



(11)

EP 3 593 962 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
15.01.2020 Bulletin 2020/03

(51) Int Cl.:
B26B 19/44 (2006.01) B26B 19/20 (2006.01)

(21) Application number: **18183076.1**

(22) Date of filing: **12.07.2018**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(72) Inventors:
• **Iaccarino, Luca**
5656 AE Eindhoven (NL)
• **Amaravathi, Madhusudhan Varma**
5656 AE Eindhoven (NL)

(74) Representative: **de Haan, Poul Erik et al**
Philips International B.V.
Philips Intellectual Property & Standards
High Tech Campus 5
5656 AE Eindhoven (NL)

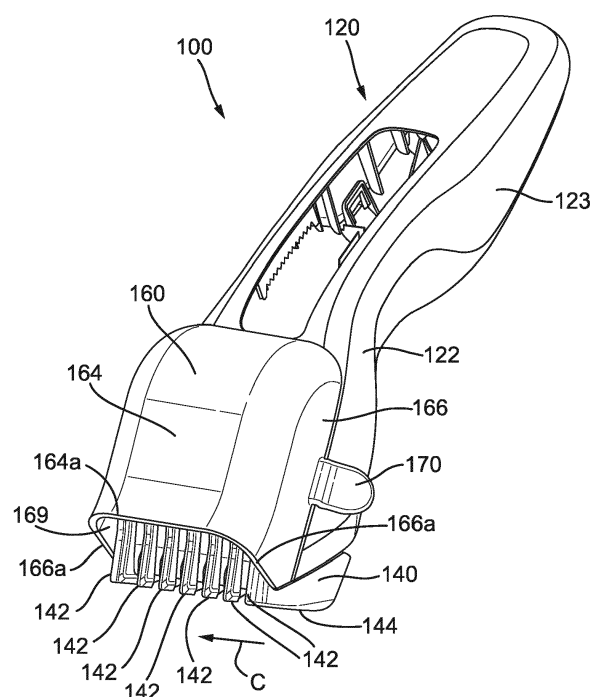
(71) Applicant: **Koninklijke Philips N.V.**
5656 AE Eindhoven (NL)

(54) **A HAIR CUTTING SYSTEM**

(57) A hair cutting system (100) is provided, the system comprising a hair cutting appliance (120) comprising one or more pairs of cutting blades (124) for cutting hair a comb (140) arranged forwards of the cutting blades and configured to guide hair towards the cutting blades; and a hair collector (160), the hair collector comprising

a hair chamber (168) for receiving hair cut by the hair cutting appliance and a coupling portion (170) configured to couple the hair collector to the hair cutting appliance. A hair collector for the hair cutting system is also provided.

Fig. 3b



Description

FIELD OF THE INVENTION

[0001] The present disclosure relates to a hair cutting system and is particularly, although not exclusively, concerned with a hair cutting system that improves the capturing of cut hairs.

BACKGROUND OF THE INVENTION

[0002] During hair trimming, cut hairs are typically allowed to fall away from a hair cutting apparatus on to and around the person whose hair is being cut. This can cause annoyance to both the one giving and the one receiving a haircut.

[0003] Cleaning up hairs after a haircut requires time and effort. Additionally, cut hairs that fall on the skin, e.g. of the neck, face, back, arms and/or hands, during the haircut can cause itchiness and irritation, which can make the hair cutting process uncomfortable.

[0004] It is particularly desirable for the hair cutting process to be made as comfortable as possible when a child is being given a haircut. Cut hairs on the child's skin can cause itchiness and irritation, adding to the concerns of the person giving the haircut and possibly leading to poor haircut results.

SUMMARY OF THE INVENTION

[0005] According to an aspect of the present disclosure, there is provided a hair cutting system comprising: a hair cutting appliance comprising one or more pairs of cutting blades for cutting hair; a comb arranged forwards of the cutting blades, e.g. as seen in the direction of movement (the cutting direction) of the hair cutting appliance, and configured to guide hair towards the cutting blades; and a hair collector, the hair collector comprising a hair chamber for receiving hairs cut by the hair cutting appliance and a coupling portion configured to couple the hair collector to the hair cutting appliance.

[0006] The comb and the hair collector may be configured such that, when the hair cutting system is assembled, a portion of the comb, e.g. a distal portion of the comb, is arranged within the hair chamber.

[0007] A wall of the hair chamber, e.g. a front wall of the hair chamber, may extend, e.g. from the hair cutting appliance, over and forwards, e.g. in the cutting direction, of the distal end of the comb, e.g. an end of the comb furthest from the hair cutting appliance along the comb.

[0008] The wall of the hair chamber, e.g. the front wall of the hair chamber, may comprise an aperture. The comb may be configured such that a distal end of the comb extends into or through the aperture, e.g. when the hair cutting system is assembled.

[0009] An opening of the hair chamber for receiving hair may be substantially covered by the comb or the cutting blades and the comb, e.g. such that hair leaving

the hair chamber passes through the cutting blades or the comb.

[0010] The comb may comprise a plurality of comb teeth. The comb teeth may be spaced laterally across the comb, e.g. perpendicular to the cutting direction. A spacing between the comb teeth may be approximately 3.8mm, e.g. in order to restrict hairs from passing out of the hair chamber between the teeth of the comb. The spacing between the comb teeth may be less than or equal to 6.8mm, less than or equal to 6mm, less than or equal to 5mm, less than or equal to 4mm or less than or equal to 3mm. The spacing between the comb teeth may be greater than or equal to 1mm, greater than or equal to 2mm, or greater than or equal to 3mm.

[0011] The spacing between the comb teeth may be between approximately 3.8mm and approximately 6.8mm, e.g. less than or equal to 6.8mm and greater than or equal to 3.8mm. In some arrangements, the spacing between the comb teeth may be between approximately 1mm and 6.8mm, e.g. greater than or equal to 1mm and less than or equal to 6.8mm. Alternatively, the spacing between the comb teeth may be between approximately 1mm and 3.8mm, e.g. greater than or equal to 1mm and less than or equal to 3.8mm.

[0012] The hair collector may comprise a base wall configured to engage, or be aligned, with a surface of a body of the hair cutting appliance when the hair collector is coupled to the hair cutting appliance. A free edge of the base wall may at least partially define an opening of the hair chamber.

[0013] The hair cutting appliance may comprise a recess configured to receive at least a portion of the base wall of the hair collector.

[0014] An inside, e.g. interior, surface of the base wall may be oriented substantially perpendicularly to a hair cutting plane of the hair cutting appliance, e.g. a plane in which hair are cut by the cutting blades of the hair cutting appliance, at the free edge, e.g. at the opening of the hair collector. The inside surface of the base wall may be substantially aligned with the surface of the body of the hair cutting apparatus at a position away from the free edge. The base wall may comprise a corner portion at which the orientation of the inside surface of the base wall changes.

[0015] The base wall may comprise a curved wall portion. The orientation of the base wall, e.g. the inside surface of the base wall, may transition over the curved wall portion from being substantially perpendicular to the hair cutting plane at the edge to being substantially aligned with the surface of the hair cutting appliance body away from the free edge.

[0016] The base wall may comprise a ramped portion extended from the free edge, e.g. in to the hair chamber. The ramped portion may define a hair flow surface substantially perpendicular to the hair cutting plane of the cutting blades. The thickness of the base wall may change over the ramped portion from an edge thickness at the free edge to a wall thickness away from the free

edge. The edge thickness may be less than the wall thickness.

[0017] The base wall may comprise a wall portion on an opposite side of the ramped portion to the free edge. The wall portion may be substantially aligned, or engaged, with the surface of the body of the hair cutting appliance.

[0018] The wall portion may be at a lower angle relative to the hair cutting plane, e.g. less perpendicular to the hair cutting plane, compared to the hair flow surface.

[0019] In other words the base wall of the hair collector may comprise a first angled portion adjacent the free edge and a second angled portion on an opposite side of the first angled portion to the edge, wherein the first angled portion, e.g. an inside surface of the first angled portion, may be angled more relative to the hair cutting plane of the hair cutting appliance, than the second angled portion. In other words, the first angled portion may be more perpendicular to the hair cutting plane than the second angled portion.

[0020] The cutting blades of the hair cutting appliance may extend from a distal end of the body of the hair cutting appliance. The free edge of the base wall may be substantially aligned with the distal end of the body of the hair cutting appliance, e.g. adjacent to the cutting blades. Hence, the opening of the hair chamber may be substantially aligned with the distal end of the body of the hair cutting appliance. The hair chamber may be enclosed on three or more sides of the chamber at the opening.

[0021] The comb may define a comb surface to be held against a user's skin when operating the hair cutting system. The comb surface may be selectively offset from the cutting blades by a hair cutting length, such that a length of hair cut by the hair cutting system is determined according to the hair cutting length.

[0022] The comb may be movable relative to the cutting blades, e.g. in a direction perpendicular to the cutting direction of the hair cutting appliance, in order to vary the length of hair cut by the hair cutting system. The comb and the hair collector may be configured such that a clearance between a distal end of the comb and an inside surface of the hair chamber is substantially constant as the comb moves. Alternatively, the clearance between the distal end of the comb and the inside surface of the hair chamber may vary, e.g. within a range of clearance values, as the comb moves.

[0023] The hair collector may further comprise a hair retaining wall between a closed end of the hair chamber and the opening of the hair chamber. The hair retaining wall may extend from the base wall into the hair chamber.

[0024] The hair retaining wall may extend away from the base wall in a direction substantially perpendicular to the hair cutting plane of the cutting blades or a cutting direction of the hair cutting appliance.

[0025] According to another aspect of the present disclosure, there is provided a hair collector for the above-mentioned hair cutting system, wherein the hair collector comprises a hair chamber for receiving hair cut by the

hair cutting appliance and a coupling portion configured to couple the hair collector to the hair cutting appliance, such that a distal portion of the comb is arranged within the hair chamber.

[0026] According to another aspect of the present disclosure, there is provided a hair collector for the above-mentioned hair cutting system, wherein the hair collector comprises a hair chamber for receiving hair cut by the hair cutting appliance and a coupling portion configured to couple the hair collector to the hair cutting appliance.

[0027] To avoid unnecessary duplication of effort and repetition of text in the specification, certain features are described in relation to only one or several aspects or embodiments of the invention. However, it is to be understood that, where it is technically possible, features described in relation to any aspect or embodiment of the invention may also be used with any other aspect or embodiment of the invention.

20 BRIEF DESCRIPTION OF THE DRAWINGS

[0028] For a better understanding of the present invention, and to show more clearly how it may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

Fig. 1 is a side view of a previously proposed hair cutting system in a first hair cutting configuration;
 Fig. 2 is a side view of the previously proposed hair cutting system in a second hair cutting configuration;
 Figs. 3a and 3b are perspective views of a hair cutting system, according to arrangements of the present disclosure, in disassembled and assembled conditions respectively;
 Fig. 4 is a sectional side view of the hair cutting system in a first hair cutting configuration;
 Fig. 5 is a sectional side view of the hair cutting system in a second hair cutting configuration;
 Fig. 6 is a front view of the hair cutting system, according to arrangements of the present disclosure, with hidden detail of the comb;
 Fig. 7 is a partial sectional side view of a hair cutting system according to another arrangement of the present disclosure;
 Fig. 8 is a partial sectional side view of the hair cutting system;
 Fig. 9 is a partial sectional side view of a hair cutting system according to another arrangement of the present disclosure;
 Fig. 10 is a front perspective view of a hair cutting system, according to another arrangement of the present disclosure, in a disassembled condition; and
 Fig. 11 is a sectional side view of a hair cutting system according to another arrangement of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0029] With reference to Figs. 1 and 2, a previously proposed hair cutting system 2 comprises a hair cutting appliance 40, a comb 60 configured to guide hair towards cutting blades 42 of the hair cutting appliance 40 to be cut, and a hair collector 80 for receiving and storing the hair cut by the hair cutting appliance 40.

[0030] The hair cutting appliance 40 comprises a body 44 including a grip portion 46 to be held by a user when the hair cutting system is in use. The cutting blades 42 may protrude from a distal end 44a of the body 44.

[0031] As depicted in Fig. 2, the hair cutting system 2 is adjustable such that the position of a comb surface 62 of the comb 60 can be adjusted relative to the body 44 of the hair cutting appliance 40 and the cutting blades 42.

[0032] In use, the comb surface 62 is held against the skin of the person whose hair is being cut and the hair cutting system 2 is moved over the person's skin in a cutting direction C, in order to cut the person's hair.

[0033] The length of hair cut by the hair cutting system 2 is controlled by adjusting the distance between the comb surface 62 of the comb 60 and the cutting blades 42 of the hair cutting appliance 40.

[0034] As shown in Figs. 1 and 2, the hair collector 80 is coupled to the comb 60, such that the hair collector 80 moves together with the comb 60 as the position of the comb surface 62 is adjusted.

[0035] The hair collector 80 comprises a plurality of walls 82, 84, 86 which define a hair collection chamber 88 for receiving the cut hair. In particular, the hair collector 80 comprises a base wall 82 which is positioned adjacent to the body of the hair cutting appliance, a front wall 84 opposite the base wall 82 and two or more side walls 86 between the base wall 82 and the front wall 84. An opening 89 of the hair collection chamber 88 is defined by free edges 82a, 84a, 86a of the walls of the hair collector 82, 84, 86.

[0036] As depicted, when the hair collector 80 is coupled to the comb 60, part of the comb 60 is arranged over the opening 89 of the hair collection chamber 88 and acts to restrict hairs from leaving the hair collection chamber 88. Because the hair collector 80 is coupled to the comb and moves together with the comb 60, the comb 60 continues to restrict hairs from leaving the hair collection chamber 88 as the hair cutting length is adjusted.

[0037] As shown in Figure 1, the free edge 82a of the base wall 82, which partially forms the opening 89 of the hair collection chamber 88, is offset from the distal end 44a of the body 44 of the hair cutting appliance, e.g. away from the comb surface 62, so that the base wall 82 does not interfere with the cutting blades 42 of the hair cutting appliance when the comb 60 is moved away from the hair cutting appliance 40 to adjust the hair cutting length, e.g. as shown in Fig. 2.

[0038] Because the free edge 82a of the base wall is offset from the distal end 44a of the body 44, a gap 90 may be present between the body 44 of the hair cutting

appliance 40 and the side walls 86 of the hair collector 80, which may allow hairs to fall out of the hair collection chamber 88, particularly when the distance between the comb surface 62 and the cutting blades 42 is at a minimum, and the distance between the cutting blades 42 and the free edge 82a of the base wall is at a maximum, as depicted in Fig. 1.

[0039] With reference to Figs. 3a and 3b, a hair cutting system 100 according to arrangements of the present disclosure, comprises a hair cutting appliance 120, a comb 140 and a hair collector 160.

[0040] The hair cutting appliance 120 may be similar to the hair cutting appliance 40 and the features described above with reference to the hair cutting appliance 40 may apply equally to the hair cutting appliance 120.

[0041] The hair cutting appliance 120 comprises a body 122, having a grip portion 123, and cutting blades 124 for cutting hair. As depicted, the cutting blades 124 may protrude from a distal end 122a of the body 122.

[0042] The hair cutting appliance 120 may further comprise one or more coupling portions 128 configured to allow the hair collector 160 to be coupled to the hair cutting appliance 120, as described below.

[0043] In the arrangement shown, the cutting blades 124 comprise a pair of blades including a moving blade and a stationary blade (which may be referred to as a comb or guard blade). The moving and stationary blades each comprise a plurality of teeth, the teeth of the stationary blade corresponding to the teeth of the moving blade. The moving blade is driven by a motor of the hair cutting appliance to perform a reciprocating, oscillating or rotating motion relative to the stationary blade, opening and closing gaps between the respective corresponding teeth of the moving and stationary blades. When the gaps are open, hairs can be received between the teeth and the hairs are then cut when the gaps are closed. In some arrangements, the teeth of both the moving and stationary blades may comprise sharpened edges. Alternatively, the teeth of the moving or of the stationary blade may not be sharpened and the hairs may be cut by the action of the sharpened blade over the blunt edge of the unsharpened blade. The cutting blades 124 are arranged to cut hair in a cutting plane 126 defined by the cutting blades. The present disclosure may also apply to hair cutting appliances comprising different arrangements of cutting blades or other cutting elements for cutting a person's hair.

[0044] The comb 140 comprises a plurality comb teeth 142 spaced laterally across the comb 140, e.g. in a direction parallel to the cutting plane 126 and perpendicular to the cutting direction C. The comb teeth 142 are shaped and arranged to lift hair away from the skin and guide the hair towards the cutting blades 124 as the hair cutting system 100 is moved in a cutting direction C, e.g. so that the hair can be more easily received in the gaps between the moving and stationary blades.

[0045] The comb 140 defines a comb surface 144 that is rested against the skin of the person whose hair is

being cut when the hair cutting system 100 is in use. As described above, the length to which hair is cut by the hair cutting system is determined according to the distance between the comb surface 144 and the cutting blades 124.

[0046] The comb 140 comprises a coupling portion 146 configured to movably couple the comb 140 to the hair cutting appliance 120, to enable the comb 140 to be moved relative to the hair cutting appliance 120 to adjust the hair cutting length. The comb 140 may be movable relative to the hair cutting appliance 120 between a retracted position, as depicted in Fig. 4, and an extended position, as depicted in Fig. 5.

[0047] The comb teeth 142 comprise first portions 142a that extend from the coupling portion 146 in the cutting direction C. The comb surface 144 may be at least partially formed by the first portions 142a of the comb teeth, e.g. the lower surfaces of the first portions 142a. The comb teeth 142 further comprise second portions 142b, which extend from the respective first comb teeth portions 142a to a distal end 140a of the comb 140. As shown, the second portions 142b of the comb teeth may extend in a direction with a component perpendicular to the comb surface 144, e.g. away from the comb surface. For example, the second portions 142b of the comb teeth may extend in a direction substantially perpendicular to the comb surface 144.

[0048] The second portions 142b of the comb teeth may provide support for hairs that have been lifted away from the skin, as the hairs are guided towards the cutting blades 124. Additionally, the second portions 142b of the comb teeth may restrict hairs from falling out of the hair collector 160, as described below.

[0049] As depicted, the comb 140 may further comprise a connecting bar 148 provided at the distal end 140a of the comb 140. The connecting bar 148 may extend in the lateral direction of the comb. The connecting bar 148 may extend between two or more of the comb teeth 142 to connect the teeth together.

[0050] The hair collector 160 comprises a base wall 162, which is positioned adjacent to the body 122 of the hair cutting appliance 120 when the hair cutting system 100 is assembled. The hair collector 160 further comprises a front wall 164 opposite to the base wall 162 and two or more side walls 166 between the base wall 162 and the front wall 164. The walls 162, 164, 166 together define a hair collection chamber 168 for receiving hair cut by the hair cutting appliance 120.

[0051] An opening 169 of the hair collection chamber 168 is defined by free edges 162a, 164a, 166a of the walls of the hair collector. When the hair cutting system 100 is assembled, the opening 169 is arranged such that hair that is cut by the hair cutting appliance arrives at the opening 169 of the hair chamber. The opening 169 may be arranged adjacent to the cutting blades 124. The opening 169 may be defined on an opposite side of the cutting plane 126 to the comb surface 144.

[0052] Returning to Figs. 3a and 3b, the hair collector

160 further comprises one or more coupling portions 170 configured to couple to the hair cutting appliance 120. The hair collector 160 may comprise a coupling portion 170 provided on each lateral side of the hair collector 160. The coupling portions 170 may extend from the side walls 166 of the hair collector 160, e.g. on each lateral side of the hair collector 160.

[0053] The coupling portions 128 of the hair cutting appliance 120 may be configured to couple with respective ones of the coupling portions 170 of the hair collector 160. The coupling portions 170 of the hair collector 160 and corresponding coupling portions 128 of the hair cutting appliance 120 may be coupleable using a mechanical coupling method, such as clips, snap connectors, buttons or straps, or any other mechanical coupling method.

[0054] Additionally or alternatively, the coupling portions 170 of the hair collector 160 and corresponding coupling portions 128 of the hair cutting appliance 120 may be coupleable using any other coupling method. For example, either or both of the coupling portions 170 and the corresponding coupling portions 128 may comprise magnets, and the hair collector 160 may be configured to couple to the hair cutting appliance using magnets.

[0055] As shown in Figs. 4 and 5, because the hair collector 160 is coupled to the hair cutting appliance 120, the opening 169 of the hair collection chamber 168 remains in the same position relative to the cutting blades 124 of the hair cutting appliance 120 as the position of the comb 140 relative to the hair cutting appliance 120 is varied, e.g. in order to adjust the hair cutting length. The free edge 162a of the base wall is substantially aligned with the distal end of the body of the hair cutting appliance, such that the opening 169 remains stationary relative to the cutting blades 124, e.g. adjacent to the cutting blades 124, as the comb 140 moves relative to the hair cutting appliance 120. Furthermore, because the base wall 162 of the hair collector extends up to the distal end of the hair cutting appliance, no gap is present between the base wall 162 and the side walls 166 of the hair collector 160 adjacent to the cutting blades 124.

[0056] When the hair collector 160 is coupled to the hair cutting appliance 120, a portion of the comb 140 is arranged within the hair collection chamber 168. In the arrangement shown, the distal end 140a of the comb 140, e.g. the connecting bar 148 and part of the second portions of the teeth 142b, is arranged within the hair collection chamber 168. The comb 140 and the hair collector 160 are together configured such that the comb 140 acts to restrict hairs from leaving the hair collection chamber 168.

[0057] The opening 169 may be substantially covered by the comb, e.g. the comb teeth 142, so cut hair passes through the comb in order to leave the hair collection chamber 168 through the opening 169.

[0058] As depicted in Fig. 6, a spacing S between the comb teeth 142 may be selected in order to improve the retention of hairs within the hair collection chamber by the comb teeth 142, e.g. by restricting the flow of hairs

between the comb teeth 142. As depicted, the spacing between the comb teeth may be less than or equal to 6.8mm, less than or equal to 6mm, less than or equal to 5mm, less than or equal to 4mm or less than or equal to mm. The spacing between the comb teeth may be greater than or equal to 1mm, greater than or equal to 2mm, or greater than or equal to 3mm. For example, the spacing between the comb teeth 142 may be approximately 3.8mm. In other arrangements, the spacing between the comb teeth 142 may be between approximately 6.8mm and approximately 1mm.

[0059] Returning to Figs. 4 and 5, the front wall 164 of the hair collector 160 extends from the base wall 162 over and forwards of the distal end 140a of the comb 140, e.g. in the cutting direction C. The front wall 164 is shaped such that, as the comb 140 moves relative to the hair cutting appliance 120, e.g. between the retracted and extended positions, a clearance 150 between the distal end 140a of the comb 140, e.g. the connecting bar 148, and the front wall 164 of the hair collector remains substantially constant.

[0060] In other arrangements, the front wall 164 may be shaped such that, as the comb 140 moves relative to the hair cutting appliance 120, the clearance 150 varies, e.g. within a range of clearance values. A maximum clearance value of the range may be selected such that cut hairs are restricted from passing between the distal end 140a of the comb and the front wall 164 when the clearance 150 is at the maximum value. A minimum clearance value of the range may be selected in order to prevent the comb from interfering with the front wall 164 as it moves. Alternatively, the minimum clearance value may be approximately 0mm, e.g. such that the distal end of the comb is touching the front wall 164 when the clearance 150 is at the minimum value.

[0061] The front wall 164 of the hair collector 160 may be shaped such that the front wall 164 extends over and forwards of the distal end 140a of the comb 140 when the comb 140 is in the retracted and extended positions, e.g. for all hair cutting lengths. In this way, the comb 140 continues to cover the opening 169 of the hair collector 160 for all hair cutting lengths.

[0062] With reference to Fig. 7, in alternative arrangements, the front wall 164 of the hair collector may comprise an aperture 700, when the hair collector 160 is coupled to the hair cutting appliance 120, the distal end 140a of the comb 140 may extend into or through the aperture 700. Hence, no gap may be present between the front wall 164 and the comb 140, e.g. in a direction perpendicular to the inside surface of the front wall 164, though which hairs can pass out of the hair collection chamber 168.

[0063] In such arrangements, the length of the comb teeth 142, e.g. the second portions 142b of the comb teeth, may be selected such that the comb teeth 142 and/or connecting bar 148 extend into or through the aperture 700 when the comb 140 is in the retracted and extended positions, e.g. for all hair cutting lengths.

[0064] With reference to Fig. 8, a ramped portion 162b of the base wall 162 may be formed adjacent to the free edge 162a of the base wall 162. The ramped portion 162b may comprise a portion of the base wall 162 over which the thickness of the base wall tapers from a wall thickness, away from the free edge 162a, to an edge thickness at the free edge 162a of the base wall. The edge thickness may be less than the wall thickness.

[0065] An inside surface 162d of the ramped portion 162b of the base wall 162, which may be referred to as a hair flow surface, may be substantially perpendicular to the cutting plane 126 and/or the comb surface 144. Arranging the inside surface 162d of the ramped portion 162b in this way improves the flow of hair into the hair collection chamber 168 over the base wall 162.

[0066] The inside surface 162e of a wall portion 162c of the base wall on an opposite side of the ramped portion 162b to the free edge 162a may be aligned with, e.g. substantially parallel with, the body 122 of the hair cutting appliance 120, e.g. the outer surface of the body 122 adjacent to the hair collector 160.

[0067] The inside surface 162e of the wall portion 162c may be angled relative to the inside surface 162d of the ramped portion 162b. The base wall 162 may comprise a corner portion 162f between the ramped portion 162b and the wall portion 162c. The orientation of the inside surface of the base wall 162 may change at the corner portion 162f, e.g. from the orientation of the ramped portion inside surface 162d to the orientation of the wall portion inside surface 162e. As depicted, the orientation of the inside surface of the base wall 162 may change discretely or abruptly at the corner portion 162f.

[0068] The inside surface 162e of the wall portion 162c may be at a lower angle relative to, e.g. less perpendicular to, the hair cutting plane 126 and/or the cutting direction C. By orienting the inside surfaces of the ramped portion and the wall portion in this way, hair flow into the chamber and retention of hair within the chamber may both be improved.

[0069] As depicted in Fig. 9, in addition to or as an alternative to the corner portion 162f, the base wall 162 may comprise a curved wall portion 162g. The orientation of the inside surface of the base wall 162 may transition over the curved wall portion 162g from being substantially perpendicular to the cutting plane 126 and/or the comb surface 144 at the free edge 162a, to being substantially aligned with, e.g. parallel with, the body 122 of the hair cutting appliance 120 away from the free edge 162a. The curved wall portion 162g may be at least partially formed by the ramped portion 162b. Additionally or alternatively, the curved wall portion 162g may be at least partially formed by the wall portion 162c.

[0070] With reference to Fig. 10, the body 122 of the hair cutting appliance 120 may comprise a recess 122b. The recess 122b may be configured to receive a portion of the hair collector 160 when the hair collector is coupled to the hair cutting appliance 120. For example, the base wall 162 of the hair collector 160 may be received within

the recess 122b. A depth of the recess 122b may be substantially equal to a thickness, e.g. a maximum thickness, of the base wall 162. In this way, the inside surface of the base wall 162 may be substantially aligned within the outer surface 122c of the body 122 around the recess 122b. In other words, the inside surface of the base wall 162 may be disposed where the outer surface of the body 122 would be if the recess 122b was not provided in the body 122.

[0071] With reference to Fig. 11, the hair collector 160 may further comprise a hair retaining wall 1000. The hair retaining wall 1000 may extend from the base wall 162 into the hair collection chamber 168. The hair retaining wall 1000 is arranged between the closed end of the hair collection chamber 168 and the opening 169. The hair retaining wall 1000 may extend across the lateral width of the hair collection chamber 168, e.g. between the side walls 166. A hair gap 1002 may remain between the hair retaining wall 1000 and the front wall 164 of the hair collector 160 to allow hairs to move past the hair retaining wall 1000 towards the closed end of the hair collection chamber 168. As depicted in Fig. 11, cut hairs may be retained by the wall 1000, e.g. between the wall 1000 and the closed end of the hair collection chamber 168.

[0072] As depicted, the hair retaining wall 1000 may extend from the base wall 162 in a direction with a component perpendicular to the cutting plane 126, the cutting direction C and/or the comb surface 144. For example, the hair retaining wall 1000 may extend away from the base wall 162 in a direction substantially perpendicular to the cutting plane 126. When the hair retaining wall 1000 is oriented in this way, the hair retaining wall 1000 may be particularly effective in retaining hairs within the hair collection chamber 168 when the hair cutting system 100 is being used on a substantially horizontal surface, such as the top of a person's head.

[0073] It will be appreciated by those skilled in the art that although the invention has been described by way of example, with reference to one or more exemplary examples, it is not limited to the disclosed examples and that alternative examples could be constructed without departing from the scope of the invention as defined by the appended claims.

Claims

1. A hair cutting system (100) comprising:

a hair cutting appliance (120) comprising one or more pairs of cutting blades (124) for cutting hair;
a comb (140) arranged forwards of the cutting blades and configured to guide hair towards the cutting blades; and
a hair collector (160), the hair collector comprising a hair chamber (168) for receiving hairs cut by the hair cutting appliance and a coupling por-

tion (170) configured to couple the hair collector to the hair cutting appliance.

2. The hair cutting system (100) of claim 1, wherein a wall (164) of the hair chamber (168) extends over and forwards of a distal end of the comb (140).
3. The hair cutting system of claim 1, wherein a wall (164) of the hair chamber (168) comprises an aperture (700), wherein a distal end (140a) of the comb extends into or through the aperture.
4. The hair cutting system of any of claims 1 to 3, wherein an opening (169) of the hair chamber for receiving hair is substantially closed by the cutting blades (124) and the comb (140).
5. The hair cutting system (100) of any of claims 1 to 4, wherein the comb (140) comprise a plurality of comb teeth (142), wherein a spacing between the comb teeth is between 1mm and 6.8mm, in order to restrict hairs from passing out of the hair chamber (168) between the teeth of the comb.
6. The hair cutting system (100) of any of the preceding claims, wherein the hair collector (160) comprises a base wall (162) configured to engage a surface of a body (122) of the hair cutting appliance (120) when the hair collector is coupled to the hair cutting appliance, wherein a free edge (162a) of the base wall at least partially defines an opening (169) of the hair chamber.
7. The hair cutting system (100) of claim 6, wherein the hair cutting appliance (120) comprises a recess (122b) configured to receive at least a portion of the base wall (162) of the hair collector (160).
8. The hair cutting system (100) of claim 6 or 7, wherein an inside surface (162d) of the base wall (162) is oriented substantially perpendicularly to a hair cutting plane (126) of the hair cutting appliance (120) at the free edge (162a), and is substantially aligned with the surface of the body (122) of the hair cutting appliance (120) at a position away from the free edge.
9. The hair cutting system (100) of any of the preceding claims, wherein the base wall (162) comprises a curved wall portion (162g), wherein the orientation of the base wall transitions over the curved wall portion from being substantially perpendicular to the hair cutting plane (126) at the free edge (162a), to being substantially aligned with the surface of the hair cutting appliance body (122) away from the free edge.
10. The hair cutting system (100) of any of claims 6 to 9, wherein the base wall (162) comprises a ramped

portion (162b) extended from the free edge (162a), the ramped portion defining a hair flow surface substantially perpendicular to the hair cutting plane (126) of the cutting blades.

5

11. The hair cutting system (100) according to any of claims 6 to 10, wherein the free edge (162a) of the base wall (162) is substantially aligned with a distal end (122a) of the body of the hair cutting appliance (120). 10
12. The hair cutting system (100) of any of the preceding claims, wherein the comb (140) is movable relative to the cutting blades (124) in order to vary the length of hair cut by the hair cutting system, wherein the comb and hair collector (160) are configured such that a clearance (150) between a distal end (140a) of the comb and an inside surface of the hair chamber (168) is substantially constant as the comb moves. 15
20
13. The hair cutting system (100) of any of the preceding claims, wherein the hair collector (160) further comprises a hair retaining wall (1000) between a closed end of the hair chamber (168) and an opening (169) of the hair chamber. 25
14. The hair cutting system (100) of claim 13 when depending on claim 5, wherein the hair retaining wall (1000) extends away from the base wall (162) in a direction substantially perpendicular to the hair cutting plane (126) of the cutting blades (124). 30
15. A hair collector (160) for the hair cutting system (100) according to any of the preceding claims, wherein the hair collector comprises a hair chamber (168) for receiving hair cut by the hair cutting appliance and a coupling portion (170) configured to couple the hair collector to the hair cutting appliance (120). 35
40
45
50
55

Fig. 1

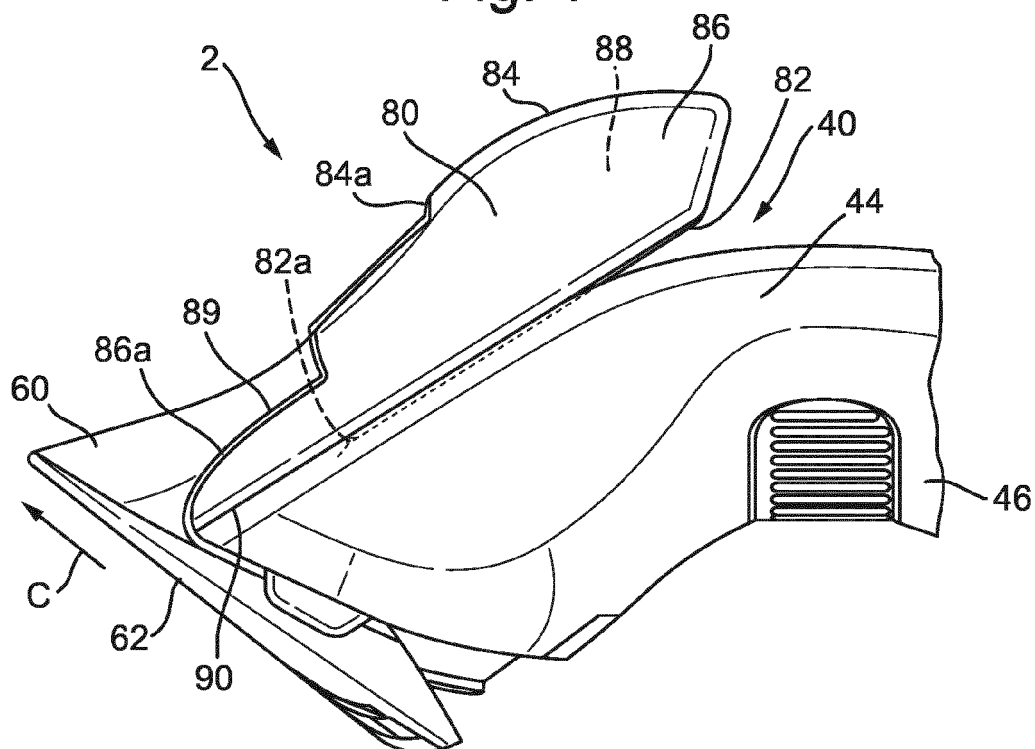


Fig. 2

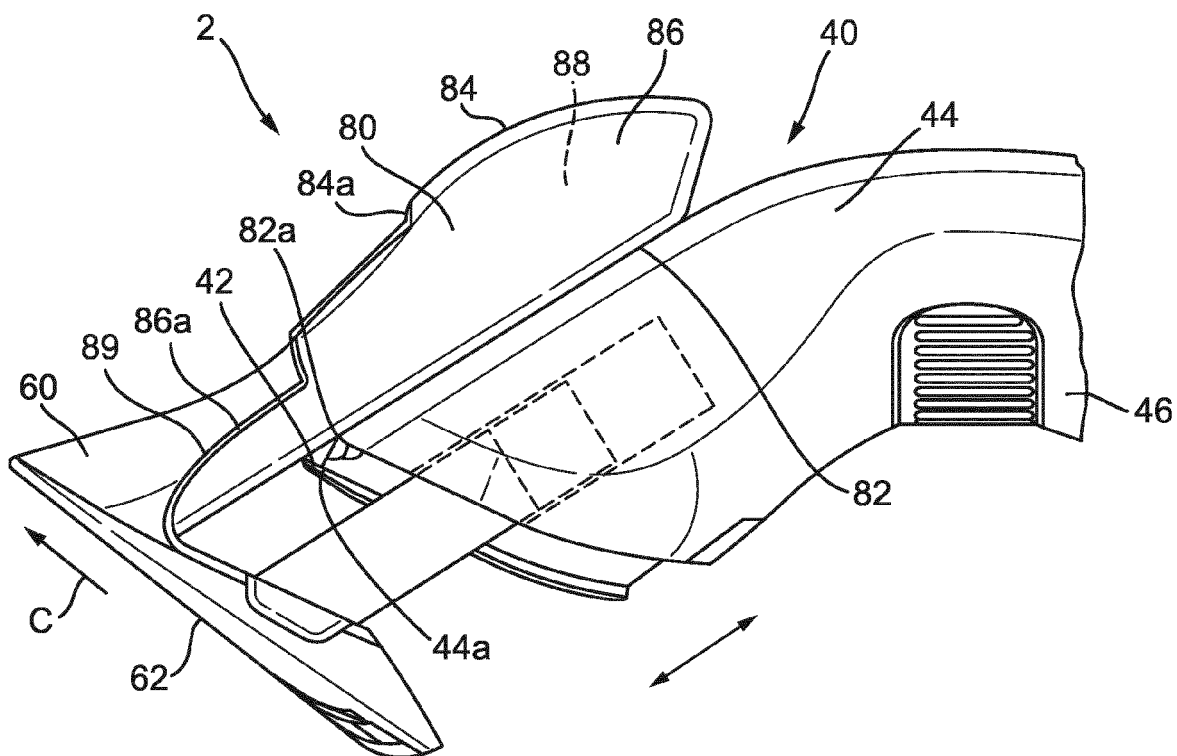


Fig. 3a

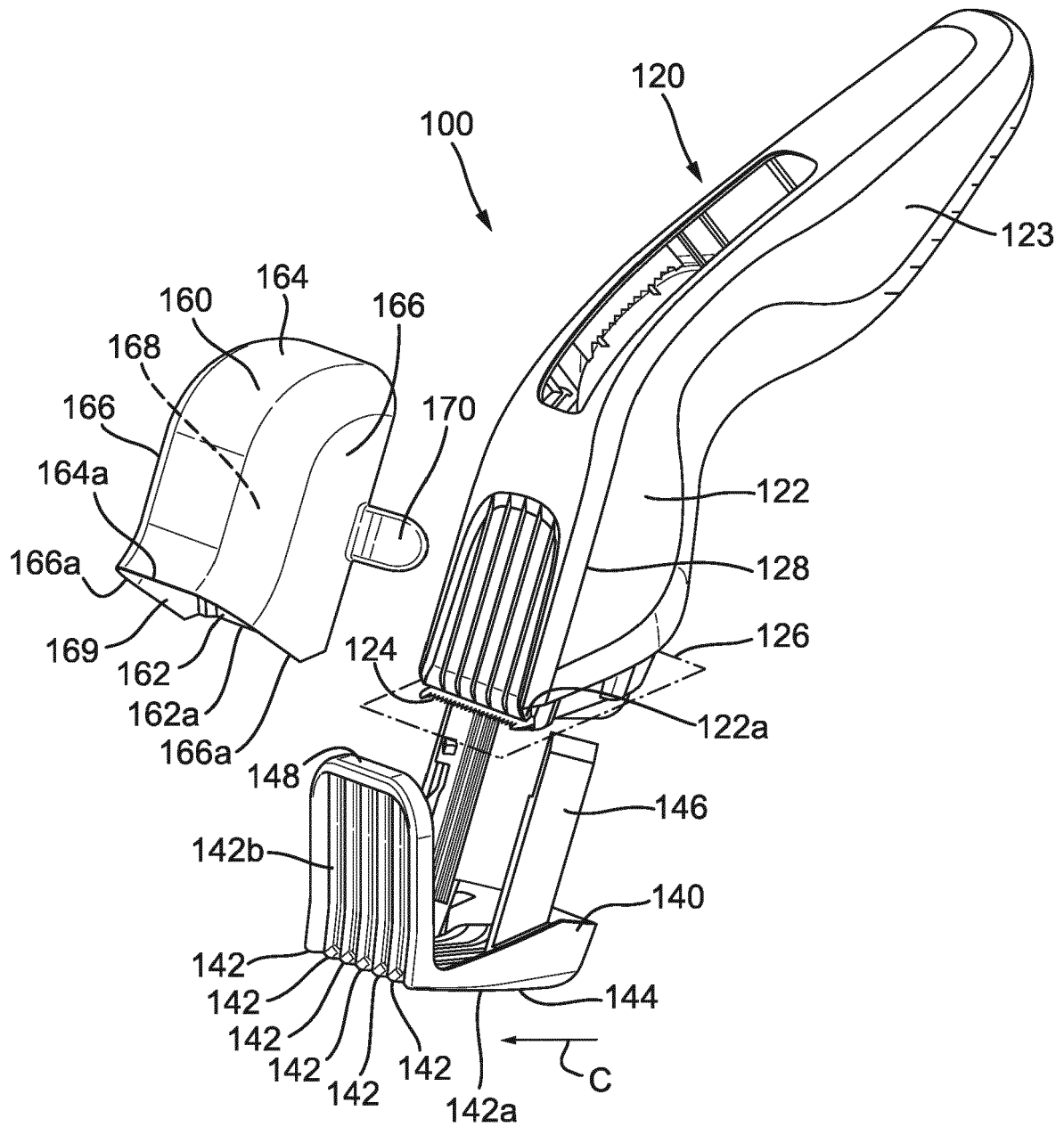


Fig. 3b

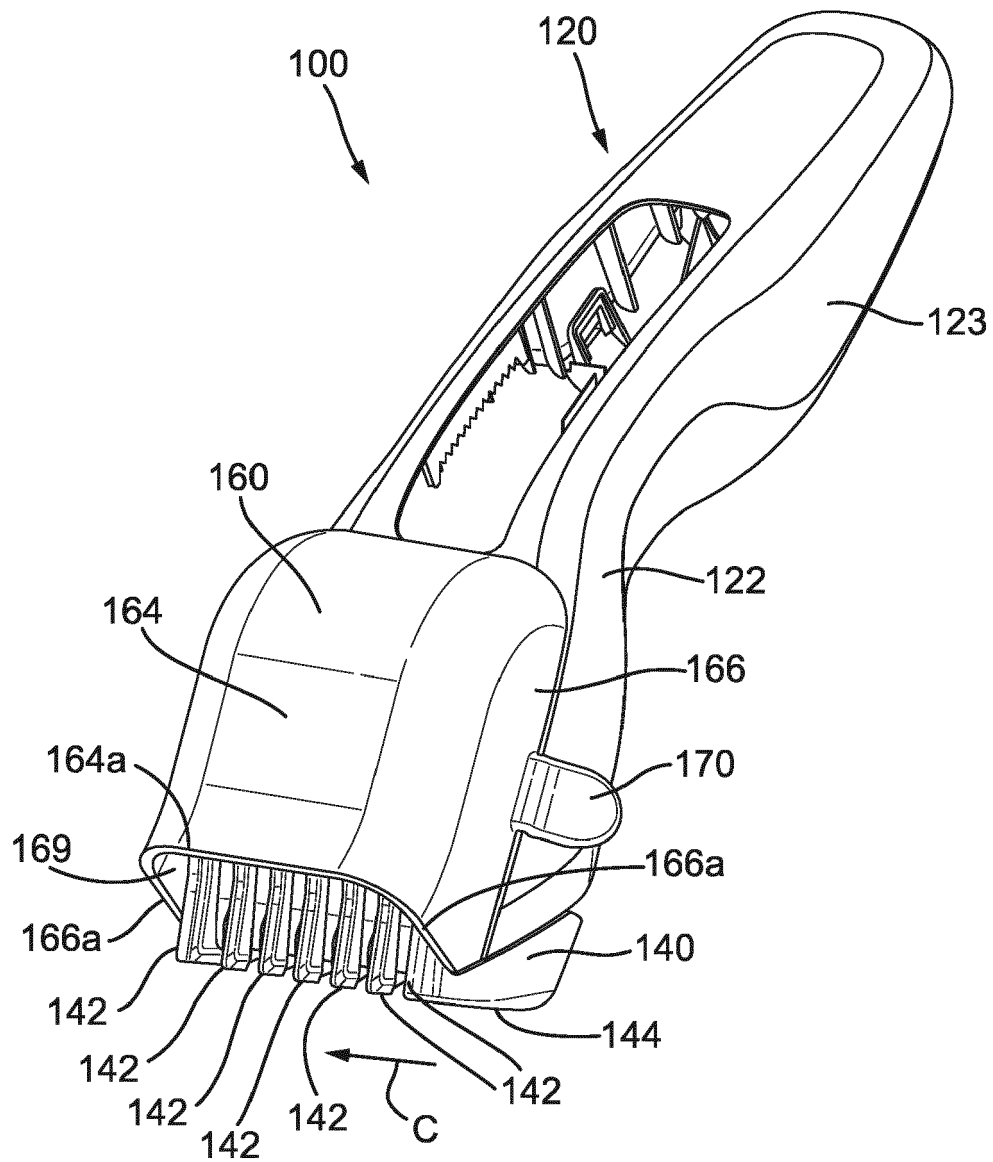


Fig. 4

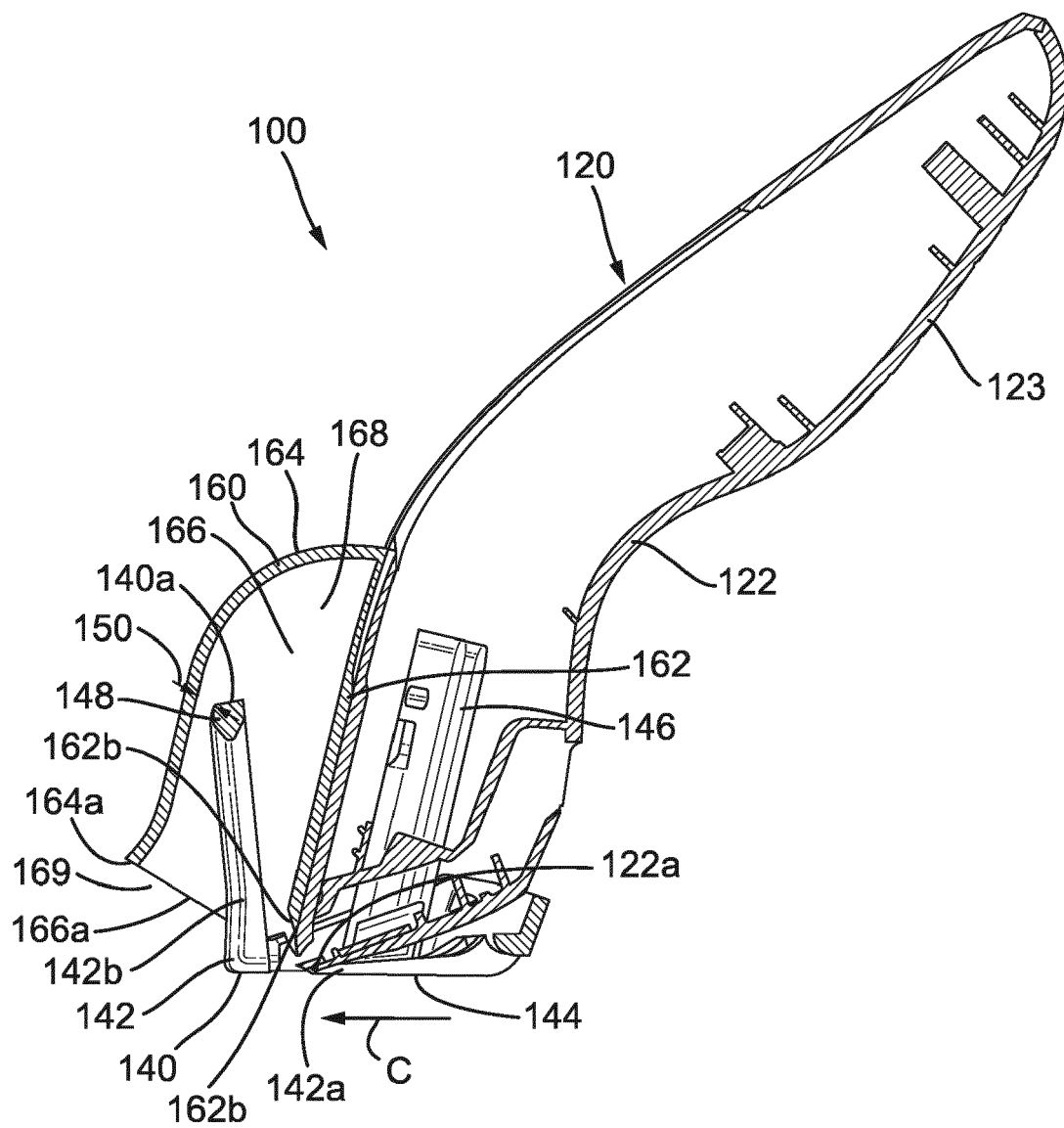


Fig. 5

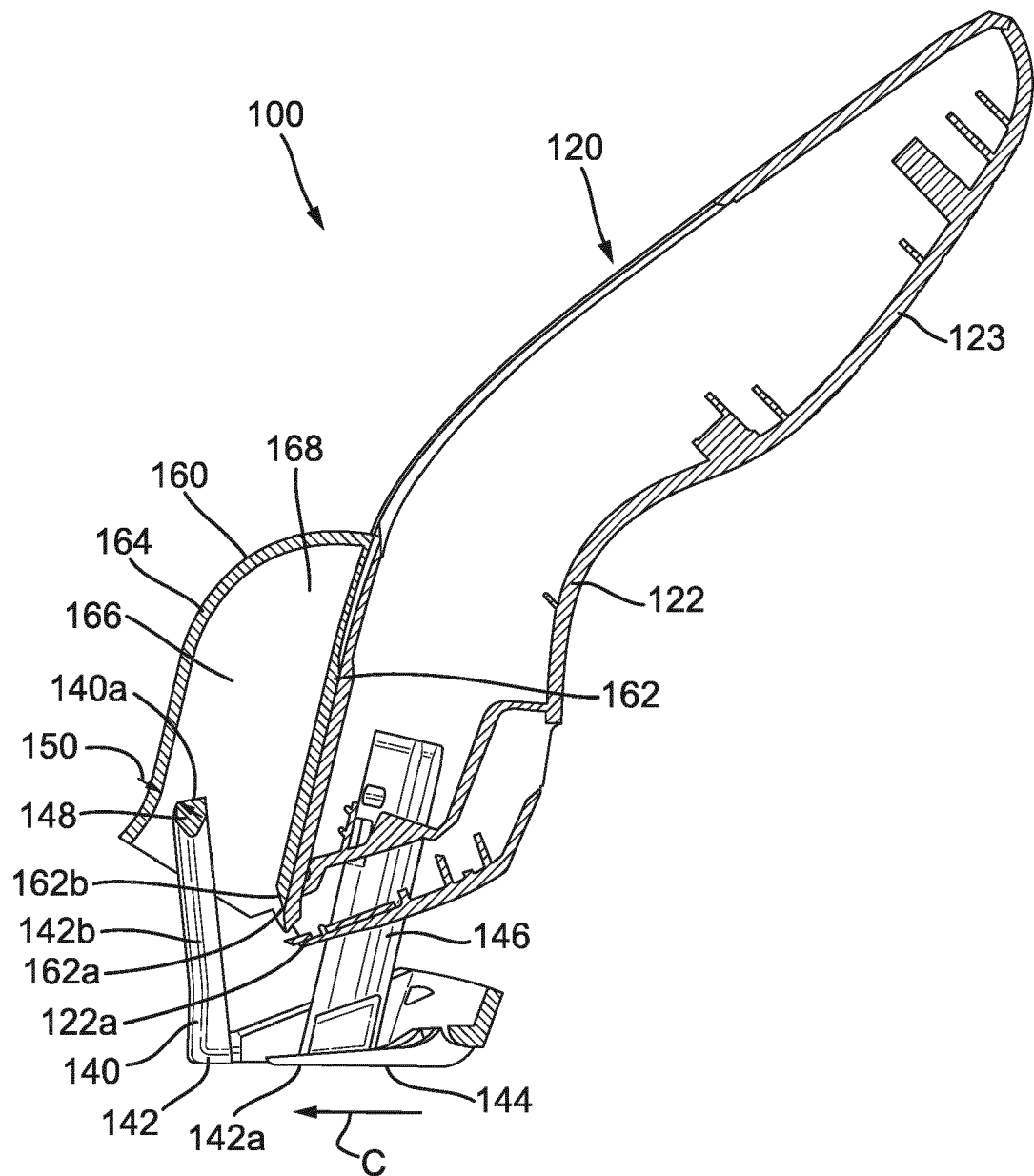


Fig. 6

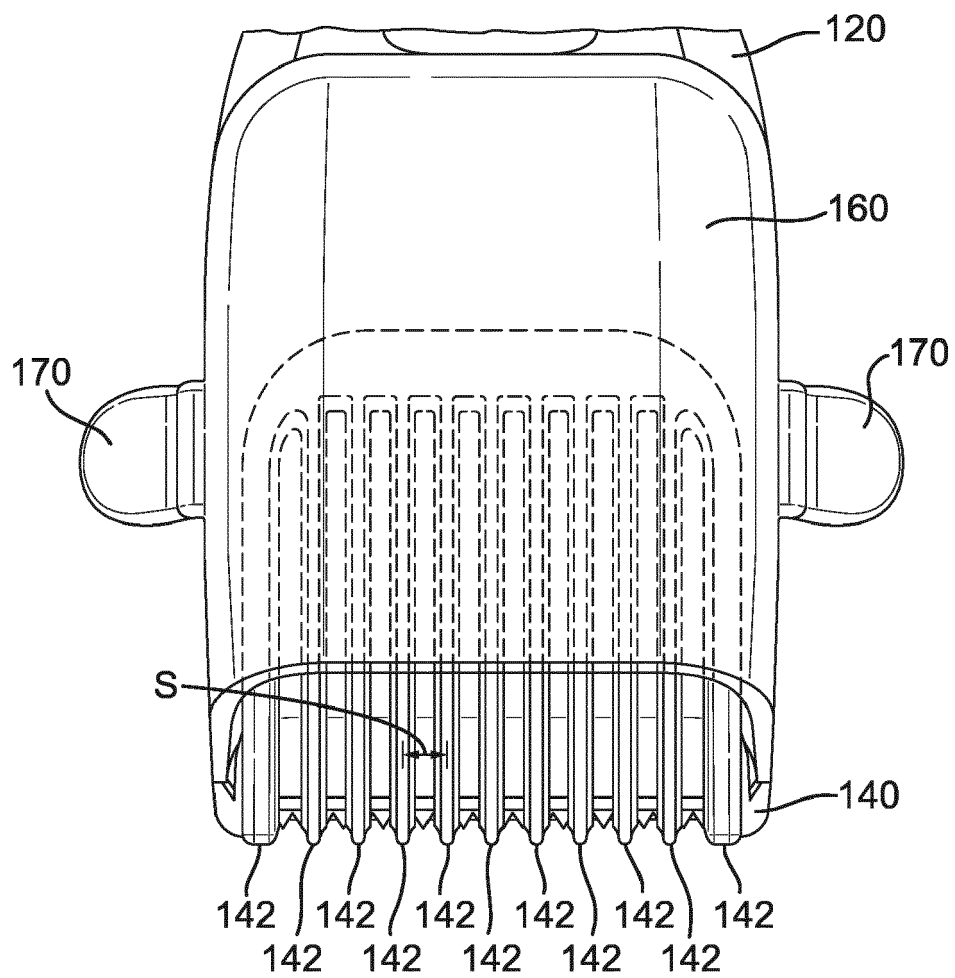


Fig. 7

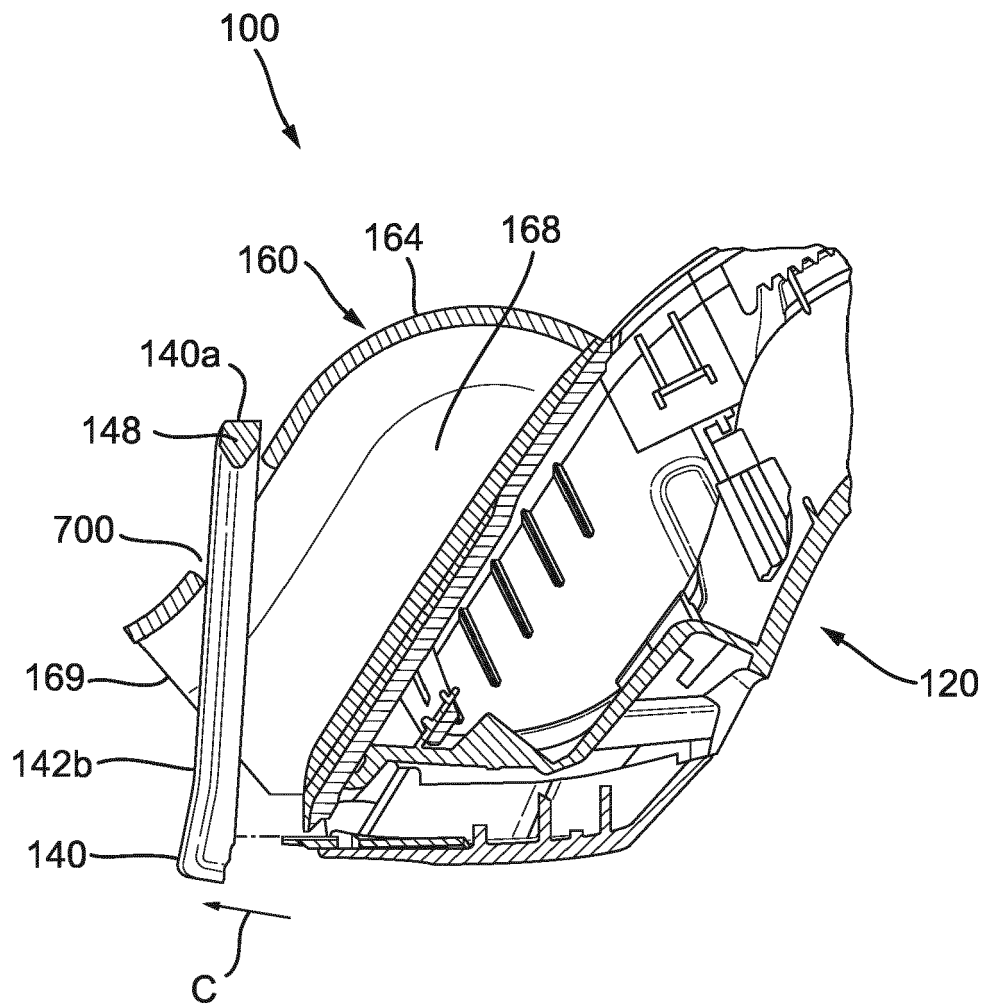


Fig. 8

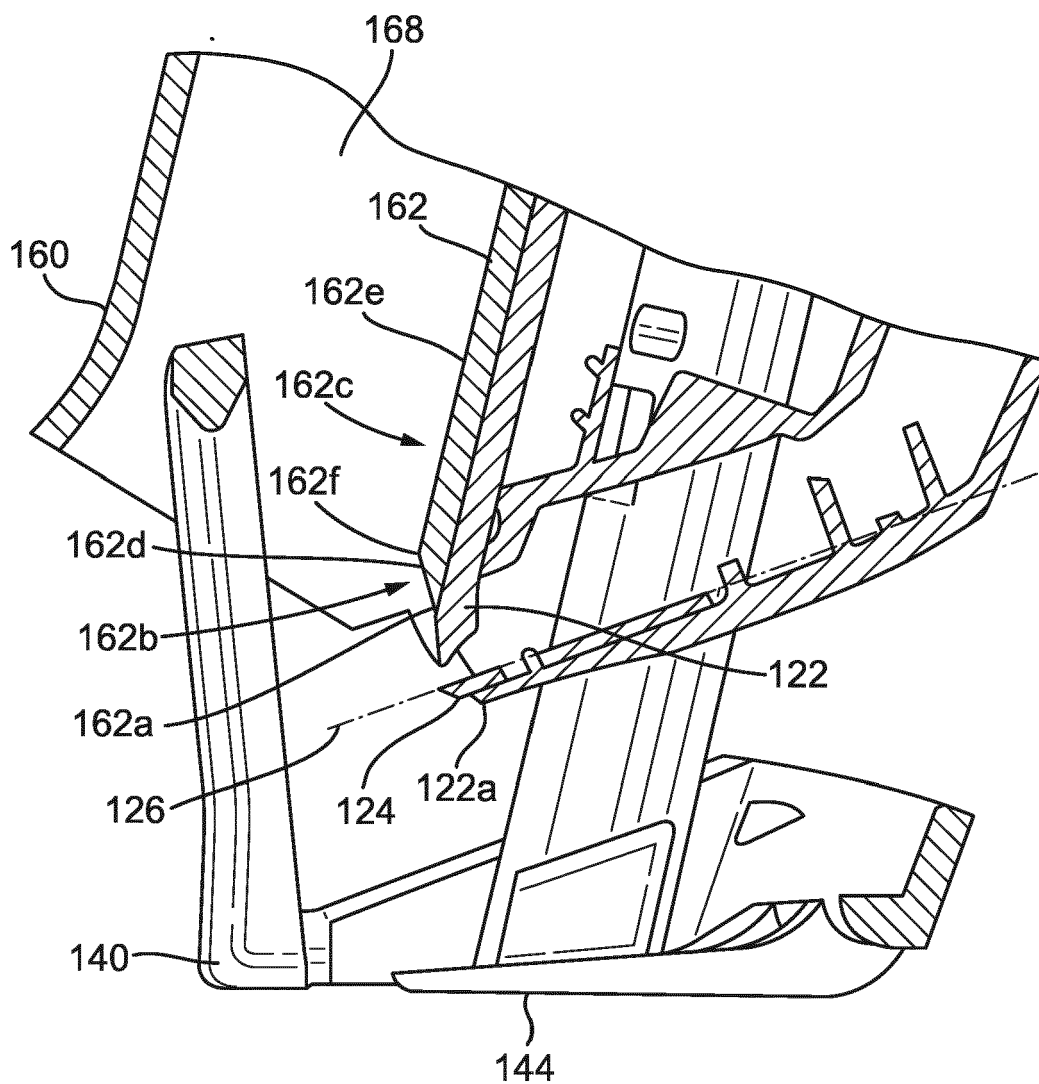


Fig. 9

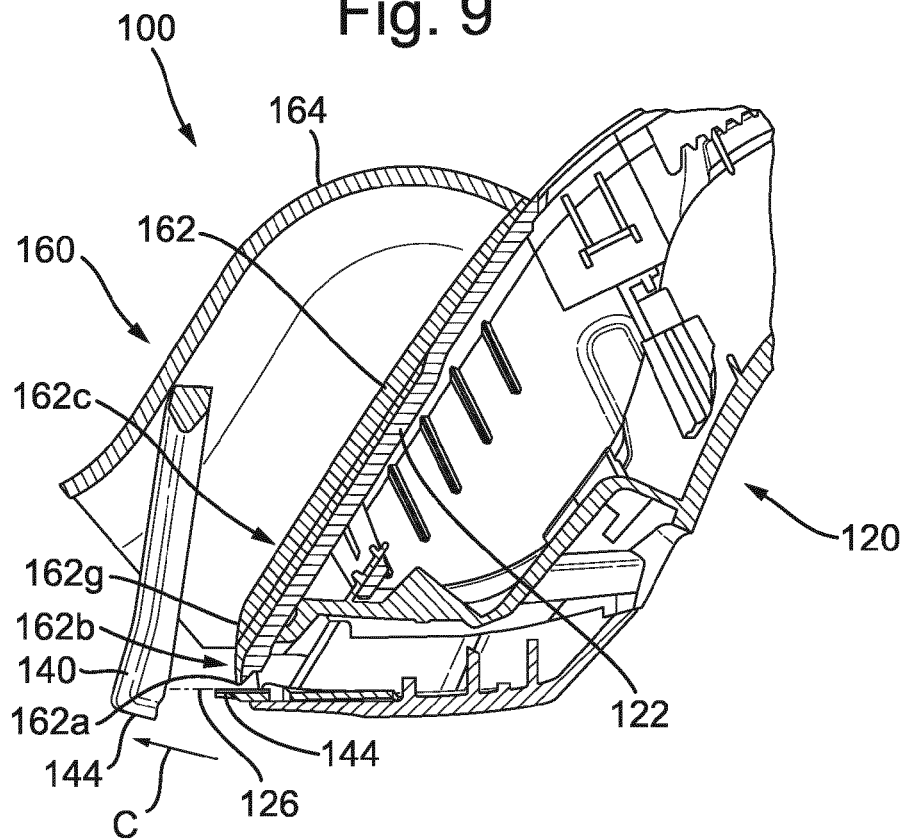


Fig. 10

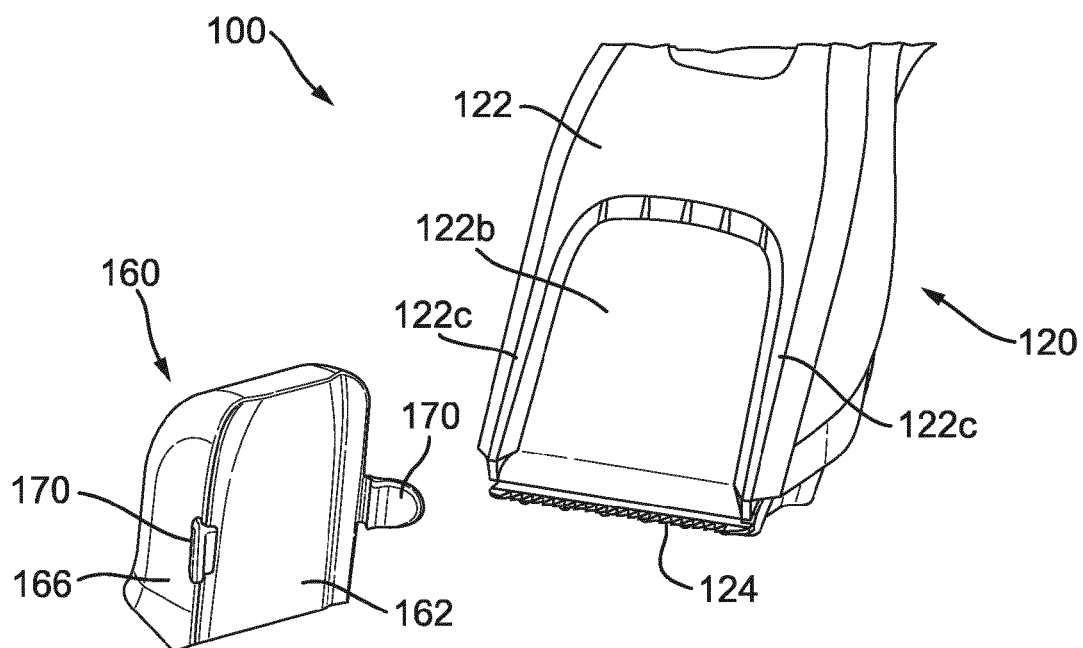
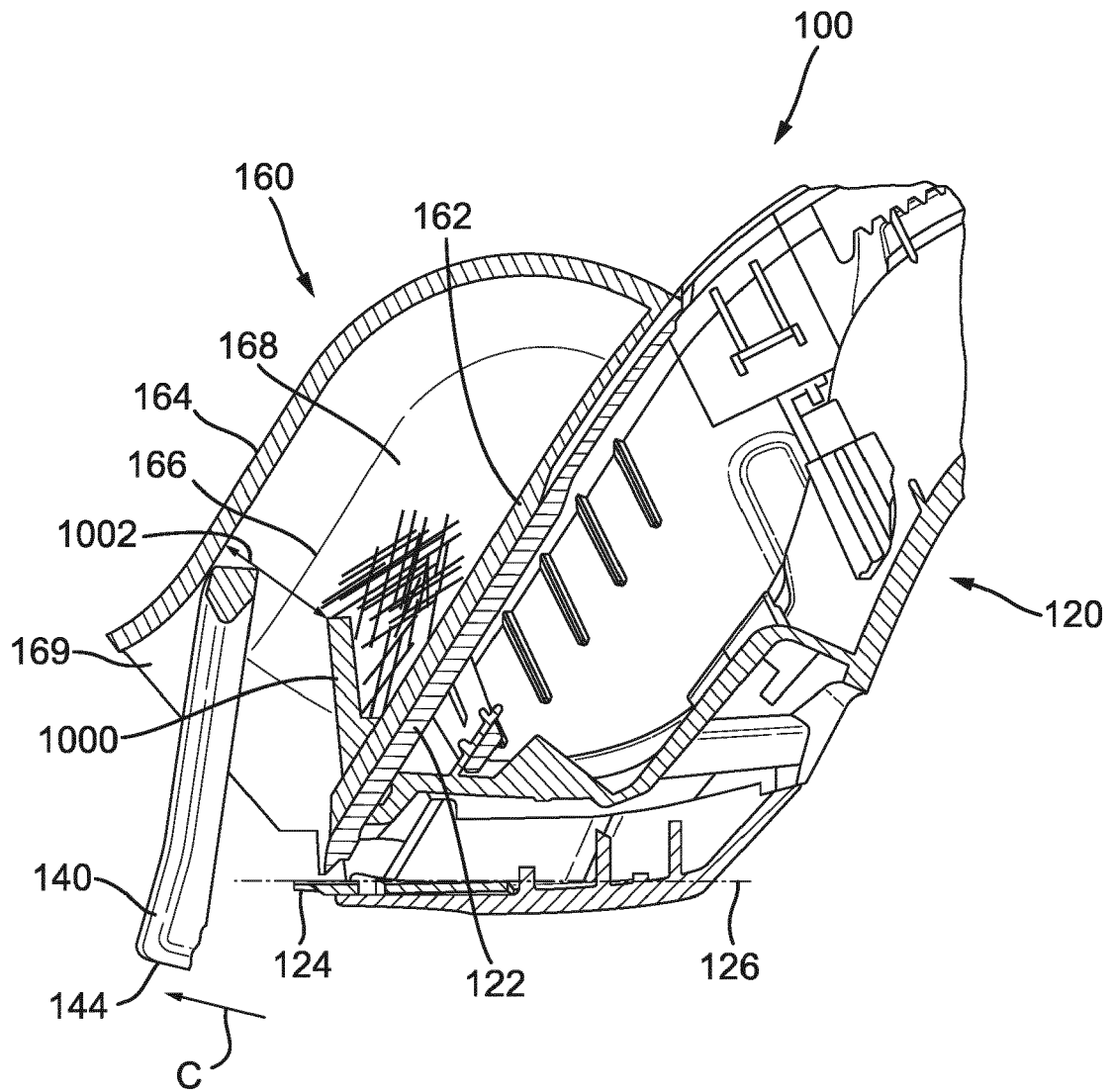


Fig. 11





EUROPEAN SEARCH REPORT

Application Number
EP 18 18 3076

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	WO 2017/084897 A1 (BABYLISS FACO SPRL [BE]) 26 May 2017 (2017-05-26) * paragraphs [0020] - [0027]; figures 1, 2, 4, 6 *	1,4-12, 15 2,3,13, 14	INV. B26B19/44 B26B19/20
X A	FR 2 809 049 A1 (BAMNIOUDIS PANAGIOTIS [FR]) 23 November 2001 (2001-11-23) * page 1, line 31 - page 2, line 12; figure 1 *	1,2,4-6, 11,13-15 3,7-10, 12	
X A	WO 2017/021202 A1 (KONINKLIJKE PHILIPS NV [NL]) 9 February 2017 (2017-02-09) * page 12, line 31 - page 13, line 20; figures 1-6 *	1,15 3	
X	US 621 439 A (WATSON G M) 21 March 1899 (1899-03-21) * page 1, lines 39-54; figures 1, 2 *	15	
			TECHNICAL FIELDS SEARCHED (IPC)
			B26B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 January 2019	Examiner Rattenberger, B
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

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

EP 18 18 3076

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-01-2019

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2017084897 A1	26-05-2017	BR 112018008252 A2	23-10-2018
		CA 3005777 A1	26-05-2017
		CN 108367444 A	03-08-2018
		EP 3377281 A1	26-09-2018
		US 2018345510 A1	06-12-2018
		WO 2017084897 A1	26-05-2017

FR 2809049 A1	23-11-2001	NONE	

WO 2017021202 A1	09-02-2017	BR 112018002193 A2	18-09-2018
		CN 107848130 A	27-03-2018
		EP 3331670 A1	13-06-2018
		JP 2018521772 A	09-08-2018
		US 2018222068 A1	09-08-2018
		WO 2017021202 A1	09-02-2017

US 621439 A	21-03-1899	NONE	
