsque ladite unité d'entraînement (5) est active sur ledit dispositif d'affichage (6),
- la commutation automatique du dispositif d'affichage (6) dans différents modes d'affichage au moyen d'une minuterie (9) lorsque le rasoir (1) et/ou l'unité d'entraînement (5) sont inactifs et/ou lorsque ladite unité d'entraînement (5) est active afin d'afficher une pluralité d'ensembles d'informations du rasoir, l'une après l'autre.

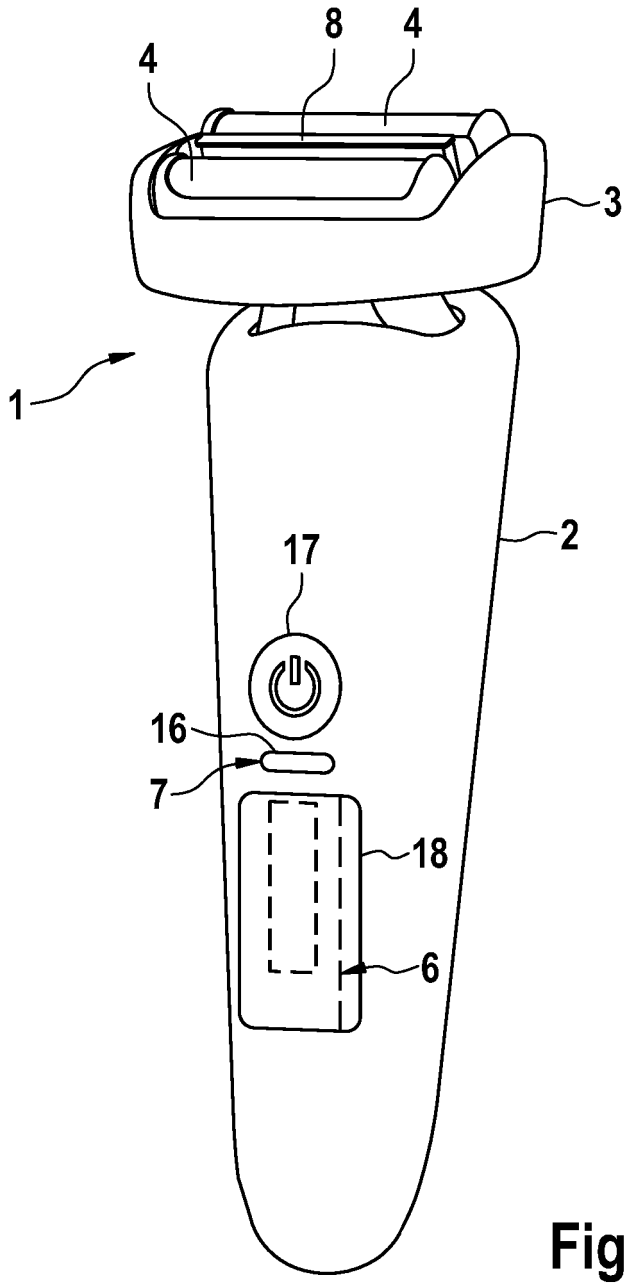

Fig. 1

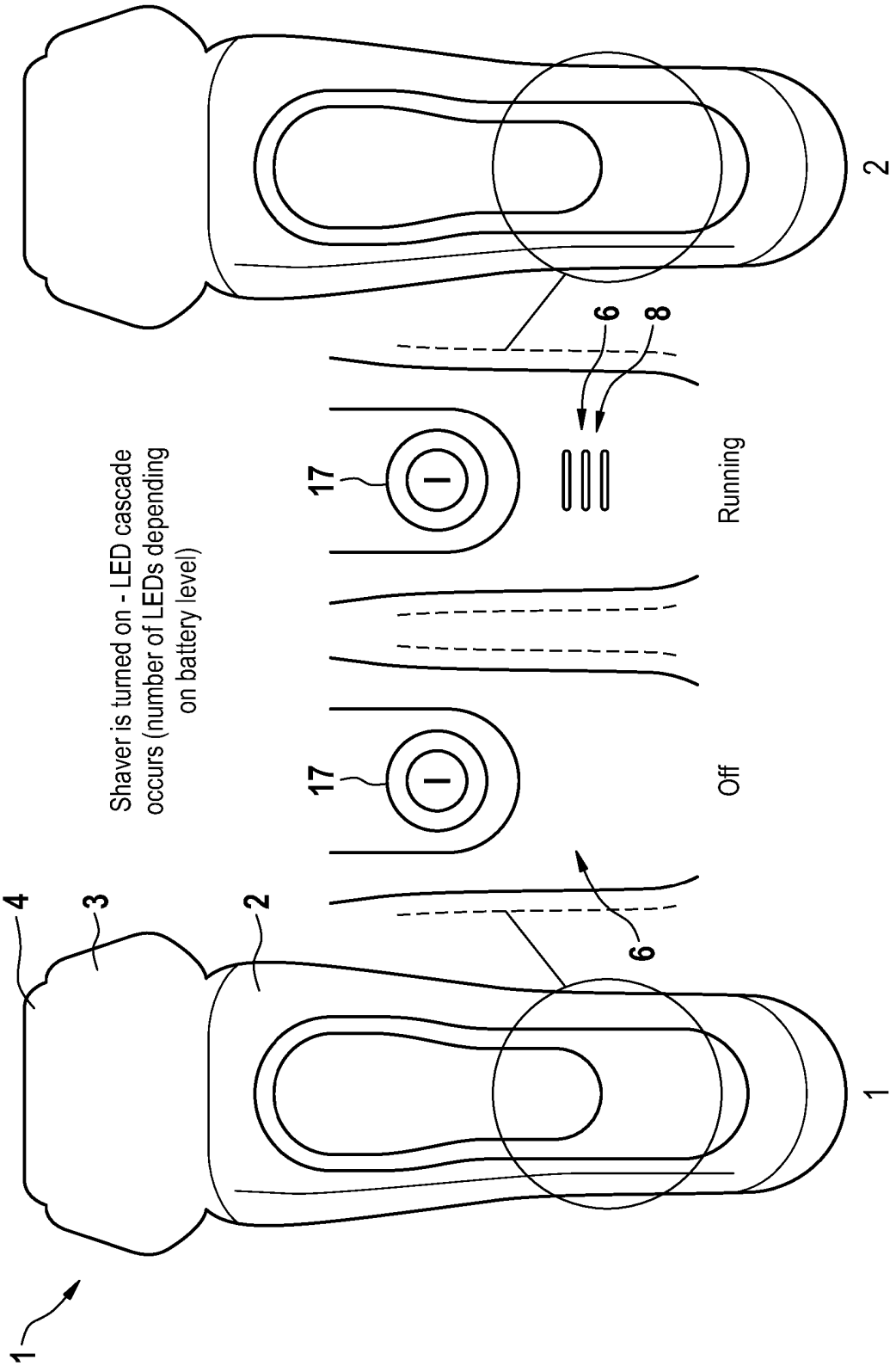
1
2
3
4
6
8
17
17
Off
Running
Shaver is turned on - LED cascade occurs (number of LEDs depending on battery level)

Fig. 2

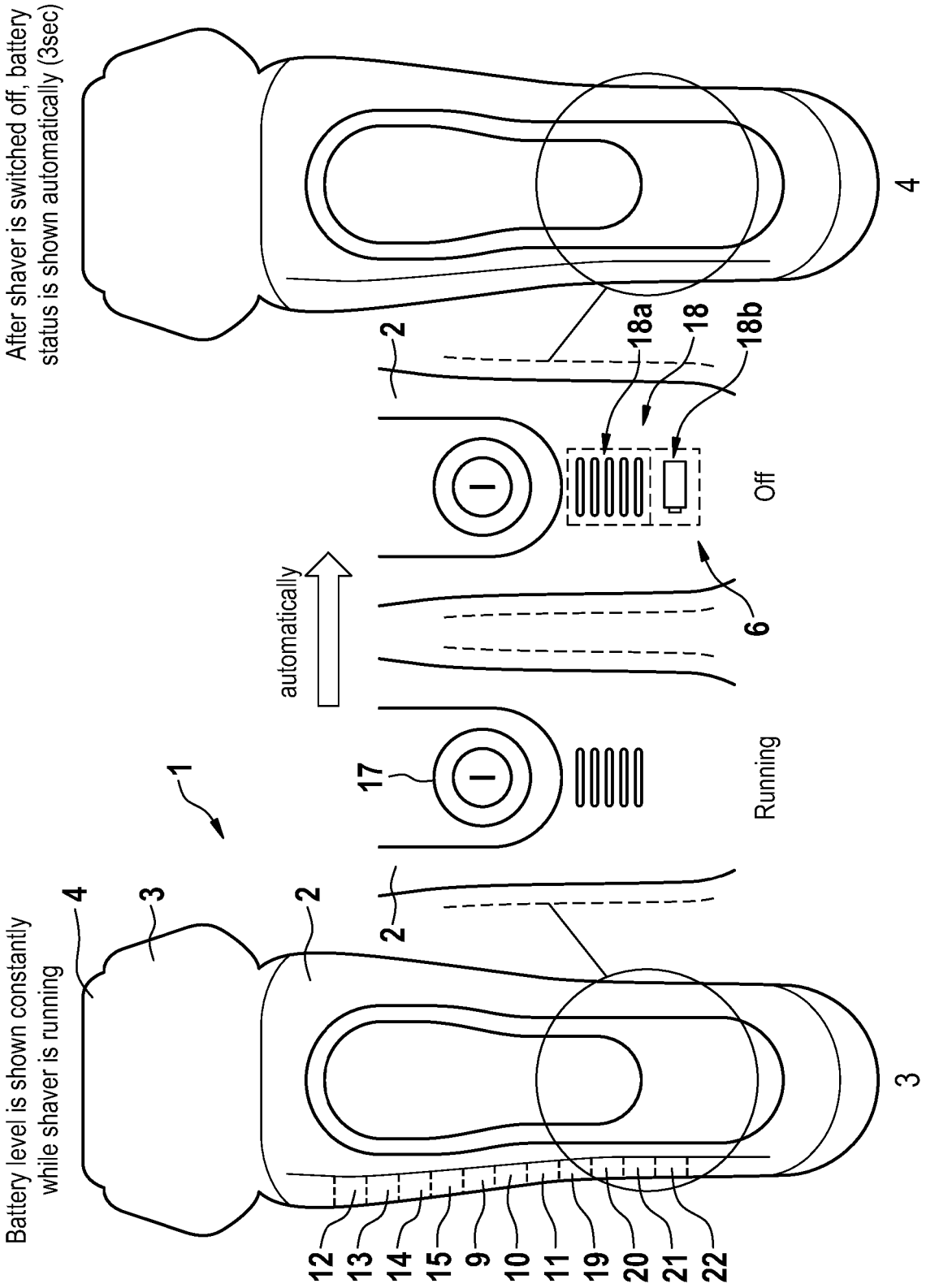
Battery level is shown constantly while shaver is running
After shaver is switched off, battery status is shown automatically (3sec)
automatically
Running
Off
1
2
3
4
6
9
10
11
12
13
14
15
17
18
18a
18b
19
20
21
22

Fig. 3

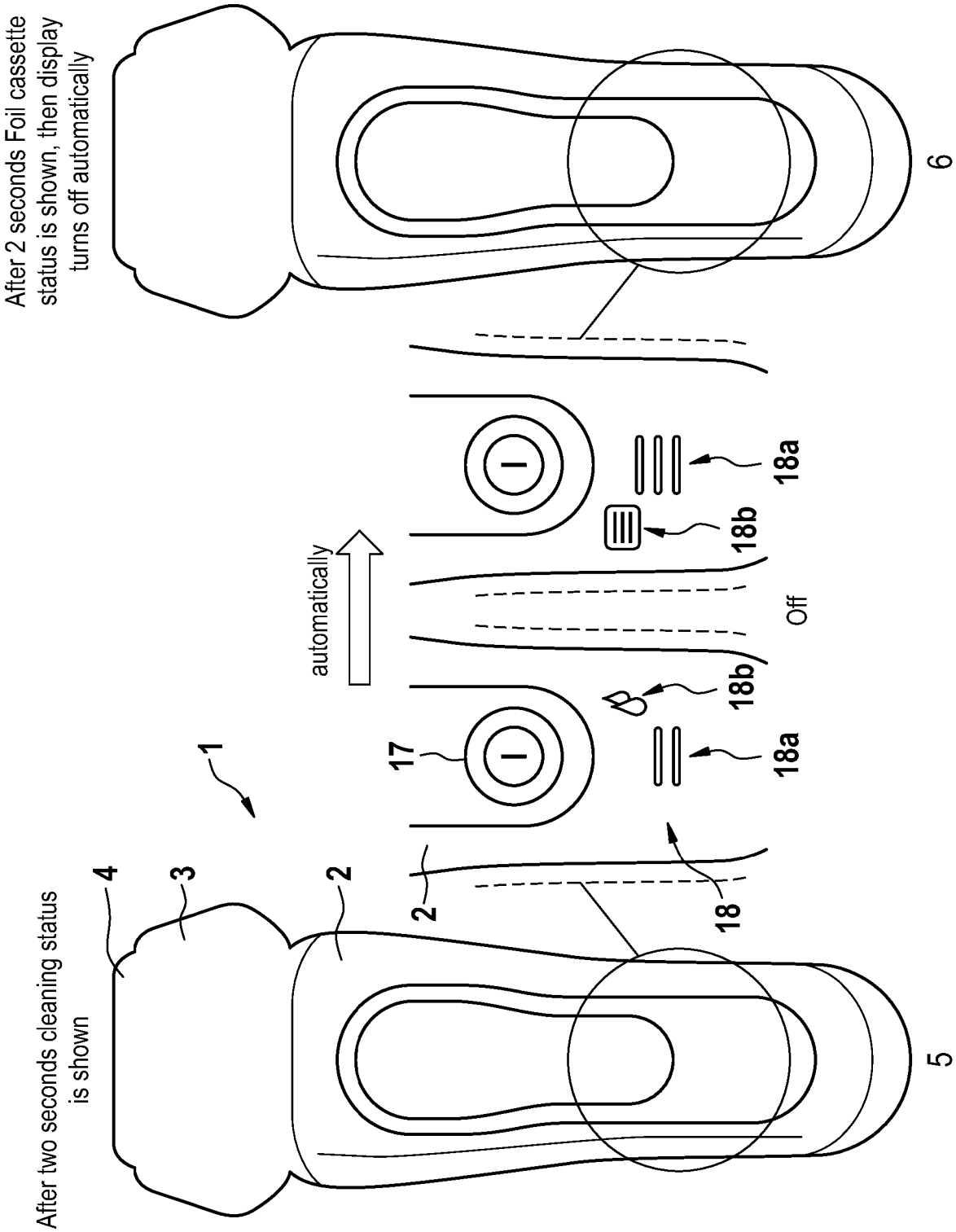
After two seconds cleaning status is shown
After 2 seconds Foil cassette status is shown, then display turns off automatically
automatically
Off
1
2
3
4
5
6
17
18
18a
18b

Fig. 4

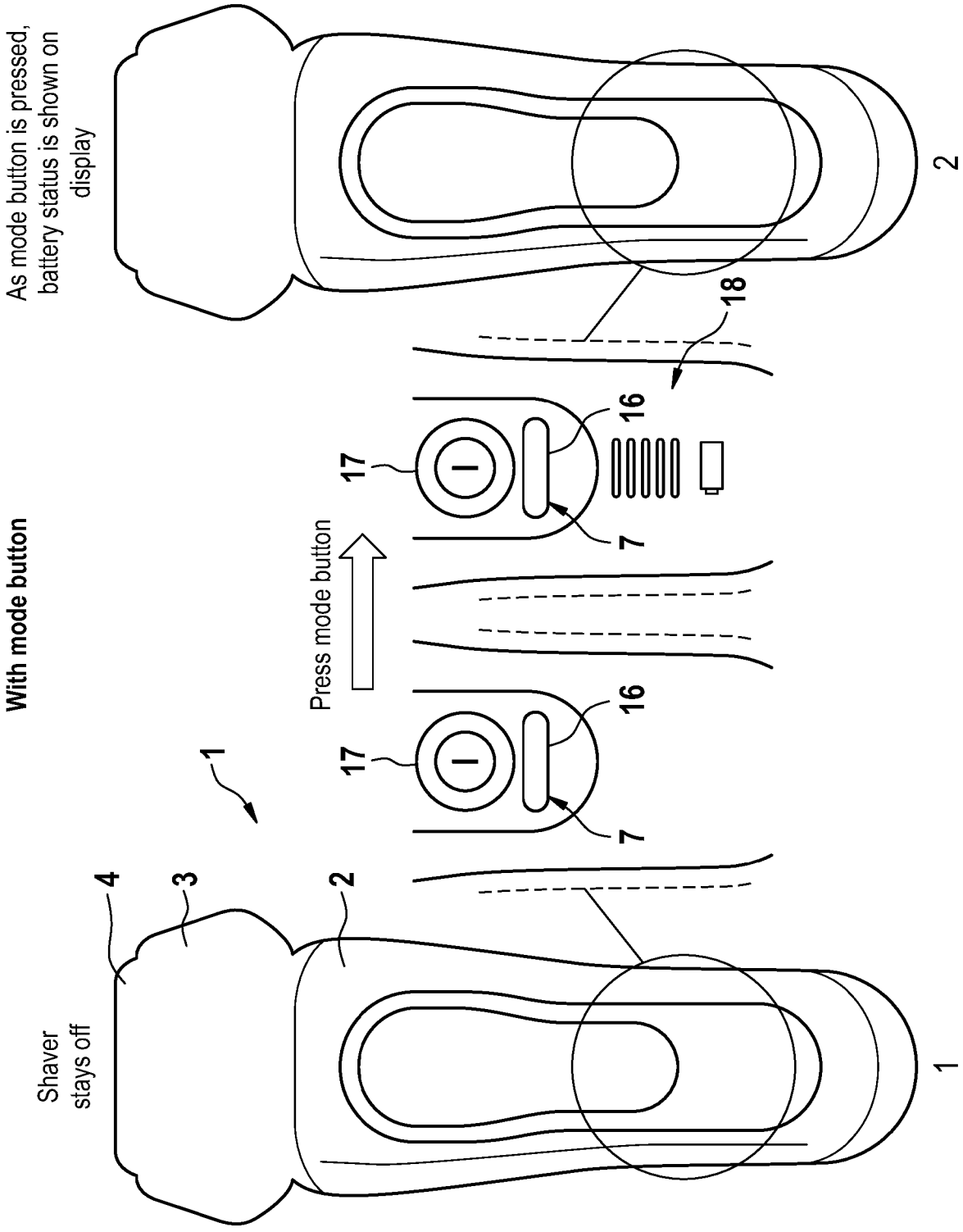
With mode button
Shaver stays off
4
3
2
1
Press mode button
17
16
7
As mode button is pressed, battery status is shown on display
18
2
1

Fig. 5

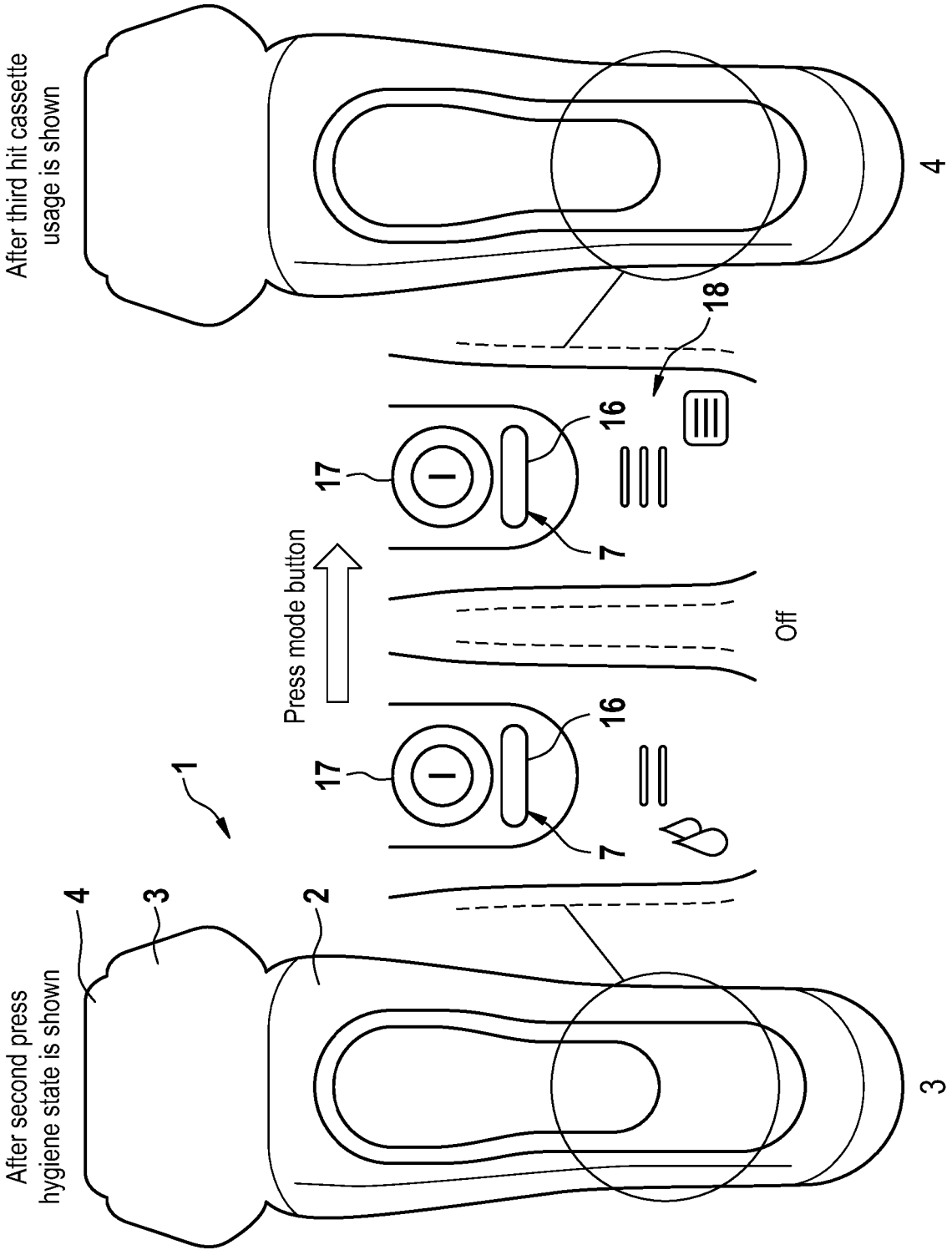
After second press
hygiene state is shown
After third hit cassette
usage is shown
Press mode button
Off
1
2
3
4
7
16
17
18

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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