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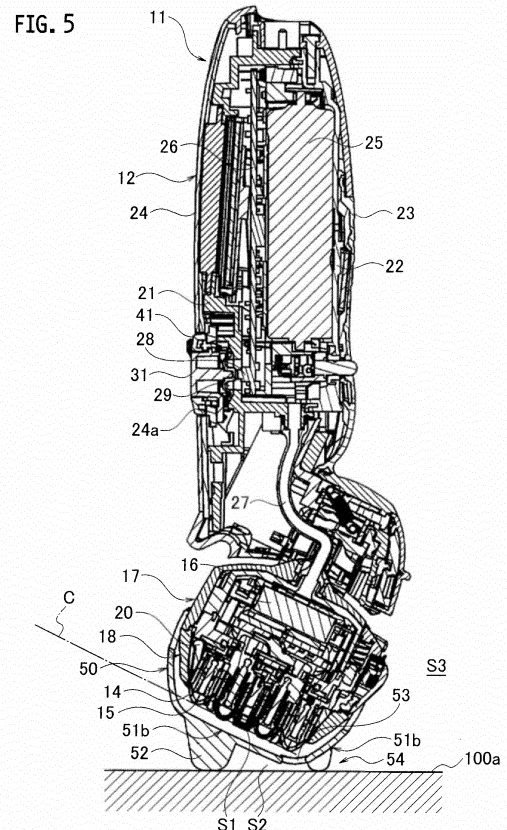
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(54) **BLADE-PROTECTING CAP AND ELECTRIC RAZOR TO WHICH SAID BLADE-PROTECTING CAP IS INSTALLED**

(57) A blade protecting cap (50) includes: a blade protecting cap main body (51) that protects a blade portion (14) in an event where the blade protecting cap (50) is installed to an electric razor (11); and a support portion (52) capable of mounting the electric razor (11), to which the blade protecting cap (50) is installed, in a predetermined state on a mounting surface in an event where the blade protecting cap (50) is allowed to abut against a mounting surface (100a). Then, a first opening (53) is formed in the blade protecting cap main body (51), and in a state where the support portion (52) is allowed to abut against the mounting surface (100a), and where the electric razor (11) to which the blade protecting cap (50) is installed is mounted in the predetermined state on the mounting surface (100a), the first opening (53) communicates with an outer space (S3) of the blade protecting cap (50).



Description

[Technical Field]

[0001] The present invention relates to a blade-protecting cap and to an electric razor to which the blade protecting cap is installed.

[Background Art]

[0002] Heretofore, there has been known an electric razor of a water-washing type, which is water-washed after shaving, and thereby removes beard debris stuck to the electric razor concerned (for example, refer to Patent Literature 1).

[0003] In this Patent Literature 1, a cap that protects a dome-like outer blade is detachably installed to such an electric razor in which the outer blade is provided in an upper portion of a drive unit main body with a substantially cylindrical shape.

[0004] This cap has a substantially inverse conical trapezoidal shape. On the upper surface of the cap, dewatering holes are formed, and a brim edge that protrudes from the upper surface is formed on an outer circumferential portion of the upper surface, thereby enabling to invert and hold the drive unit main body.

[0005] Then, the cap is put on the water-washed outer blade, and the drive unit main body is inverted, thereby enabling to drain moisture that is collected in a blade portion.

[Citation List]

[Patent Literature]

[0006] [PTL 1] Japanese Utility Model Laid-Open Publication No. S59-133173 (published in 1984)

[Summary of Invention]

[Technical Problem]

[0007] However, in the above-described conventional technology, the brim edge has a substantially doughnut shape, and in the event where the drive unit main body is inverted and held, an entire circumference of the brim edge abuts against a mounting surface. Accordingly, such water, which has moved to the outside of the cap through the dewatering holes, collects in a space portion formed between the upper surface and the brim edge. Therefore, in the above-described conventional technology, it has been impossible to dry the blade portion and the like more efficiently.

[0008] In this connection, it is an object of the present invention to obtain a blade protection cap capable of drying the blade portion and the like more efficiently, and to obtain an electric razor to which the blade protecting cap is installed.

[Solution to Problem]

[0009] A first feature of the present invention is a blade protecting cap, which is detachably installed to an electric razor including an electric razor main body and a blade portion detachably provided in the electric razor main body to protect the blade portion, the blade protection cap including: a blade protecting cap main body that protects the blade portion when the blade protection cap is installed to the electric razor; and a support portion capable of mounting the electric razor in a predetermined state on a mounting surface when the blade protection cap is allowed to abut against the mounting surface, the electric razor having the blade protecting cap installed thereto, wherein a first opening is formed in the blade protecting cap main body, and in a state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, the first opening communicates with an outer space of the blade protecting cap.

[0010] A second feature of the present invention is summarized as that, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, the first opening communicates with a space formed of the blade protecting cap main body, the support portion and the mounting surface, and a second opening is formed so that the space formed of the blade protecting cap main body, the support portion and the mounting surface cannot become a closed space.

[0011] A third feature of the present invention is summarized as that, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, a plane approximating an abutting region of the blade portion against skin is inclined with respect to a horizontal plane.

[0012] A fourth feature of the present invention is summarized as that the blade protecting cap main body has an inclined surface in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface.

[0013] A fifth feature of the present invention is summarized as that the first opening is formed in a lowermost portion of the inclined surface.

[0014] A sixth feature of the present invention is summarized in that the support portion of the blade protecting cap is formed so that the electric razor having the blade protecting cap installed thereto can be supported in a plurality of attitudes.

[0015] A seventh feature of the present invention is

summarized as that the blade protecting cap includes a lid portion that openably covers the first opening formed in the blade protecting cap main body.

[0016] An eighth feature of the present invention is summarized as that the lid portion is formed integrally with the blade protecting cap main body, and the lid portion becomes the support portion in an event where the lid portion is opened.

[0017] A ninth feature of the present invention is an electric razor, summarized as that the blade protecting cap is installed thereto.

[Advantageous Effects of Invention]

[0018] According to the present invention, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, the first opening communicates with the outer space of the blade protecting cap. Therefore, ventilation characteristics between the blade portion and the outer space in the state where the electric razor with the blade protecting cap installed is mounted in the predetermined state on the mounting surface can be ensured, and it is made possible to dry the blade portion and the like more efficiently.

[Brief Description of Drawings]

[0019]

FIG. 1 is a front view showing an electric razor for use in a first embodiment of the present invention.

Fig. 2 is a cross-sectional view showing the electric razor for use in the first embodiment of the present invention.

FIG. 3 is a perspective view showing a blade protecting cap according to the first embodiment of the present invention.

FIG. 4 is a cross-sectional view showing the blade protecting cap according to the first embodiment of the present invention.

FIG. 5 is a cross-sectional view showing a state where a support portion of the blade protecting cap according to the first embodiment of the present invention is allowed to abut against a mounting surface, and the electric razor to which the blade protecting cap is installed is inverted and held.

FIGS. 6(a) and 6(b) are views showing a state where an electric razor to which a blade protecting cap according to a second embodiment of the present invention is installed is supported: FIG. 6 (a) is a side view showing a state where the electric razor is supported by one surface of a support portion; and FIG. 6 (b) is a side view showing a state where the electric razor is supported by the other surface of the support portion.

FIG. 7 is a cross-sectional view showing a state where the electric razor to which a blade protecting cap according to the second embodiment of the present invention is installed is supported by the other surface of the support portion.

FIGS. 8(a) and 8(b) are views showing a blade protecting cap according to a third embodiment of the present invention: FIG. 8(a) is a perspective view showing a state where an opening of the blade protecting cap is closed by a lid portion; and FIG. 8 (b) is a perspective view showing a state where the lid portion is opened.

[Description of Embodiments]

[0020] A description is made below in detail of embodiments of the present invention while referring to the drawings. Note that, in the following, the description is made on the assumption that a direction where a plurality of outer blades are provided in parallel to one another is a front-back direction, that a direction where the respective outer blades are extended is a right-left direction, and that an up-and-down direction in a state where a head unit is arranged so that the outer blades can face upward is an up-down direction. Moreover, the description is made on the assumption that a side on which a switch of an electric razor is provided is the front in the front-back direction.

[0021] Moreover, in the plurality of following embodiments, similar constituents are included. Hence, in the following, common reference numerals are affixed to those similar constituents, and a duplicate description is omitted.

(First embodiment)

[0022] An electric razor 11 according to this embodiment is a water-washable type electric razor, and as shown in FIG. 1, includes: a grip unit (electric razor main body) 12 to be gripped by hand; and a head unit (electric razor main body) 13 to be supported by the grip 12.

[0023] As shown in FIG. 2, the grip unit 12 includes: a first main body case 21; and a second main body case 22. In a space formed of the first main body case 21 and the second main body case 22, electric components are sealed and held. Moreover, the grip unit 12 includes: a grip case 23, which has an opening formed on a front surface thereof to house and hold an electronic component holding case formed by assembling the first main body case 21 and the second main body case 22 with each other; and a front panel 24 that closes the opening formed on the front surface of the grip case 23. Note that, in this embodiment, the first main body case 21 composes a switch arrangement member.

[0024] Moreover, in this embodiment, the electric components held in the space formed of the first main body case 21 and the second main body case 22 include a secondary battery 25 and a circuit member 26. This sec-

ondary battery 25 is electrically connected to the circuit member 26 through wiring (not shown), and further, is electrically connected to a linear motor 16, which will be described later, through wiring (not shown) passing through the inside of a waterproof tube 27.

[0025] Moreover, a switch element 28 is provided in the circuit member 26. In this embodiment, the switch element 28 is pressed once, whereby a drive current is supplied from the secondary battery 25 to the linear motor 16, and when the switch element 28 is pressed one more time, the supply of the drive current is stopped.

[0026] Furthermore, an opening 21a is formed at a position corresponding to the switch element 28 in the first main body case 21 on a front side. Then, in this opening 21a is provided by two color molding a waterproof rubber member 29, which suppresses entrance of a liquid into the first main body case 21 while allowing the switch element 28 to be pushed from outside the first main body case 21.

[0027] Moreover, at a position of the front panel 24, which corresponds to the waterproof rubber member 29, a substantially circular panel opening 24a is formed, and a switch is provided in this panel opening 24a. In this embodiment, the switch has: a button 31 attached so as to be push-operable; a locking tool 41 switchable between an unlocking state of allowing the pressing of the button 31 and a locking state of regulating the pressing.

[0028] As shown in FIG. 2, the head unit 13 includes: a head unit main body 17 attached to the grip unit 12; and an outer blade cassette 18 detachably installed to the head unit main body 17.

[0029] In this embodiment, the head unit main body 17 includes: a head case 17a opened upward; and the linear motor 16 housed in the head case 17a. Note that a space that houses the linear motor 16 therein is formed into a waterproof space, and prevents the liquid and the like from entering such a housing space for the linear motor 16.

[0030] Then, onto the head unit main body 17, inner blades 15 are attached so as to be reciprocally movable. A plurality (five in this embodiment) of the inner blades 15 are provided in parallel to one another in the front-back direction, and the respective inner blades 15 reciprocally move in the right-left direction, following drive of the linear motor 16.

[0031] As shown in FIG. 2, the outer blade cassette 18 includes: a blade frame portion 18a detachably installed to the head case 17a; and outer blades 14 attached to the blade frame portion 18a.

[0032] Also with regard to the outer blades 14, plural pieces (five in this embodiment) thereof are provided in parallel to one another in the front-back direction (refer to FIG. 2).

[0033] Then, when the outer blade cassette 18 is attached to the head unit main body 17, the inner blades 15 are individually arranged inside (lower sides of the outer blade 14) the respective outer blades 14.

[0034] By adopting such a configuration, when the

switch is operated to drive the linear motor 16, the inner blades 15 move relatively to the outer blades 14 (that is, reciprocally move in the right-left direction), and body hair inserted into blade holes of the outer blades 14 is cut by the outer blades 14 and the inner blades 15 in cooperation therebetween.

[0035] Note that, in the inside of the blade frame portion 18a, a body hair reservoir 20 is formed, and it is made possible to collect, in the body hair reservoir 20, the body hair (beard debris) cut at the time when the electric razor 11 is used.

[0036] Moreover, on side portions (both ends in the width direction) of the head unit 13, operation buttons 19, which make the outer blade cassette 18 detachable from the head unit main body 17, are formed, and when the operation buttons 19 are pushed, the outer blade cassette 18 is detached from the head unit main body 17. Then, by detaching the outer blade cassette 18 from the head unit main body 17 after the electric razor 11 is used (after the beard is shaved), it is made possible to clean the outer blades 18, the inner blades 15 and the body hair reservoir 20 by brushing, water washing and the like, and to remove the body hair (beard debris), sebum and the like.

[0037] Then, to the electric razor 11, a blade protecting cap 50 is detachably installed, and this blade protection cap 50 is installed, whereby the outer blades (blade portions) 14 of the electric razor 11 are protected.

[0038] The blade protecting cap 50 includes a blade protecting cap main body 51, which, in the event where the blade protecting cap 50 is installed to the electric razor 11, covers outer surfaces of the outer blades (blade portions) 14, and thereby protects the outer blades (blade portions) 14.

[0039] In this embodiment, the blade protecting cap main body 51 has a shape corresponding to an outer shape of the outer blade cassette 18. Then, into an inner space S1 of the blade protecting cap main body 51, the outer blade cassette 18 of the electric razor 11 is inserted, and engagement portions 18b formed on the outer blade cassette 18 are engaged with engagement portions 51a formed on the blade protecting cap main body 51, whereby the blade protecting cap 50 is installed to the electric razor 11 (refer to FIG. 5).

[0040] As described above, the blade protecting cap 50 is installed to the electric razor 11, and the blade protecting cap main body 51 covers the outer surfaces of the outer blades (blade portions) 14. In such a way, it is made possible to suppress an impact to be received by the blade portions (inner blades 15 and outer blades 14) in the event where the electric razor 11 tumbles, falls down, and so on.

[0041] Moreover, in this embodiment, the blade protecting cap 50 includes support portions 52, which, in the event where the blade protecting cap 50 is allowed to abut against a mounting surface 100a, are capable of mounting the electric razor 11, to which the blade protecting cap 50 is installed, in a state where the electric

razor 11 is inverted (state where the blade portions are located downward: predetermined state).

[0042] In this embodiment, in a state where the blade protecting cap 50 is installed to the electric razor 11, the support portions 52 are protruded at three spots, which are: a spot that is in the front in the front-back direction of the blade protecting cap main body 51 and at a center portion in the width direction thereof, and spots which are in the rear in the front-back direction of the blade protecting cap main body 51 and on both end portions in the width direction thereof.

[0043] Then, as shown in FIG. 5, the electric razor 11 to which the blade protecting cap 50 is installed turns to a state of being three-point supported by the three support portions, and are enabled to be stably inverted and held on the mounting surface 100a.

[0044] Here, in this embodiment, in the blade protecting cap main body 51, there is formed a dewatering portion (first opening) 53 for draining water (liquid), which is present in the inner space S1 of the blade protecting cap main body 51. Note that a plurality of the dewatering portions (first openings) may be formed.

[0045] In this embodiment, the dewatering portion (first opening) 53 is formed so as to be present in a region drawn by abutment portions of the support portions 52 when viewed from the above in a state where the support portions 52 are allowed to abut against mounting surface 100a. Here, the region thus drawn is a region formed by connecting such three abutment portions to one another by line segments.

[0046] That is to say, in the event where the support portions 52 are allowed to abut against the mounting surface 100a, and the electric razor 11 with the blade protecting cap 50 installed is mounted thereon in the state (predetermined state) of being inverted, the dewatering portion (first opening) 53 communicates with a space S2 formed of the blade protecting cap main body 51, the support portions 52 and the mounting surface 100a.

[0047] Furthermore, a second opening 54 is formed so that the space S2 formed of the blade protecting cap main body 51, the support portions 52 and the mounting surface 100a cannot become a closed space when the support portions 52 are allowed to abut against the mounting surface 100a, and when the electric razor 11 to which the blade protecting cap 50 is installed is inverted. Note that the closed space mentioned herein means that the space S2 directly communicates with an outer space S3 of the blade protecting cap 50, and does not mean that the space S2 communicates with the outer space S3 of the blade protecting cap 50 through the inner space S1 of the blade protecting cap main body 51. That is to say, the second opening 54 does not include the dewatering portion (first opening) 53.

[0048] As described above, in this embodiment, when the support portions 52 are allowed to abut against the mounting surface 100a, and when the electric razor 11 to which the blade protecting cap 50 is installed is inverted, the dewatering portion (first opening) 53 communi-

cates with the outer space S3 of the blade protecting cap 50 through the space S2 and the second opening 54.

[0049] Moreover, in this embodiment, the abutment portions of the support portions 52 against the mounting surface 100a are prevented from forming a closed line when viewed from the above. That is to say, the second opening 54 has, on a lower end thereof, a portion in which the support portions 52 are not present, and at least a part of the second opening 54 is partitioned by the mounting surface 100a. In such a way, the water (liquid) in the space S2 is made movable to the outer space S3 of the blade protecting cap 50 without being disturbed by the support portions 52.

[0050] Moreover, in this embodiment, when the support portions 52 are allowed to abut against the mounting surface 100a, and when the electric razor 11 with the blade protecting cap 50 installed is inverted, a plane C, which approximates outer surfaces (abutting regions of the blade portions against the skin) of the outer blades (blade portions) 14, is inclined with respect to the horizontal plane. Note that, in this embodiment, the mounting surface 100 is the horizontal plane.

[0051] Furthermore, in this embodiment, when viewed from the width direction, the plane C is inclined in the front-back direction. Note that an inclined direction of the plane C is not limited to the front-back direction. The plane C may be inclined in the width direction (that is, inclined in the width direction when viewed from the front-back direction), or may be inclined when viewed from the front-back direction and the width direction.

[0052] Incidentally, in this embodiment, protrusion amounts of the respective five outer blades (blade portions) 14 provided in parallel to one another are substantially to the same. Hence, tangent planes of vertices of the respective outer blades (blade portions) 14 form the plane C. Note that, in the case where the outer blades (blade portions) 14 provided in parallel to one another include one in which the protrusion amount is different from those of others, for example, a tangent plane of a vertex of the outer blade (blade portion) 14 that protrudes the most just needs to be such a plane that approximates the abutment regions of the blade portions against the skin. Moreover, in the case where the number of outer blades (blade portions) 14 is one, for example, the tangent plane of the vertex of the outer blade (blade portion) 14 concerned just needs to be the plane that approximates the abutment region of the blade portion against the skin.

[0053] Note that this method in which the tangent planes of the vertices are used for the plane that approximates the abutment regions against the skin is merely an example, and the plane that approximates the abutment regions against the skin may be obtained by other methods. For example, in the case where the outer blades (blade portions) 14 are arranged so that center portions thereof can protrude when viewed from the width direction, two planes inclined from each of the center portions of the outer blades (blade portions) 14 to both

ends thereof may be defined as such planes which approximate abutment regions against the skin, and these two planes may be individually inclined with respect to the horizontal plane.

[0054] Furthermore, in this embodiment, when the support portions 52 are allowed to abut against the mounting surface 100a, and when the electric razor 11 with the blade protecting cap 50 installed is inverted, the blade protecting cap main body 51 has an inclined surface 51b.

[0055] Specifically, a protrusion amount of the support portion 52 formed in the front in the front-back direction of the blade protecting cap main body 51 and at the center portion in the width direction thereof is made greater than that of the support portions formed in the rear in the front-back direction of the blade protecting cap main body 51 and on both end portions in the width direction thereof, whereby, when viewed from the width direction, a region of the blade protecting cap main body 51, which corresponds to the outer surfaces of the outer blades (blade portions) 14, is formed into the inclined surface 51b inclined in the front-back direction. At this time, a region corresponding to a side surface of the blade frame portion 18a, which is located in the rear thereof in the front-back direction, is also formed into such an inclined surface 51b inclined in the front-back direction.

[0056] Furthermore, in this embodiment, the dewatering portion (first opening) 53 is formed in a lowermost portion of the inclined surface 51b of the blade protecting cap main body 51 (the lowermost portion being a boundary portion between the inclined surface 51b corresponding to the outer surfaces of the outer blades 14 and the inclined surface 51b corresponding to the side surface of the blade frame portion 18a, which is located in the rear thereof in the front-back direction).

[0057] Such a configuration is adopted, wherein after using the electric razor 11 (after shaveing the beard), the blade protecting cap 50 is installed to the water-washed electric razor 11, the support portions 52 are allowed to abut against the mounting surface 100a, and the electric razor 11 is inverted, whereby the outer blades (blade portions) 14 and the like can be dried more efficiently.

[0058] Specifically, the water (liquid), which is stuck to the grip unit (electric razor main body) 12 and the head unit (electric razor main body) 13, and the water, which has collected in the outer blades 14, the inner blades 15 and the body hair reservoir 20, run down, and collect on the outer surfaces of the outer blades (blade portions) 14.

[0059] Then, by gravity, the water which has collected on the outer surfaces of the outer blades (blade portions) 14 moves downward along the inclination of the outer surfaces of the outer blades (blade portions) 14, and drops down from the outer surfaces of the outer blades (blade portions) 14 to the inclined surfaces 51b of the blade protecting cap main body 51.

[0060] Then, the water which has moved to lower portions of the outer surfaces of the outer blades (blade portions) 14, and the water which has moved along the in-

clined surfaces 51b of the blade protecting cap main body 51 move to the space S2 and the outer space S3 of the blade protecting cap 50 through the dewatering portion (first opening) 53.

[0061] At this time, the water which has moved to the space S2 through the dewatering portion (first opening) 53 can move from the second opening 54 to the outer space S3 of the blade protecting cap 50. That is to say, it is made possible to drain the water, which has moved to the space S2, to the outer space S3 of the blade protecting cap 50 without leaving the water concerned in the space S2.

[0062] As described above, such a configuration of this embodiment is adopted, whereby the water, which has run down from the dewatering portion (first opening) 53, can be suppressed from remaining, by surface tension, on the periphery of the dewatering portion (first opening) 53 and in the inside of the blade protecting cap main body 51. That is to say, ventilation characteristics and water drainage between the blade portions (outer blades 14 and inner blades 15) and the outer space (outer space S3 of the blade protecting cap 50) can be ensured, and it is made possible to dry the blade portions and the like more efficiently while achieving the protection of the outer blades (blade portions) 14 of the electric razor 11.

[0063] As described above, in this embodiment, when the electric razor 11 to which the blade protecting cap 50 is installed is mounted on the mounting surface 100a in the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a concerned, and where the electric razor 11 concerned is inverted, the dewatering portion (first opening) 53 formed in the blade protecting cap main body 51 is allowed to communicate with the outer space S3 of the blade protecting cap 51. Therefore, the ventilation characteristics between the blade portions (outer blades 14 and inner blades 15) and the outer space S3 in the state where the electric razor 11 to which the blade protecting cap 50 is installed can be ensured, and it is made possible to dry the blade portions and the like (for example, outer blades 14, inner blades 15, body hair reservoir 20 and the like) more efficiently.

[0064] Moreover, the ventilation characteristics are improved, whereby there is also an advantage that propagation of microorganisms and generation of a bad smell can be suppressed.

[0065] Moreover, according to this embodiment, when the electric razor 11 with the blade protecting cap 50 installed is mounted on the mounting surface 100a in the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a concerned, and where the electric razor 11 concerned is inverted, the dewatering portion (first opening) 53 is allowed to communicate with the space S2 formed of the blade protecting cap main body 51, the support portions 52 and the mounting surface 100a. Furthermore, the second opening 54 is formed so that the space S2 formed of the blade protecting cap main body 51, the support

portions 52, and the mounting surface 100a cannot become the closed space.

[0066] As described above, the dewatering portion (first opening) 53 is allowed to communicate with the space S2, whereby it is made possible to provide the support portions 52, which support the electric razor 11, to which the blade protecting cap 50 is installed, at any regions of the blade protecting cap main body 51. As a result, the blade protecting cap main body 51 can be used in a wide state, and the region drawn by the abutment portions of the support portions 52 against the mounting surface 100a (that is, the region is one formed by connecting the three abutment portions to one another by the line segments) can be widened, whereby the electric razor 11 to which the blade protecting cap 50 is installed can be supported in such an inverted state more stably.

[0067] Moreover, according to this embodiment, when the electric razor 11 with the blade protecting cap 50 installed is mounted on the mounting surface 100a in the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a concerned, and where the electric razor 11 concerned is inverted, the plane C, which approximates the outer surfaces (abutting regions of the blade portions against the skin) of the outer blades (blade portions) 14, is allowed to be inclined with respect to the horizontal plane. Therefore, in the event of drying the electric razor 11, the water which is stuck to the outer surfaces of the outer blades (blade portions) 14 is made to efficiently run down by the gravity.

[0068] Moreover, according to this embodiment, when the electric razor 11 to which the blade protecting cap 50 is installed is mounted on the mounting surface 100a in the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a concerned, and where the electric razor 11 concerned is inverted, the blade protecting cap main body 51 is allowed to include the inclined surfaces 51b. Therefore, the water, which has dropped on the inclined surfaces 51b, can be moved along the inclined surfaces 51b, and the blade portions and the like (for example, outer blades 14, inner blades 15 and body hair reservoir 20 and the like) can be dried more efficiently.

[0069] Furthermore, according to this embodiment, the dewatering portion (first opening) 53 is formed in The lowermost portion of the inclined surface 51b of the blade protecting cap main body 51, the lowermost portion being the boundary portion between the inclined surface 51b corresponding to the outer surfaces of the outer blades 14 and the inclined surface 51b corresponding to the side surface of the blade frame portion 18a, which is located in the rear thereof in the front-back direction. Therefore, the water which is moved along the inclined surfaces 51b can be drained from the inner space S1 of the blade protecting cap main body 51 to the outer space (space S2 and outer space S3) thereof more smoothly.

[0070] Moreover, the second opening 54 has, on the

lower end thereof, the portion in which the support portions 52 are not present, and at least a part of the second opening 54 is partitioned by the mounting surface 100a. Therefore, the water (liquid) in the space S2 is made movable to the outer space S3 of the blade protecting cap 50 without being disturbed by the support portions 52.

(Second embodiment)

[0071] A blade protecting cap 50A according to this embodiment basically has substantially the same configuration as that of the above-described first embodiment. That is to say, the blade protecting cap 50A is one to be detachably installed to the electric razor 11, and is one to protect the outer blades (blade portions) 14 of the electric razor 11 by being thus installed.

[0072] Also in this embodiment, the blade protecting cap 50A includes the blade protecting cap main body 51, which, when the blade protecting cap 50A is installed to the electric razor 11, covers the outer surfaces of the outer blades (blade portions) 14, and thereby protects the outer blades (blade portions) 14.

[0073] Moreover, the blade protecting cap 50A includes support portions 52, which, when the blade protecting cap 50A is allowed to abut against the mounting surface 100a, can mount the electric razor 11, to which the blade protecting cap 50A is installed, in a state where the electric razor 11 is inverted (with the blade portions located downward: a predetermined state) (refer to FIG. 6(a)).

[0074] Moreover, in this embodiment, with the blade protecting cap 50A installed to the electric razor 11, the support portions 52 are protruded at three spots, which are: the spot that is in the front in the front-back direction of the blade protecting cap main body 51 and at the center portion in the width direction thereof; and the spots which are in the rear in the front-back direction of the blade protecting cap main body 51 and on both end portions in the width direction thereof.

[0075] Note that the state where the electric razor 11 with the blade protecting cap 50A installed is inverted is substantially similar to that of the above-described first embodiment.

[0076] Here, a main different point of the blade protecting cap 50A according to this embodiment from that of the above-described first embodiment is that the support portions 52 of the blade protecting cap 50A are formed so that the electric razor 11 to which the blade protecting cap 50A is installed can be supported in a plurality of attitudes.

[0077] That is to say, in this embodiment, not only the electric razor 11 with the blade protecting cap 50A installed can be mounted on the mounting surface 100a in the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a concerned, and where the electric razor 11 concerned is inverted, but also the electric razor 11 is made mountable even in another attitude (state where the elec-

tric razor 11 is laid as shown in another attitude (FIG. 6(b)).

[0078] Specifically, on the support portion 52 provided in the rear in the front-back direction of the blade protecting cap main body 51 and on both end portions in the width direction thereof, extended portions 52a extended along the grip case 23 are formed, and the grip case 23 is allowed to abut against ridge line portions 52b of the extended portions 52, whereby the electric razor 11 is made mountable in the state of being laid.

[0079] Then, also when the electric razor 11 is mounted sideways, in the blade protecting cap main body 51, there is formed the dewatering portion (first opening: notched portion provided in the blade protecting cap main body 51 in this embodiment) 53 for draining the water (liquid), which is present in the inner space S1 of the blade protecting cap main body 51, to the outside thereof.

[0080] Moreover, at the time of the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a, and where the electric razor 11 to which the blade protecting cap 50A is installed is laid sideways, the dewatering portion (first opening) 53 communicates with the space 52 formed of the blade protecting cap main body 51, the support portions 52 and the mounting surface 100a.

[0081] Furthermore, the second opening 54 is formed so that the space S2 formed of the blade protecting cap main body 51, the support portions 52 and the mounting surface 100a, cannot become the closed space at the time of the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a, and where the electric razor 11 to which the blade protecting cap 50A is installed is laid sideways.

[0082] Moreover, also in this embodiment, the second opening 54 has, on the lower end thereof, the portion in which the support portions 52 are not present, and at least a part of the second opening 54 is partitioned by the mounting surface 100a. In such a way, the water (liquid) in the space S2 is made movable to the outer space S3 of the blade protecting cap 50A without being disturbed by the support portions 52.

[0083] Moreover, in this embodiment, at the time of the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a, and where the electric razor 11 to which the blade protecting cap 50A is installed is laid sideways, the plane C, which approximates the outer surfaces (abutting regions of the blade portions against the skin) of the outer blades (blade portions) 14, is inclined with respect to the horizontal plane.

[0084] Furthermore, in this embodiment, at the time of the state (predetermined state) where the support portions 52 are allowed to abut against the mounting surface 100a, and where the electric razor 11 to which the blade protecting cap 50A is installed is laid sideways, the blade protecting cap main body 51 has the inclined surface 51b.

[0085] Moreover, in this embodiment, the dewatering portion (first opening) 53 is formed in the lowermost por-

tion of the inclined surface 51b of the blade protecting cap main body 51, the lowermost portion being the boundary portion between the inclined surface 51b corresponding to the outer surfaces of the outer blades 14 and the inclined surface 51b corresponding to the side surface of the blade frame portion 18a, which is located in the rear thereof in the front-back direction.

[0086] By adopting such a configuration, also at the time of the state (predetermined state) where the electric razor 11 with the blade protecting cap 50A installed is laid sideways, it is made possible to dry the blade portions and the like more efficiently while protecting the outer blades (blade portions) 14 of the electric razor 11.

[0087] Also by this embodiment described above, similar functions and effects to those of the first embodiment described above can be exerted.

[0088] Moreover, according to this embodiment, the support portions 52 of the blade protecting cap 50A are formed so that the electric razor 11 with the blade protecting cap 50A installed can be supported in the plurality of attitudes. Therefore, regions of the support portions 52, which are allowed to abut against the mounting surface 100a, are selected, whereby it can be selected in which attitude among the plurality of attitudes the electric razor 11 is to be dried. That is to say, a supporting method corresponding to an installation place can be selected.

[0089] Note that, in this embodiment, one is illustrated, in which the electric razor 11 can be supported in the plurality of attitudes by providing the extended portions 52a on the support portions 52; however, for example, it is possible to extend the blade protecting cap main body 51 along the grip case 23, and to provide another support portion on such an extended portion concerned. Moreover, it is also possible to extend the blade protecting cap main body 51 so that the blade protecting cap main body 51 can go along the grip case 23, and in addition, to provide the extended portions 52a on the support portions 52.

(Third embodiment)

[0090] A blade protecting cap 50B according to this embodiment basically has substantially the same configuration as that of the above-described first embodiment. That is to say, the blade protecting cap 50B is detachably installed to the electric razor 11, and thereby protects the outer blades (blade portions) 14 of the electric razor 11.

[0091] Also in this embodiment, the blade protecting cap 50B includes the blade protecting cap main body 51, which, in the event where the blade protecting cap 50B is installed to the electric razor 11, covers the outer surfaces of the outer blades (blade portions) 14, and thereby protects the outer blades (blade portions) 14.

[0092] Moreover, the blade protecting cap 50B includes support portions 52, which, in the event where the blade protecting cap 50B is allowed to abut against the mounting surface 100a, are capable of mounting the electric razor 11 with the blade protecting cap 50A in-

stalled in a state where the electric razor 11 is inverted (state where the blade portions are located downward: predetermined state).

[0093] Moreover, in this embodiment, in a state where the blade protecting cap 50B is installed to the electric razor 11, the support portions 52 are protruded at three spots, which are: the spot that is in the front in the front-back direction of the blade protecting cap main body 51 and at the center portion in the width direction thereof; and the spots which are in the rear in the front-back direction and on both end portions in the width direction of the blade protecting cap main body 51.

[0094] Note that the state where the electric razor 11 with the blade protecting cap 50B installed is inverted is substantially the same as that of the above-described first embodiment.

[0095] Here, a main point of difference of the blade protecting cap 50B according to this embodiment from that of the above-described first embodiment is that the blade protecting cap 50B includes a lid portion 55 that openably covers the dewatering portion (first opening) 53 formed in the blade protecting cap main body 51.

[0096] Moreover, in this embodiment, the lid portion 55 is formed integrally with the blade protecting cap main body 51, and the lid portion 55 concerned has a function of the support portions 52 in the event of opening the lid portion 55.

[0097] By adopting such a configuration, when the electric razor 11 is not dried, the lid portion 55 is closed to close the dewatering portion (first opening) 53 so as to prevent entrance of dust and like from the dewatering portion (first opening) 53.

[0098] Meanwhile, when drying electric razor 11, the lid portion 55 is opened to open the dewatering portion (first opening) 53, and the support portions 52 (support portions 52 and lid portion 55) are allowed to abut against the mounting surface 100a. In such a way, it is made possible to dry the electric razor 11 with the blade protecting cap 50B installed, while inverting the electric razor 11 concerned.

[0099] Also by this embodiment, similar functions and effects to those of the first embodiment can be exerted.

[0100] Moreover, according to this embodiment, the blade protecting cap 50B includes the lid portion 55 that openably covers the dewatering portion (first opening) 53 formed in the blade protecting cap main body 51. Therefore, when not drying the electric razor 11, such as when carrying the electric razor 11, the lid portion 55 is closed to close the dewatering portion (first opening) 53, whereby scattering of the beard debris can be suppressed, and the entrance of the dust can be suppressed, and so on, thereby enabling to enhance portability of the electric razor 11.

[0101] Moreover, according to this embodiment, the lid portion 55 is formed integrally with the blade protecting cap main body 51, and the lid portion 55 concerned has the function of the support portions 52 in the event of opening the lid portion 55.

[0102] Therefore, in the event where the lid portion 55 is closed, the above-described effects can be exerted, and in addition, in the event where the lid portion 55 is opened, the electric razor 11 with the blade protecting cap 50B installed can be dried while being inverted.

[0103] Note that, in this embodiment, one is illustrated, in which the support portions 52 are provided separately from the lid portion 55; however, a plurality of the lid portions 55 may be provided integrally with the blade protecting cap main body 51, whereby the support portions may be composed of only the lid portions 55.

[0104] Moreover, it is also possible to apply the configuration of this embodiment to the above-described second embodiment.

[0105] The description has been made above of the preferred embodiments of the present invention; however, the present invention is not limited to the above-described embodiments, and is modifiable in various ways.

[0106] For example, in each of the above-described embodiments, as the support portions, those formed integrally with the blade protecting cap main body are illustrated; however, in consideration of stability at the time of installation thereof, the support portions may be formed by attaching rubber feet to the blade protecting cap main body. Moreover, the support portions may be made of components separate from the blade protecting cap main body.

[0107] Moreover, in each of the above-described embodiments, one using the electric razor with five blades provided in parallel to one another is illustrated; however, it is also possible to use an electric razor in which a blade portion is composed by using one to four or six or more blades. Moreover, the present invention can also be applied to a blade protecting cap to be installed to an electric razor in which the blade portion is provided on an electric razor main body itself that does not have the head unit.

[0108] Moreover, it is also possible to appropriately change specifications (shapes, sizes, layout and the like) of the support portions, the dewatering portion and other details.

[Industrial Applicability]

[0109] According to the present invention, there can be obtained: the blade protecting cap, which is capable of drying the blade portion and the like more efficiently; and the electric razor to which the blade protecting cap is installed.

Claims

1. A blade protecting cap, which is detachably installed to an electric razor including an electric razor main body and a blade portion provided in the electric razor main body, and protects the blade portion, the blade protecting cap comprising:

- a blade protecting cap main body that protects the blade portion in an event where the blade protecting cap is installed to the electric razor; and
 a support portion capable of mounting the electric razor in a predetermined state on a mounting surface in an event where the blade protecting cap is allowed to abut against the mounting surface, the electric razor having the blade protecting cap installed thereto,
 wherein a first opening is formed in the blade protecting cap main body, and
 in a state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, the first opening communicates with an outer space of the blade protecting cap.
2. The blade protecting cap according to claim 1, wherein
 in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface,
 the first opening communicates with a space formed of the blade protecting cap main body, the support portion and the mounting surface, and
 a second opening is formed so that the space formed of the blade protecting cap main body, the support portion and the mounting surface cannot become a closed space.
3. The blade protecting cap according to claim 1 or 2, wherein, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, a plane approximating an abutting region of the blade portion against skin is inclined with respect to a horizontal plane.
4. The blade protecting cap according to any one of claims 1 to 3, wherein, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, the blade protecting cap main body has an inclined surface.
5. The blade protecting cap according to claim 4, wherein the first opening is formed in a lowermost portion of the inclined surface.
6. The blade protecting cap according to any one of

claims 1 to 5, wherein the support portion of the blade protecting cap is formed so that the electric razor having the blade protecting cap installed thereto can be supported in a plurality of attitudes.

7. The blade protecting cap according to any one of claims 1 to 6, wherein the blade protecting cap includes a lid portion that openably covers the first opening formed in the blade protecting cap main body.
8. The blade protecting cap according to claim 7, wherein
 the lid portion is formed integrally with the blade protecting cap main body, and
 the lid portion becomes the support portion in an event where the lid portion is opened.
9. An electric razor, wherein the blade protecting cap according to any one of claims 1 to 8 is installed.

Amended claims under Art. 19.1 PCT

1. (amended) A blade protecting cap, which is detachably installed to an electric razor including an electric razor main body and a blade portion provided in the electric razor main body, and protects the blade portion, the blade protecting cap comprising:

a blade protecting cap main body that protects the blade portion in an event where the blade protecting cap is installed to the electric razor; and

a support portion capable of mounting the electric razor in a predetermined state on a mounting surface in an event where the blade protecting cap is allowed to abut against the mounting surface, the electric razor having the blade protecting cap installed thereto,
 wherein a first opening is formed in the blade protecting cap main body, and
 in a state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, a second opening is formed so that a space formed of the blade protecting cap main body, the support portion and the mounting surface cannot become a closed space, and the first opening communicates with an outer space of the blade protecting cap.

2. (amended) The blade protecting cap according to claim 1, wherein
 in the state where the support portion is allowed to abut against the mounting surface, and where the

electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface,
the first opening communicates with the space formed of the blade protecting cap main body, the support portion and the mounting surface. 5

3. The blade protecting cap according to claim 1 or 2, wherein, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, a plane approximating an abutting region of the blade portion against skin is inclined with respect to a horizontal plane. 10 15

4. The blade protecting cap according to any one of claims 1 to 3, wherein, in the state where the support portion is allowed to abut against the mounting surface, and where the electric razor having the blade protecting cap installed thereto is mounted in the predetermined state on the mounting surface, the blade protecting cap main body has an inclined surface. 20 25

5. The blade protecting cap according to claim 4, wherein the first opening is formed in a lowermost portion of the inclined surface.

6. The blade protecting cap according to any one of claims 1 to 5, wherein the support portion of the blade protecting cap is formed so that the electric razor having the blade protecting cap installed thereto can be supported in a plurality of attitudes. 30 35

7. The blade protecting cap according to any one of claims 1 to 6, wherein the blade protecting cap includes a lid portion that openably covers the first opening formed in the blade protecting cap main body. 40

8. The blade protecting cap according to claim 7, wherein the lid portion is formed integrally with the blade protecting cap main body, and the lid portion becomes the support portion in an event where the lid portion is opened. 45

9. An electric razor, wherein the blade protecting cap according to any one of claims 1 to 8 is installed. 50

55

FIG. 1

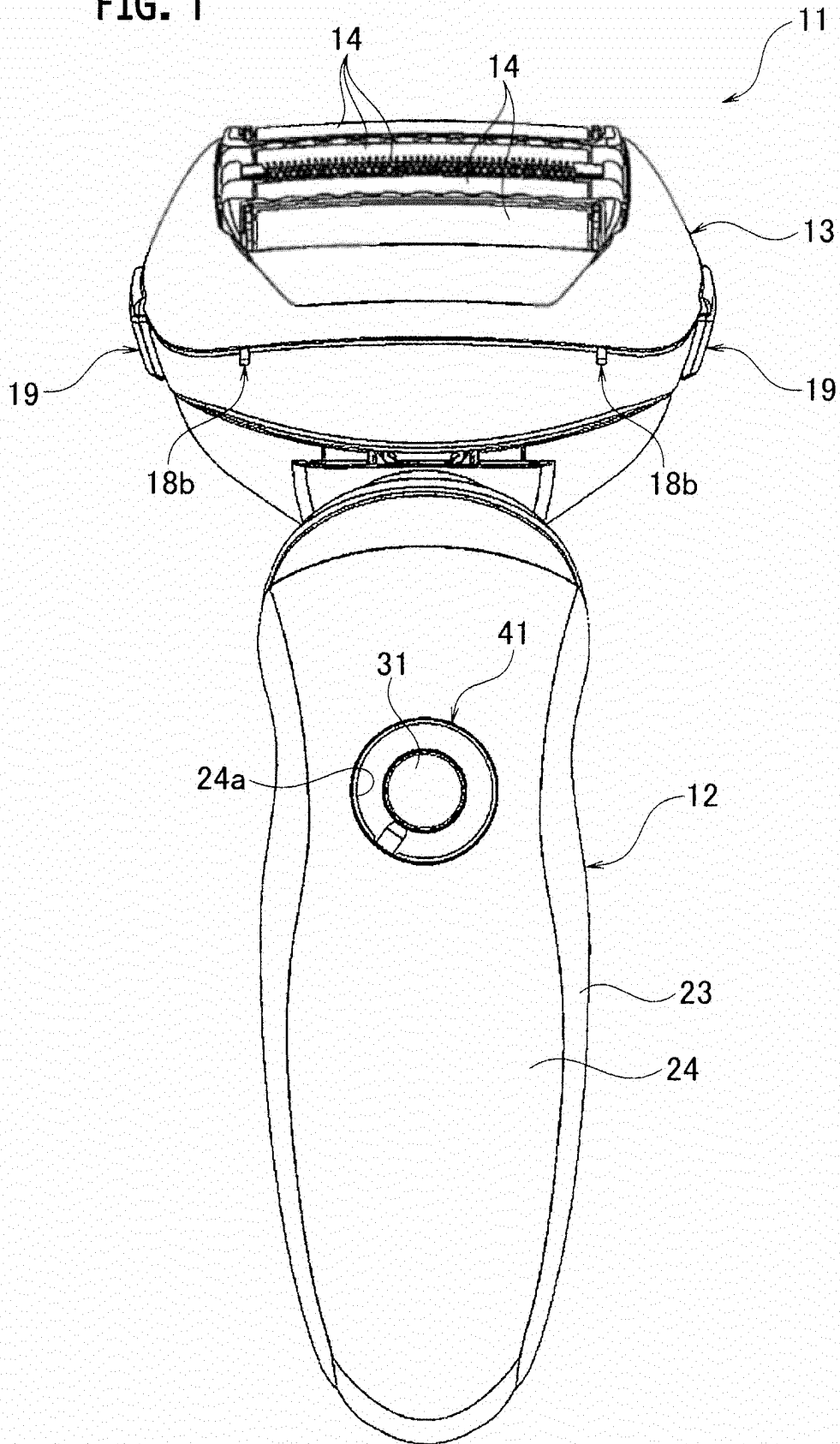


FIG. 2

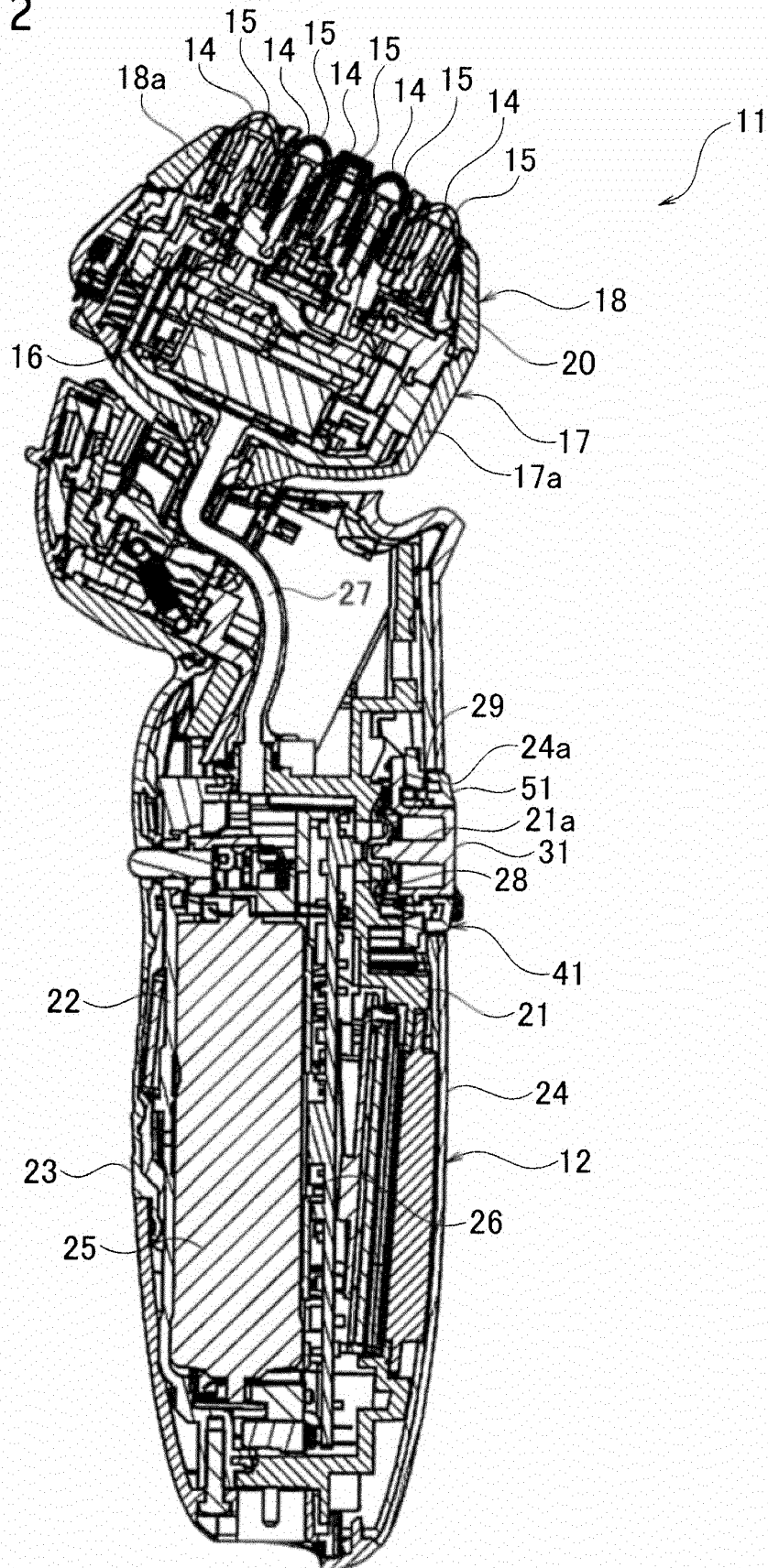


FIG. 3

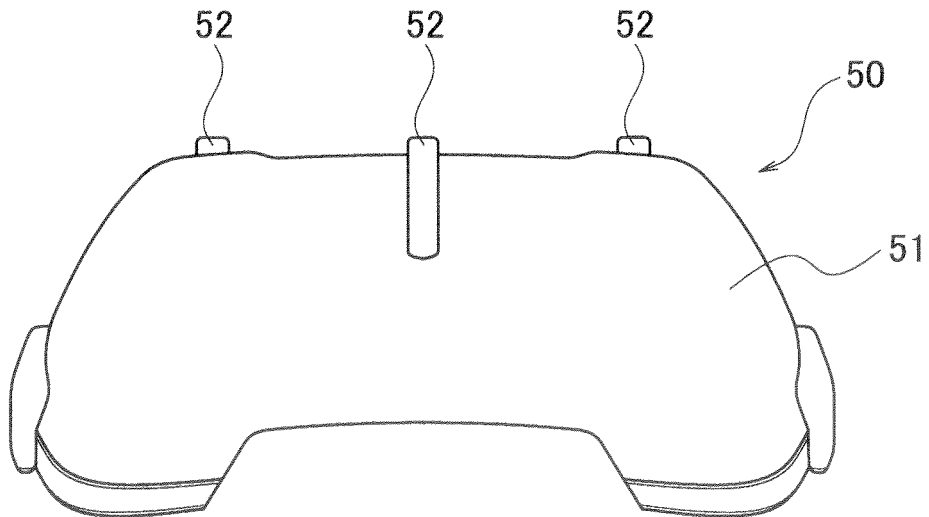


FIG. 4

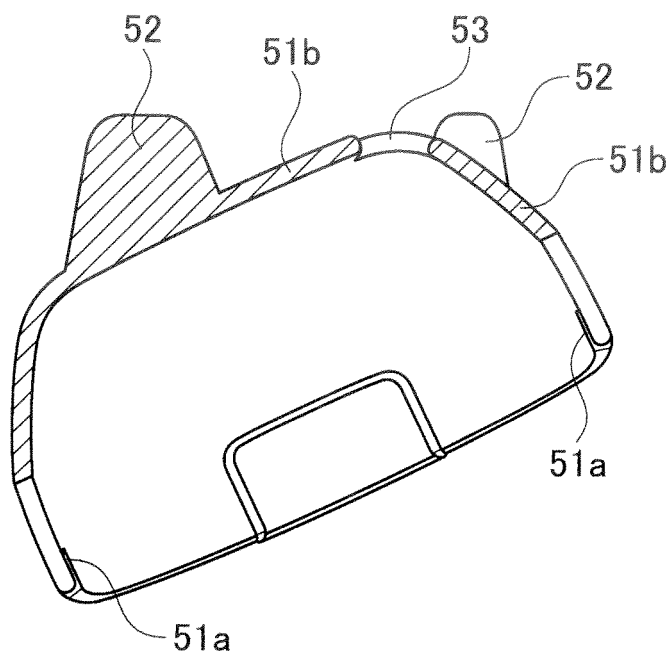


FIG. 5

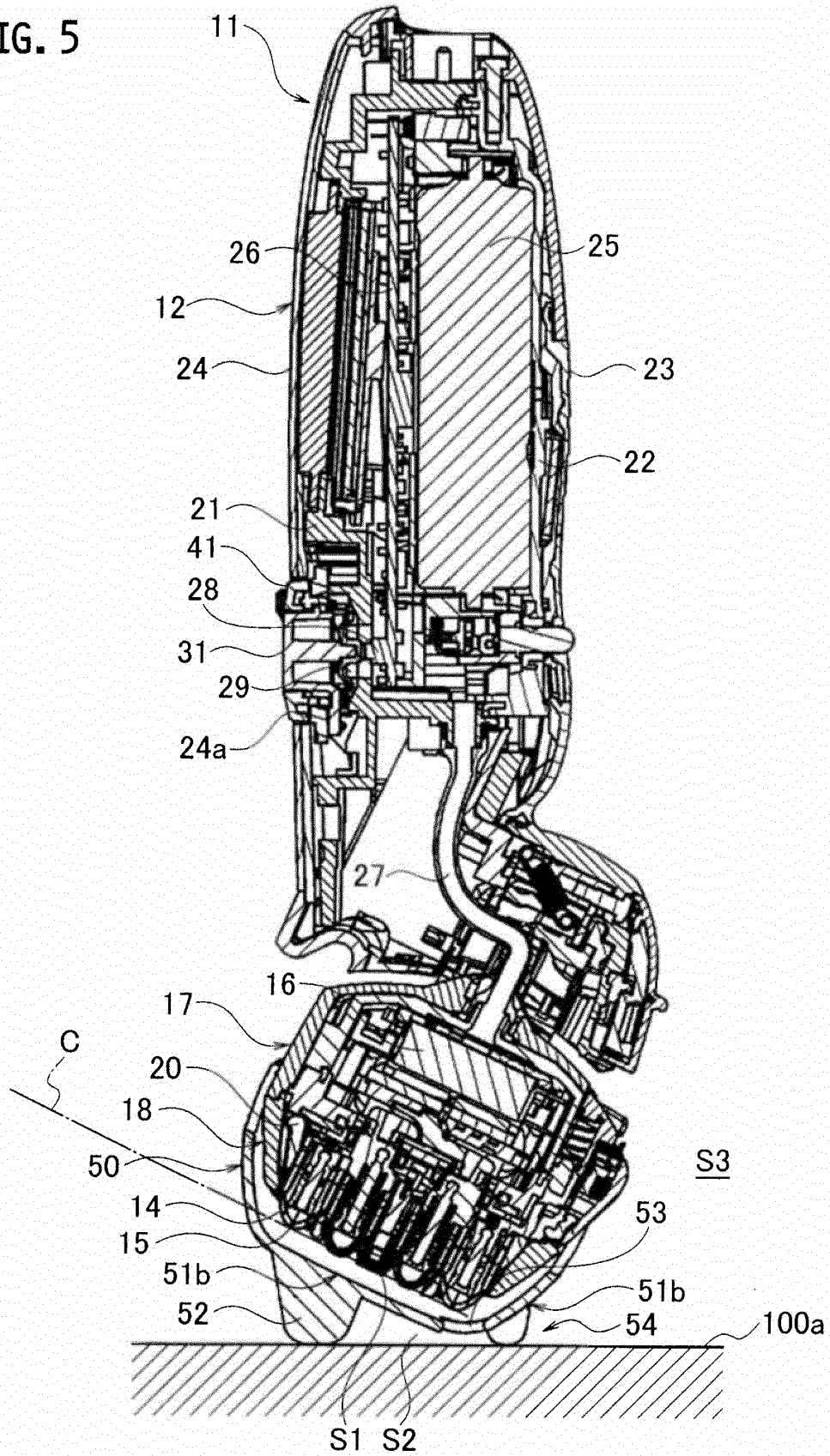


FIG. 6

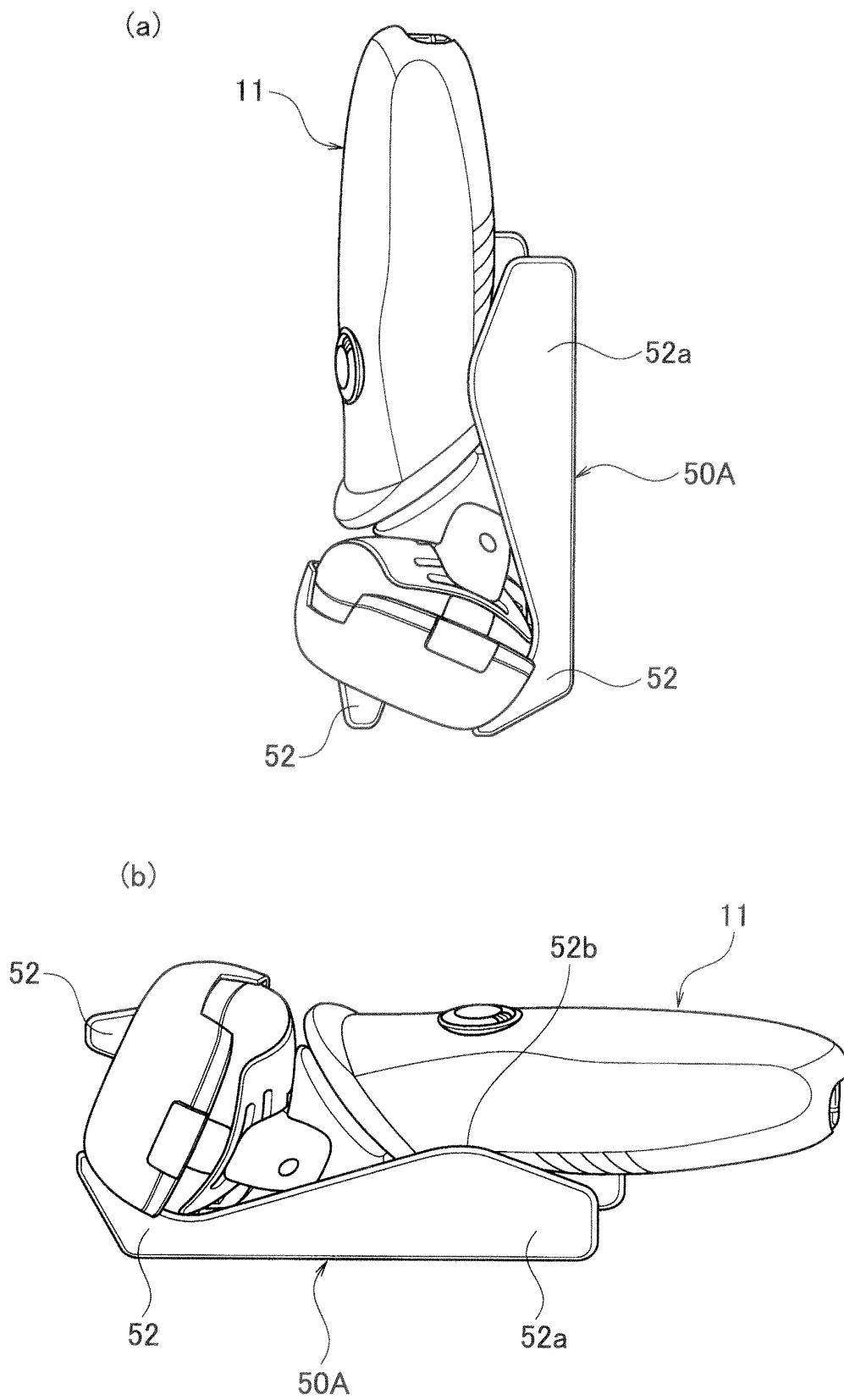


FIG. 7

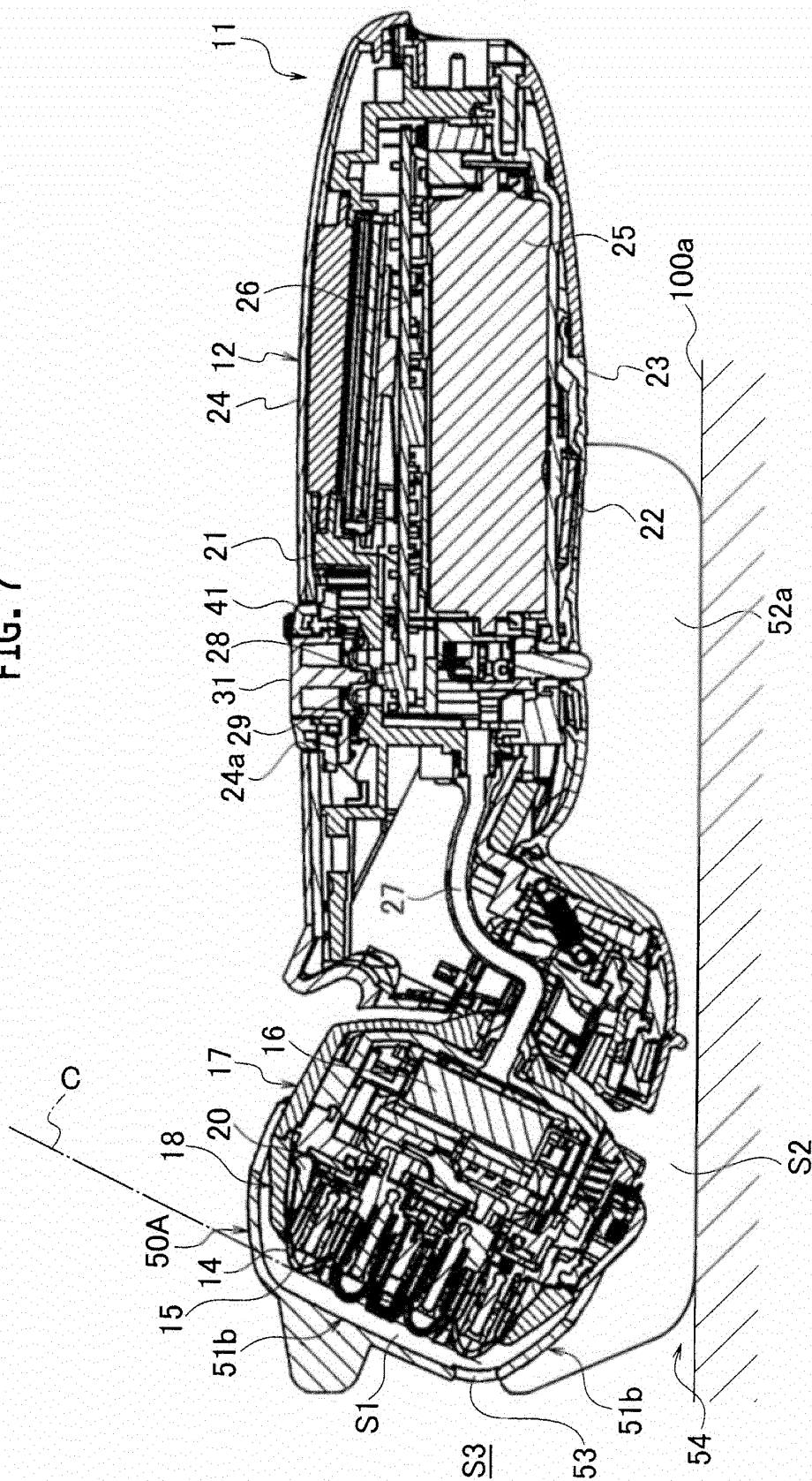
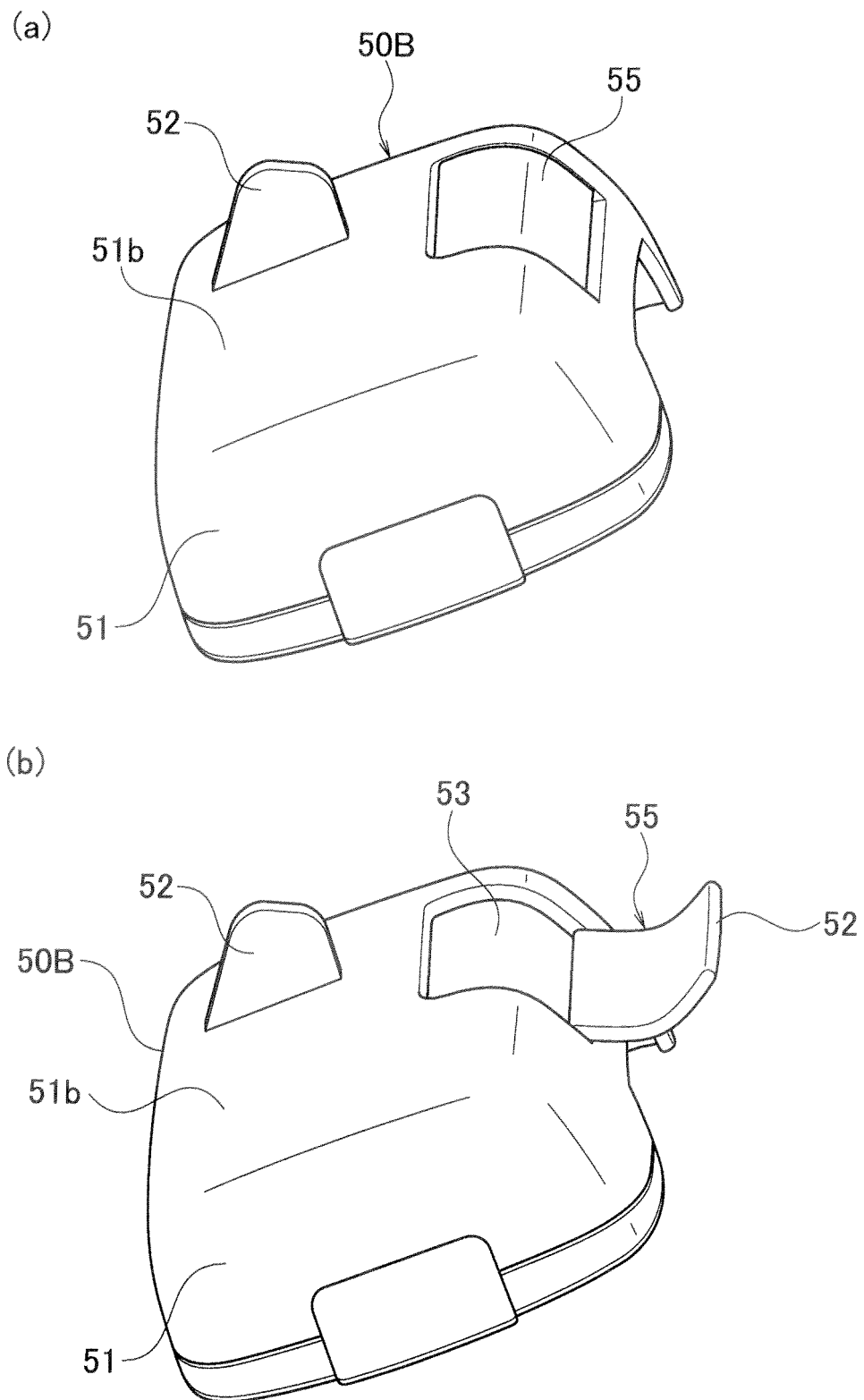


FIG. 8



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2012/065080

A. CLASSIFICATION OF SUBJECT MATTER

B26B19/38 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B26B19/38

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2012
Kokai Jitsuyo Shinan Koho	1971-2012	Toroku Jitsuyo Shinan Koho	1994-2012

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Microfilm of the specification and drawings	1, 9
Y	annexed to the request of Japanese Utility	3-7
A	Model Application No. 26625/1983 (Laid-open No. 133173/1984) (Sanyo Electric Co., Ltd.), 06 September 1984 (06.09.1984), page 3, line 12 to page 5, line 11; fig. 1 to 3 (Family: none)	2, 8
Y	JP 62-26094 A (Matsushita Electric Works, Ltd.), 04 February 1987 (04.02.1987), page 2, upper left column, line 5 to upper right column, line 8; fig. 4 (Family: none)	3-6

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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Date of the actual completion of the international search
11 July, 2012 (11.07.12)Date of mailing of the international search report
31 July, 2012 (31.07.12)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2012/065080

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 58-38583 A (Matsushita Electric Works, Ltd.), 07 March 1983 (07.03.1983), page 2, lower left column, line 8 to lower right column, line 10; fig. 3 to 4 (Family: none)	7 8

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP S59133173 B [0006]