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(71) Applicant: **Panasonic Electric Works Co., Ltd**
**Kadoma-shi**
**Osaka 571-8686 (JP)**

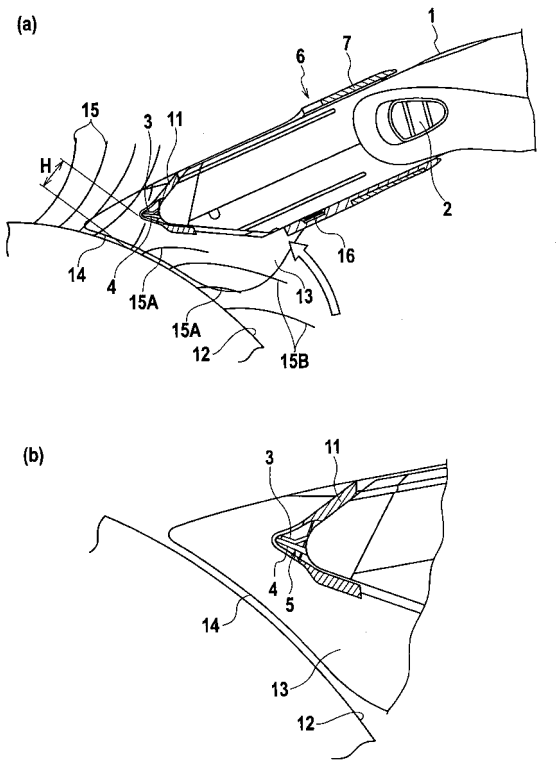
(72) Inventor: **NAKAKURA, Makoto**
**c/o Panasonic Electric Works Co., Ltd.**
**Osaka 571-8686 (JP)**

(74) Representative: **Appelt, Christian W.**
**Forrester & Boehmert**
**Pettenkoferstrasse 20-22**
**80336 München (DE)**

# (54) HAIR CUTTER

(57) A hair cutter for implementing a combing-cutting by being moved toward a head top, includes: a body (1) including: a blade block (5) which is a combination of a comb-shaped immovable blade (3) and a comb-shaped movable blade (4) which slidably contact each other, and a driver including a motor; a protector member (6) detachably mounted to the body (1) and capable of implementing the combing-cutting of hair (15) at a certain interval relative to a blade width of each of the immovable blade (3) and the movable blade (4); and a comb part (13) for keeping a distance (H) constant from a skin (12) to a point cut by the blade block (5).

FIG. 5

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## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to a hair cutter for cutting hair (head and body) by means of a comb-shaped immovable blade and a comb-shaped movable blade which slidably contact each other.

### BACKGROUND ART

**[0002]** A hair cutter is so configured that rotation of a motor and the like is converted into a reciprocation and then the reciprocation is transmitted to a movable blade so that the movable blade reciprocates relative to an immovable blade, to thereby cut the hair introduced to the immovable blade which is comb-shaped and slidably contacts the movable blade. Japanese Patent Application Laid-Open No. Showa 55 (1980)-47885 {= JP55047885 (A)} discloses the above hair cutter which is so configured as to implement combing-cutting.

**[0003]** Fig. 19(a), Fig. 19(b), Fig. 20(a) and Fig. 20(b) each show an example of a hair cutter capable of combing-cutting hair. For accomplishing the combing-cutting of hair, a combing-cutting attachment 104 for combing-cutting hair is mounted to a cutter body 103 having a blade block 102 including an immovable blade 100 and a movable blade 101, such that the attachment 104 covers the blade block 102.

**[0004]** Hooking a hook 106 with a holding hole 105 formed at the cutter body 103 fixes the combing-cutting attachment 104 to the cutter body 103. This combing-cutting attachment 104, which is formed into a cap, has a head end which includes cut protector parts 108 and groove parts 109, where the cut protector parts 108 suppress cutting of hair 107 at certain intervals while the groove parts 109 are capable of cutting the hair 107. The hair 107 entering the groove part 109 is cut by means of the immovable blade 100 and movable blade 101, while the hair 107 contacting the cut protector part 108 is protected from the cutting. As such, use of the combing-cutting attachment 104 can accomplish spurious combing-cutting of a surface of hair, without entirely cutting the hair contacting the blade.

### DISCLOSURE OF INVENTION

**[0005]** However, as shown in Fig. 19(b), thickness T of the cut protector part 108 is extremely small. As such, the combing-cutting attachment 104 excessively pressed on the hair (head) may extremely shorten length of the hair 107 to such an extent that the length of the hair 107 is as long as the thickness T of the cut protector part 108. In this case, the hair of a part not subjected to the combing-cutting attachment 104 becomes largely different in length from the hair of a part subjected to the combing-cutting attachment 104, thus causing what is called a hole (baldness) where only a part of the hair 107 is shortened.

**[0006]** In addition, the above hair cutter is configured to be used from a head (vertex) to a fringe (patting the hair cutter upper to lower). As such, a part where the cutter body 103 contacts the hair 107 may cause a line (due to the cutting which is started from the above contact part of the cutter body 103). Thus, finish is likely to be unnatural.

**[0007]** Then, the present invention solves the above conventional subject. It is an object of the present invention to provide a hair cutter which is capable of combing-cutting without causing holes and prevents unnatural finish.

**[0008]** According an aspect of the present invention, a hair cutter for implementing a combing-cutting by being moved toward a head top, comprises: a body including: a blade block which is a combination of a comb-shaped immovable blade and a comb-shaped movable blade which slidably contact each other, and a driver including a motor; a protector member detachably mounted to the body and capable of implementing the combing-cutting of hair at a certain interval relative to a blade width of each of the immovable blade and the movable blade; and a comb part for keeping a distance constant from a skin to a point cut by the blade block.

### BRIEF DESCRIPTION OF DRAWINGS

**[0009]**

[Fig. 1] Fig. 1(a) is a perspective view of a cutter body according to an embodiment 1, with a hair cutter viewed from a first direction; while Fig. 1(b) is a perspective view of the hair cutter body according to the embodiment 1, with the hair cutter viewed in a second direction.

[Fig. 2] Fig. 2(a) is a perspective view of a combing-cutting attachment of the hair cutter according to the embodiment 1; while Fig. 2(b) is a plan view of the combing-cutting attachment of the hair cutter according to the embodiment 1.

[Fig. 3] Fig. 3(a) is a plan view of a comb member of the combing-cutting attachment of the hair cutter according to the embodiment 1; while Fig. 3(b) is a plan view of a base of the combing-cutting attachment of the hair cutter according to the embodiment 1. [Fig. 4] Fig. 4 is a perspective view showing a head end part of the hair cutter according to the embodiment 1.

[Fig. 5] Fig. 5(a) shows the head end part of the hair cutter according to the embodiment 1, with hair being cut; while Fig. 5(b) shows the head end part of the hair cutter according to the embodiment 1, which figure is an enlarged cross sectional view of an essential part of the head end part.

[Fig. 6] Fig. 6 is a perspective view of the comb member of the hair cutter according to an embodiment 2.

[Fig. 7] Fig. 7(a) shows the head end part of the hair cutter according to the embodiment 2, which figure

is a cross sectional view of the head end part; while Fig. 7(b) shows the head end part of the hair cutter according to the embodiment 2, which figure is an enlarged cross sectional view with the hair being cut.

[Fig. 8] Fig. 8(a) shows the combing-cutting attachment of the hair cutter according to an embodiment 3, which figure is a perspective view showing a state before a combing-cutting member slides relative to a comb member; while Fig. 8(b) shows the combing-cutting attachment of the hair cutter according to the embodiment 3, which figure is a perspective view showing a state after the combing-cutting member slid relative to the comb member.

[Fig. 9] Fig. 9 is an exploded perspective view of the combing-cutting attachment according to the embodiment 3.

[Fig. 10] Fig. 10(a) shows the hair cutter according to the embodiment 3, which figure is a cross sectional view showing a state before the combing-cutting member slides relative to the comb member; while Fig. 10(b) shows the hair cutter according to the embodiment 3, which figure is a cross sectional view showing a state after the combing-cutting member slid relative to the comb member.

[Fig. 11]Fig. 11(a) is a perspective view showing the head end part of the hair cutter according to an embodiment 4, while Fig. 11(b) is a cross sectional view showing the head end part of the hair cutter according to the embodiment 4.

[Fig. 12] Fig. 12(a) shows the head end part of the comb member according to an embodiment 5, which figure is an enlarged plan view of an essential part and shows an example of cuttable positions having intervals made random relative to the blade block, while Fig. 12(b) shows the head end part of the comb member according to the embodiment 5, which figure is an enlarged plan view of an essential part and shows another example of cuttable positions having intervals made random relative to the blade block.

[Fig. 13] Fig. 13 shows an example that a hair holding member of the hair cutter according to an embodiment 6 is made movable in an operational direction relative to the cut point, which figure is a perspective view with the hair holding member detached from the comb member.

[Fig. 14] Fig. 14(a) shows an example that the hair holding member of the hair cutter according to the embodiment 6 is made movable in the operational direction relative to the cut point, which figure is a perspective view with the hair holding member slid in a first direction relative to the comb member; while Fig. 14(b) shows an example that the hair holding member of the hair cutter according to the embodiment 6 is made movable in the operational direction relative to the cut point, which figure is a perspective view with the hair holding member slid in a second direction relative to the comb member. [Fig. 15] Fig. 15(a) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid nearside, which figure is a cross sectional view of the head end part of the hair cutter; while Fig. 15(b) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid nearside, which figure is an enlarged cross sectional view of an essential part of the head end part of the hair cutter. [Fig. 16] Fig. 16(a) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid forward, which figure is a cross sectional view of the head end part of the hair cutter; while Fig. 16(b) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid forward, which figure is a cross sectional view of an essential part of the head end part of the hair cutter.

[Fig. 17] Fig. 17 is an enlarged perspective view of an essential part, showing the head end part of the hair cutter according to an embodiment 7.

[Fig. 18] Fig. 18 is a plan view of the combing-cutting attachment of the hair cutter according to an embodiment 8.

[Fig. 19] Fig. 19(a) shows an example of a conventional hair cutter, which figure is a perspective view of the hair cutter with a combing-cutting attachment fitted to a cutter body; while Fig. 19(b) shows a state that the conventional hair cutter is cutting hair. [Fig. 20] Fig. 20(a) shows an example of the conventional hair cutter, which figure is a plan view of the combing-cutting attachment; while Fig. 20(b) is an enlarged perspective view of an essential part and shows the head end part of the conventional hair cutter.

## BEST MODE FOR CARRYING OUT THE INVENTION

**[0010]** Hereinafter, specific embodiments of the present invention are to be set forth referring to drawings.

[Embodiment 1]

**[0011]** Fig. 1(a) is a perspective view of a cutter body according to an embodiment 1, with a hair cutter viewed from a first direction, Fig. 1(b) is a perspective view of the hair cutter body according to the embodiment 1, with the hair cutter viewed in a second direction, Fig. 2(a) is a perspective view of a combing-cutting attachment of the hair cutter according to the embodiment 1, and Fig. 2(b) is a plan view of the combing-cutting attachment of the hair cutter according to the embodiment 1. Fig. 3 (a) is a plan view of a comb member of the combing-cutting attachment of the hair cutter according to the embodiment 1, Fig. 3(b) is a plan view of a base of the combing-cutting attachment of the hair cutter according to the embodiment 1, Fig. 4 is a perspective view showing a head end part of the hair cutter according to the embodiment

1, Fig. 5 (a) shows the head end part of the hair cutter according to the embodiment 1, with hair being cut; and Fig. 5(b) shows the head end part of the hair cutter according to the embodiment 1, which figure is an enlarged cross sectional view of an essential part of the head end part.

**[0012]** As shown in Fig. 1 to Fig. 4, a hair cutter includes a cutter body 1, a switch handle 2 for turning on and off the cutter body 1 for operation, a blade block 5 formed by combining a comb-shaped immovable blade 3 and a comb-shaped movable blade 4 which slidably contact each other, and a combing-cutting attachment 6 as a protector member capable of combing-cutting.

**[0013]** The cutter body 1 includes a driver (not shown) such as motor and the like for reciprocating the movable blade 4 rightward and leftward relative to the immovable blade 3. Sliding the switch handle 2 for turning on the switch handle 2 operates the above driver, thus converting the motor's rotation into a reciprocation to thereby swing the movable blade 4 rightward and leftward relative to the immovable blade 3. In this case, entering an area between the immovable blade 3 and the movable blades 4, hair (head) or hair (body) is cut which hair includes that of human being or animal. This embodiment is to be set forth as an example of cutting the hair (head).

**[0014]** The black 5 includes the immovable blade 3 which is serrated and the blade which is also serrated. The immovable blade 3 is fixed to the cutter body 1. The movable blade 4 is mounted to the cutter body 1 in such a manner as to reciprocate rightward and leftward relative to the immovable blade 3.

**[0015]** The combing-cutting attachment 6 includes a base 7 and a comb member 8 fixed to the base 7. The comb member 8 is fixed to the base 7 by means of such fixing operations as welding or adhering, and the base 7 is fitted to the cutter body 1. The comb member 8 includes cut protector parts 9 and a combing-cutting member 11, where the cut protector parts 9 are capable of combing-cutting at certain intervals relative to blade widths of the immovable blade 3 and movable blade 4 while the combing-cutting member 11 is formed with cut grooves 10. Moreover, the comb member 8 has a plurality of comb parts 13 formed at pitches same as those of the cut protector parts 9, where the comb parts 13 keep a distance H constant between a scalp 12 (skin) and a point cut by the blade block 5.

**[0016]** The comb part 13 is so formed as to extend forward from a head end of the comb member 8 and has a contact face 14 for contacting the scalp 12. The distance H from the contact face 14 of the comb part 13 to the cut point is sufficiently secured so as not to extremely shorten hair 15 and not to cause a hole.

**[0017]** Then, the comb member 8 has a holding position hole 17 which is so mated with an attachment lock button 16 of the cutter body 1 as to fix a position for mounting the combing-cutting attachment 6 to the cutter body 1. Forming a plurality of holding position holes 17 can arbitrarily vary the positions for mounting the combing-cutting attachment 6 to the cutter body 1.

**[0018]** In addition, the attachment lock button 16, which is interlocked with the switch handle 2, ordinarily sinks inward in the cutter body 1 by means of an elastic member. Turning on the switch handle 2 protrudes the attachment lock button 16 from a surface of the cutter body 1, thereby mating the attachment lock button 16 with the holding position hole 17. As a result, detaching of the combing-cutting attachment 6 during operation can be made incapable, thereby preventing unconsidered position movement during usage to thereby prevent a possible combing-cutting failure.

**[0019]** In addition, an extended part 18 is so disposed at either end of the base 7 as to extend forward. A horizontal cross sectional view of the extended part 18 (hair cutter viewed from sideward) is substantially the same as that of a head end part of the comb part 13. In addition, the extended part 18 is formed thicker than the comb part 13, preventing breakage of the comb part 13 in such cases as drop and the like. Like the contact face 14 of the comb part 13, the extended part 18 has a contact face 19 for contacting the scalp 12, thus keeping the distance H constant from the scalp 12 to the cut point. This is the extended part 18's function as a comb part. It is preferable to provide the extended part 18 for preventing breakage of the comb part 13 in such cases as drop and the like, as set forth above. However, the extended part 18 may be omitted.

**[0020]** With the hair cutter having the above structure, allowing the combing-cutting attachment 6 (substantially, the contact face 14 of the comb part 13 and the contact face 19 of the extended part 18) to contact the scalp 12 and moving (striking up from lower to upper) the combing-cutting attachment 6 from a fringe toward a head top implements the combing-cutting, as shown in Fig. 5(a) and Fig. 5(b). Then, the hair 15 is caused to stand by being sandwiched between the comb parts 13 and by means of the combing-cutting member 11, thus cutting only hair 15A that is introduced into a cut groove 10. In this case, several divided hairs 15 enter an area between the comb parts 13. Therefore, providing the plurality of comb parts 13 can beatify finishing of the combing-cutting. Meanwhile, hair 15B contacting the cut protector part 9 goes through below the comb part 13 without being cut.

**[0021]** As set forth above, according to this embodiment, providing the comb part 13 (extended part 18) for keeping the distance H constant from the scalp 12 to the point cut by the blade block 5 can leave at least a length (equivalent to the above distance H) for the hair 15A introduced into the cut groove 10, thus preventing in advance the conventional inconvenience, that is, the extremely shortening of a part of the hair 15.

**[0022]** Moreover, according to this embodiment, the hair cutter is operated in such a manner as to strike the hair from the fringe toward the head top (striking up from lower to upper) in order to comb and cut the hair. Thereby, lines are unlikely to be caused on the hair surface, thus finishing the hair cut without failure and as beautifully as

the hair cut finish by a barber (hair dresser).

**[0023]** In addition, this embodiment discloses the structure where the combing-cutting attachment 6 is configured to include the comb member 8 and the base 7. Otherwise, providing the comb member for the conventional cap method (capping a combing-cutting attachment over a body) can bring about a like effect.

**[0024]** As set forth above, according to this embodiment, the comb part for keeping the distance constant from the skin to the point cut by the blade block is provided. As such, the comb part capable of keeping the distance constant from the skin to the cut point is unlikely to cause a hole and lines are unlikely to be caused on the hair surface, even when the barber (hair dresser)'s inherent combing-cutting (cutting inside hair by standing it, instead of cutting hair surface) is adopted and thereby varying operational directions toward the head top (striking up from lower to upper). As such, hair cut finish ("combing-cutting" for thinning hair volume without greatly changing the entire hair style) is, without failure, as beautiful as that by the barber.

[Embodiment 2]

**[0025]** Fig. 6 is a perspective view of the comb member of the hair cutter according to the embodiment 2, Fig. 7 (a) shows the head end part of the hair cutter according to the embodiment 2, which figure is a cross sectional view of the head end part, and Fig. 7(b) shows the head end part of the hair cutter according to the embodiment 2, which figure is an enlarged cross sectional view with the hair being cut.

**[0026]** In addition to the structure equivalent to the comb member 8 according to the embodiment 1, the combing-cutting member 11 according to the embodiment 2 includes a hair holding member 20. By pressing the hair 15, the hair holding member 20 allows the blade block 5 to cut the hair 15. A comb member 21 according to the embodiment 2 has parts similar to those of the comb member 8 according to the embodiment 1 although the above parts of the respective comb members 8, 21 are slightly different in configuration from each other. The comb member 21 according to the embodiment 2 includes the combing-cutting member 11 and the comb part 13, where the combing-cutting member 11 includes the cut protector part 9 and the cut groove 10.

**[0027]** As shown in Fig. 6 and Fig. 7, the hair holding member 20 is disposed above the blade block 5 and protrudes forward relative to the cut point. The hair holding member 20 has a head end part protruding forward relative to a cut line 22 which is perpendicular to the scalp 12 and connects the scalp 12 with the cut point. The hair holding members 20 are disposed between the comb parts 13, and outside the comb part 13 at either end.

**[0028]** As set forth above, with the hair cutter according to the embodiment 2, the hair holding member 20 is disposed forward relative to the cut point and the head end part of the hair holding member 20 protrudes forward relative to the cut line 22. As such, cutting the hair 15 by pressing and falling the hair 15 with the hair holding member 20 is allowed, instead of uniformly cutting the hair 15 from the scalp 12 at a shortest distance (from close to root of hair 15). With this, the hair 15 entering the cut point becomes random, thus accomplishing a more natural finish. As such, the hair cutter according to the embodiment 2 can prevent such an unnatural finish that the hair is partly extremely shortened.

**[0029]** By pressing the hair, the hair holding member allows the blade block to cut the hair, as set forth above according to this embodiment. As such, a structure that cutting the hair by pressing and falling the hair with the hair holding member is accomplished. With this, the shortest distance of the hair reaching the cut point can be extended, thus preventing the hair from being cut from close to the root of hair.

[Embodiment 3]

**[0030]** Fig. 8(a) shows the combing-cutting attachment of the hair cutter according to an embodiment 3, which figure is a perspective view showing a state before a combing-cutting member slides relative to a comb member, Fig. 8(b) shows the combing-cutting attachment of the hair cutter according to the embodiment 3, which figure is a perspective view showing a state after the combing-cutting member slid relative to the comb member, Fig. 9 is an exploded perspective view of the combing-cutting attachment according to the embodiment 3, Fig. 10(a) shows the hair cutter according to the embodiment 3, which figure is a cross sectional view showing a state before the combing-cutting member slides relative to the comb member, and Fig. 10(b) shows the hair cutter according to the embodiment 3, which figure is a cross sectional view showing a state after the combing-cutting member slid relative to the comb member.

**[0031]** Unlike the embodiment 1 where the combing-cutting member 11 for accomplishing the combing-cutting is integrated with the comb member 8, a comb member 23 is separated from a combing-cutting member 24 according to the embodiment 3. It is configured that the combing-cutting member 24 is so provided as to slide relative to the comb member 23, and the combing-cutting member 24 pressed by means of a coil spring 25 as an elastic member is caused to continuously closely contact the blade block 5.

**[0032]** Specifically, the combing-cutting member 24 includes, other than the cut protector part 9 and cut groove 10, a spring receiver 26 for receiving an elastic force by the coil spring 25, as shown in Fig. 8 and Fig. 9. The spring receiver 26, which is shaped substantially into an alphabetical L in plan view, is integrated with the combing-cutting member 24 at either end of the combing-cutting member 24.

**[0033]** The comb member 23 includes the comb part 13 and holding position holes 17A, 17B, where the comb part 13 keeps the distance H constant from the scalp 12

to the point cut by the blade block 5 while the holding position holes 17A, 17B fix the position for mounting the combing-cutting attachment 6 to the cutter body 1. The holding position holes 17A, 17B are disposed at respective two positions along a longitudinal direction, so as to vary the position for mounting the combing-cutting attachment 6 to the cutter body 1. Varying the position for mounting the combing-cutting attachment 6 to the cutter body 1 can further enlarge the distance H from the scalp 12 to the cut point, thus varying stepwise the length of the hair 15 through the combing-cutting.

**[0034]** Like the base 7 according to the embodiment 1, a base 27 includes the extended part 18 having a function same as that of the comb part 13. In addition, the base 27 includes a coil spring holder 28 for housing therein the coil spring 25 and receiving the elastic force by the coil spring 25. The coil spring holder 28 for housing therein the coil spring 25 is shaped into a rectangular parallelepiped and protrudes on a sideface of each of the extended parts 18. The coil spring 25 housed in the coil spring holder 28 is so configured that a first end part thereof is caused to contact an inner wall of the coil spring holder 28 while a second end part thereof is caused to contact the spring receiver 26, thus continuously biasing the combing-cutting member 24 in a direction away from the head end of the comb part 13 to thereby allow the combing-cutting member 24 to closely contact the blade block 5.

**[0035]** With the hair cutter according to the embodiment 3, as shown in Fig. 10, the combing-cutting member 24 pressed by means of the coil spring 25 is continuously disposed in such a position that the combing-cutting member 24 is moved in a direction away from the comb part 13. As such, even when the position for mounting the combing-cutting attachment 6 is made movable, the combing-cutting member 24 continuously closely contacts the blade block 5, thus causing a possible cutting disability which may be caused when the hair clogs in a gap formed between the combing-cutting member 24 and the cutter body 1.

**[0036]** As set forth above, according to this embodiment, the protector member is pressed by means of the elastic member to be continuously closely contact the blade block. As such, the cutting disability can be prevented, which may be finally caused when a hair remnant stays in a gap formed between the protector member and the blade block.

[Embodiment 4]

**[0037]** Fig. 11 (a) is a perspective view showing the hair cutter according to an embodiment 4, while Fig. 11 (b) is a cross sectional view showing the head end part of the hair cutter according to the embodiment 4.

**[0038]** According to the embodiment 4, the comb part 13's contact face 14 for contacting the scalp 12 is formed substantially into a flat face. The embodiment 4 is applicable to any of the embodiment 1 to the embodiment 3. The contact face 14 is defined as a substantially flat face. According to this embodiment, however, the contact face 14 is to include such a face as has a curvature radius along the scalp 12.

**[0039]** In addition, like the contact face 14 of the comb part 13, the extended part 18's contact face 19 on the base 7 is formed substantially into a flat face.

**[0040]** The hair cutter having the above structure where the contact face 14 of the comb part 13 is substantially flat, this face works for accomplishing a visual recognition of the operational direction, thus preventing misuse of the hair cutter in the wrong direction.

**[0041]** As set forth above, according to this embodiment, the substantially flat face for contacting the skin is provided at a part of the comb member. As such, this face accomplishes visual recognition of the operational direction, thus further preventing misuse.

**[0042]** Fig. 12(a) shows the head end part of the comb member according to an embodiment 5, which figure is an enlarged plan view of an essential part and shows an example of cuttable positions having intervals made random relative to the blade block, while Fig. 12(b) shows the head end part of the comb member according to the embodiment 5, which figure is an enlarged plan view of an essential part and shows another example of cuttable positions having intervals made random relative to the blade block.

[Embodiment 5]

**[0043]** According to the embodiment 5, the combing-cutting member 11 according to the embodiment 1 has such a structure that the cut grooves 10 are disposed randomly relative to the blade block 5. In Fig. 12(a) and Fig. 12(b), pads 29 are embedded in the respective cut grooves 10 such that the cut grooves 10 are formed every other or irregularly. Otherwise, the cut groove 10's portion for the pad 29 can be formed with the cut protector part 9.

**[0044]** With the hair cutter having the above structure, length of the hair 15 after cutting can be finished more randomly, thus accomplishing more natural finish.

**[0045]** As set forth above, according to this embodiment, the intervals of the cuttable positions of the protector member are random relative to the blade block, thus making random the cuttable points relative to blade width to thereby accomplish a more natural finish.

[Embodiment 6]

**[0046]** Fig. 13 shows an example that a hair holding member of the hair cutter according to an embodiment 6 is made movable in the operational direction relative to the cut point, which figure is a perspective view with the hair holding member detached from the comb member, Fig. 14(a) shows an example that the hair holding member of the hair cutter according to the embodiment 6 is made movable in the operational direction relative to the cut point, which figure is a perspective view with

the hair holding member slid in a first direction relative to the comb member, and Fig. 14(b) shows an example that the hair holding member of the hair cutter according to the embodiment 6 is made movable in the operational direction relative to the cut point, which figure is a perspective view with the hair holding member slid in a second direction relative to the comb member. Fig. 15(a) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid nearside, which figure is a cross sectional view of the head end part of the hair cutter, Fig. 15(b) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid nearside, which figure is an enlarged cross sectional view of an essential part of the head end part of the hair cutter, Fig. 16(a) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid forward, which figure is a cross sectional view of the head end part of the hair cutter, and Fig. 16(b) shows the head end part of the hair cutter according to the embodiment 6 and shows an example that the hair holding member is slid forward, which figure is a cross sectional view of an essential part of the head end part of the hair cutter.

**[0047]** According to the former embodiment 2, the hair holding member 20 is integrated with the combing-cutting member 11. Meanwhile, according to the embodiment 6, as shown in Fig. 13 and Fig. 14, a hair holding member 30 is separated from a combing-cutting member 31. Relative to the comb part 13, the hair holding member 30 is made movable in the operational direction of the hair cutter.

**[0048]** The hair holding member 30 includes a plurality of hair pressing parts 32 for pressing the hair 15 and a connecting part 33 for connecting the hair pressing parts 32. The hair pressing parts 32 are separated into a plurality of pieces. Each of the comb parts 13 is allowed to enter a gap 35 between the hair pressing parts 32. The comb part 13 entering the gap 35 allows the hair holding member 30 to slide relative to the comb member 8. One of the opposing hair pressing parts 32 sandwiching therebetween the gap 35 at either end includes two positioning groves, that is, positioning grooves 36A, 36B for varying sliding positions of the hair holding member 30. A positioning protrusion 34 disposed at the comb part 13 at either end mates with the positioning grooves 36A, 36B.

**[0049]** For moving the hair holding member 30 closer to the blade block 5, the positioning protrusion 34 is caused to mate with the forward positioning groove 36A, as shown in Fig. 14(a) and Fig. 15. Meanwhile, for moving the hair holding member 30 away from the blade block 5, the positioning protrusion 34 is caused to mate with the rearward positioning groove 36A, as shown in Fig. 14(b) and Fig. 16.

**[0050]** Other than the cut protector part 9 and cut groove 10, the combing-cutting member 31 includes a guide nail part 37 for guiding the sliding operation of the hair holding member 30. The guide nail part 37, which mates with a side end part of the hair pressing part 32 at either end, guides the hair holding member 30' sliding operation relative to the comb part 13. For sliding the hair holding member 30, a finger is hooked with the connecting part 33.

**[0051]** With the hair cutter having the above structure, the hair holding member 30 is so made as to slide in a direction closer to and away from the cut point. As such, falling quantity of the hair 15 can be adjusted, thus varying the volumes and lengths of the to-be-cut hair depending on places.

**[0052]** According to this embodiment, the hair holding member is made movable in the operational direction relative to the cut point. As such, the hair's falling quantity by means the hair holding member is adjustable, thus arbitrarily adjusting cutting quantity.

[Embodiment 7]

**[0053]** Fig. 17 an enlarged perspective view of an essential part, showing the head end part of the hair cutter according to an embodiment 7.

**[0054]** According to the embodiment 7, the hair holding member 20's contact face with the hair 15 is non-linear, instead of linear according to the former embodiment 2.

**[0055]** Specifically, positions of head end faces 20A to 20G (of the hair holding member 20) to have a contact with the hair 15 are, as shown in Fig. 17, arranged non-linearly, instead of being disposed on one line, such that the head end faces 20A to 20G are deviated from each other fore and aft.

**[0056]** With the hair cutter having the above structure where the hair holding member 20's contact face with the hair 15 is non-linear, volumes and length of the to-be-cut hair can be varied depending on places. As a result, cutting can be made random, thus adjusting to a natural finish.

**[0057]** As set forth above, according to this embodiment, the hair holding member's contact face with the hair is made non-linear, thus partly varying the hair's minimum distance to the cut point, to thereby accomplish a random cutting, adjusting to a natural finish.

[Embodiment 8]

**[0058]** Fig. 18 is a plan view of the combing-cutting attachment of the hair cutter according to an embodiment 8.

**[0059]** The embodiment 8 omits the comb part 13 according to the embodiment 1. In place of the comb part 13 which keeps the distance constant from the scalp 12 to the cut point, the extended part 18 is disposed on the base 7. For improving finish of the combing-cutting, the comb part 13 is preferable. However, as long as the distance H from the scalp 12 is kept, the effect of the present invention can be accomplished, and therefore the comb

part 13 is not necessarily needed.

INDUSTRIAL APPLICABILITY

**[0060]** Under the present invention, the comb part for keeping the distance constant from the scalp to the point cut by the blade block is provided. As such, the comb part capable of keeping the distance constant from the skin to the cut point is unlikely to cause a hole and lines are unlikely to be caused on the hair surface, even when the barber (hair dresser)'s inherent combing-cutting (cutting inside hair by standing it, instead of cutting hair surface) is adopted and thereby varying operational directions toward the head top (striking up from lower to upper). As such, hair cut finish ("combing-cutting" which thins hair volume without greatly changing the entire hair style) is, without failure, as beautiful as that by the barber.

**Claims**

**1.** A hair cutter for implementing a combing-cutting by being moved toward a head top, comprising:

a body including:

a blade block which is a combination of a comb-shaped immovable blade and a comb-shaped movable blade which slidably contact each other, and
a driver including a motor;

a protector member detachably mounted to the body and capable of implementing the combing-cutting of hair at a certain interval relative to a blade width of each of the immovable blade and the movable blade; and
a comb part for keeping a distance constant from a skin to a point cut by the blade block.

**2.** The hair cutter according to claim 1, further comprising:

a hair holding member disposed above the blade block in such a configuration as to:

protrude forward relative to the cut point, and
cut the hair with the blade block by pressing the hair.

**3.** The hair cutter according to claim 1, wherein the protector member includes:

a base,
a comb member adapted to be mounted to the base and having the comb part, and
a combing-cutting member slidable relative to the comb member, and the combing-cutting member is pressed with an elastic member to continuously closely contact the blade block.

**4.** The hair cutter according to claim 1, wherein a part of the comb member has substantially a flat face for contacting the skin.

**5.** The hair cutter according to claim 1, wherein intervals of cuttable positions of the protector member are random relative to the blade block.

**6.** The hair cutter according to claim 2, wherein the hair holding member is movable in an operational direction relative to the cut point.

**7.** The hair cutter according to claim 2, wherein the hair holding member and the hair has a contact face which is non-linear.

FIG. 1

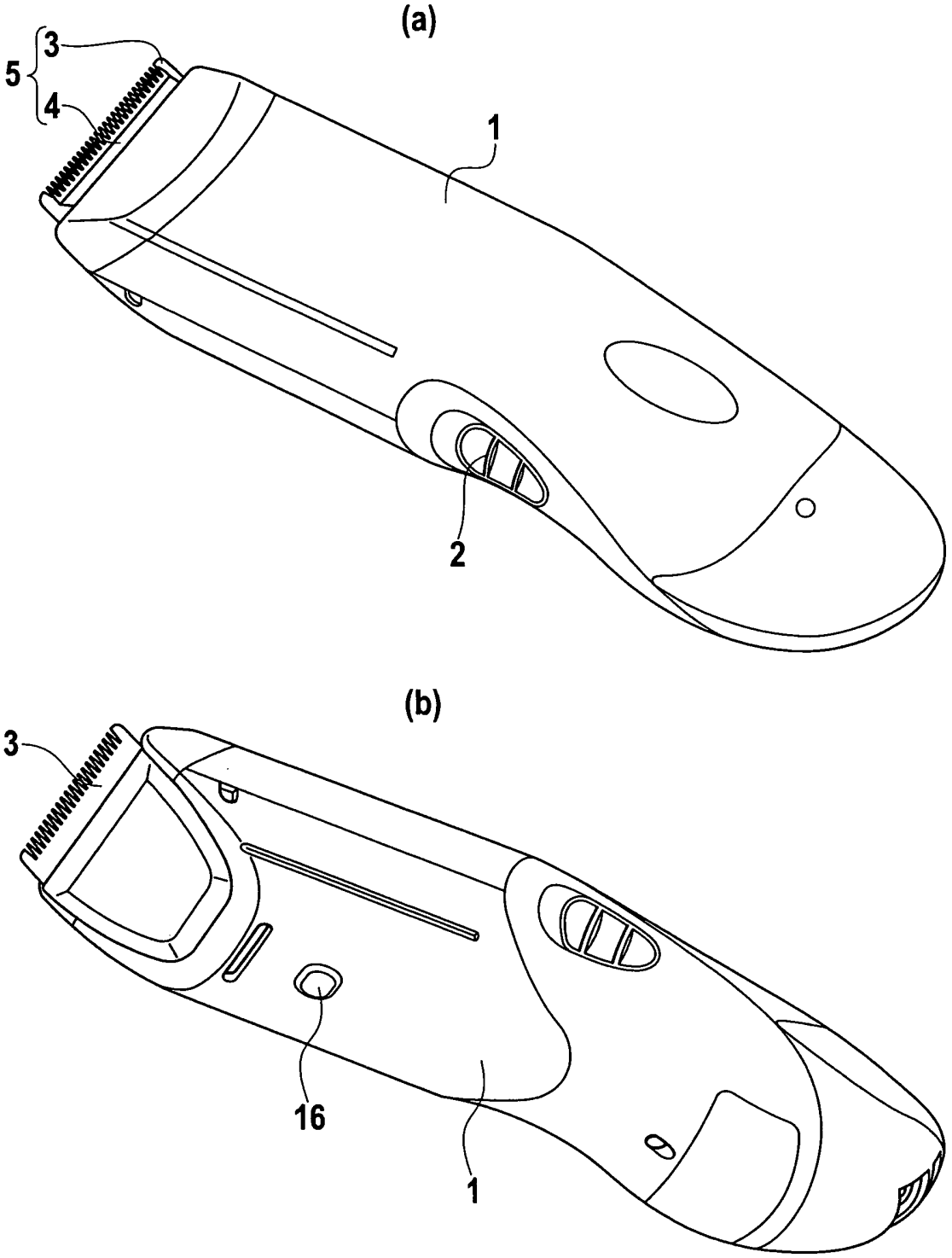


FIG. 2

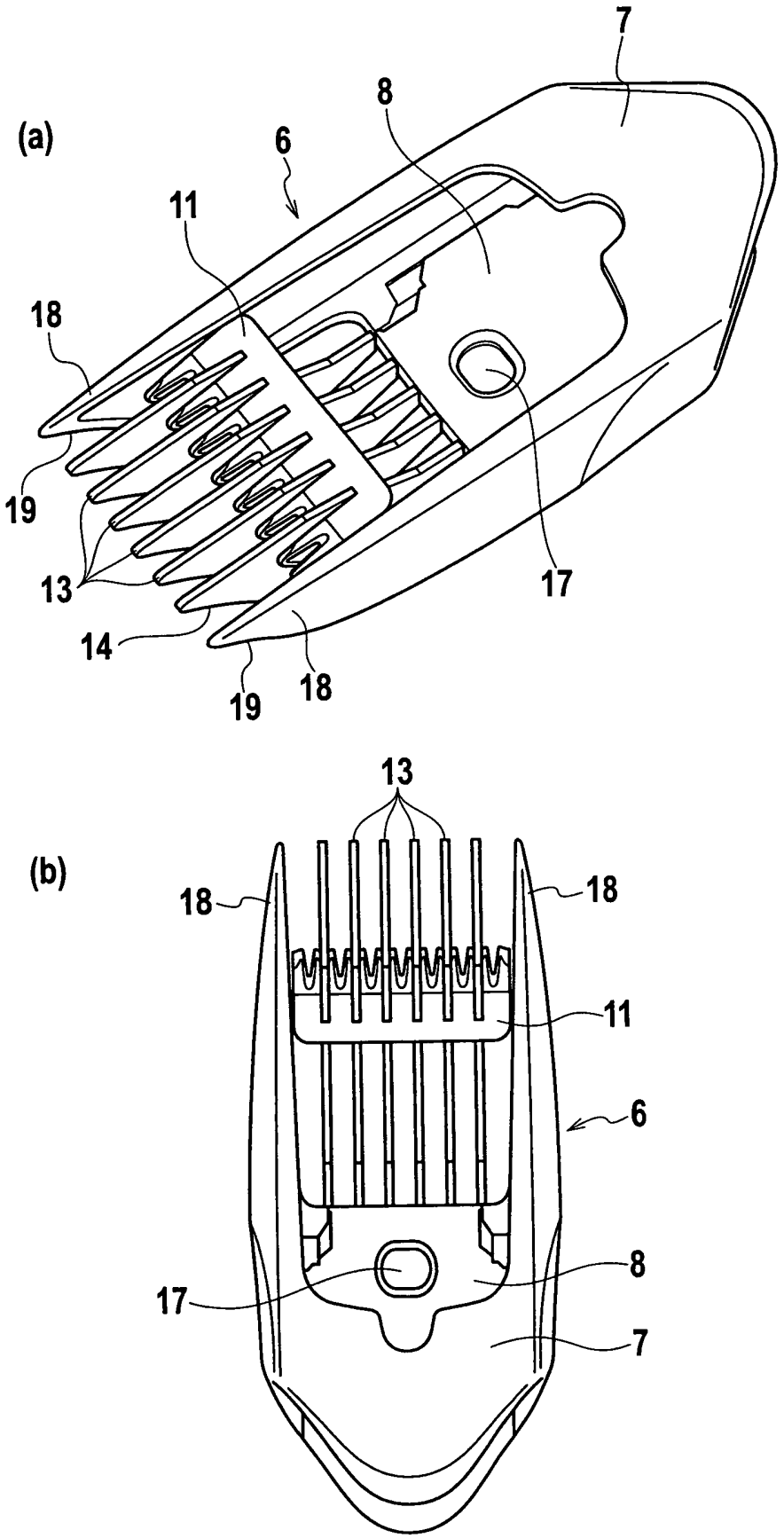


FIG. 3

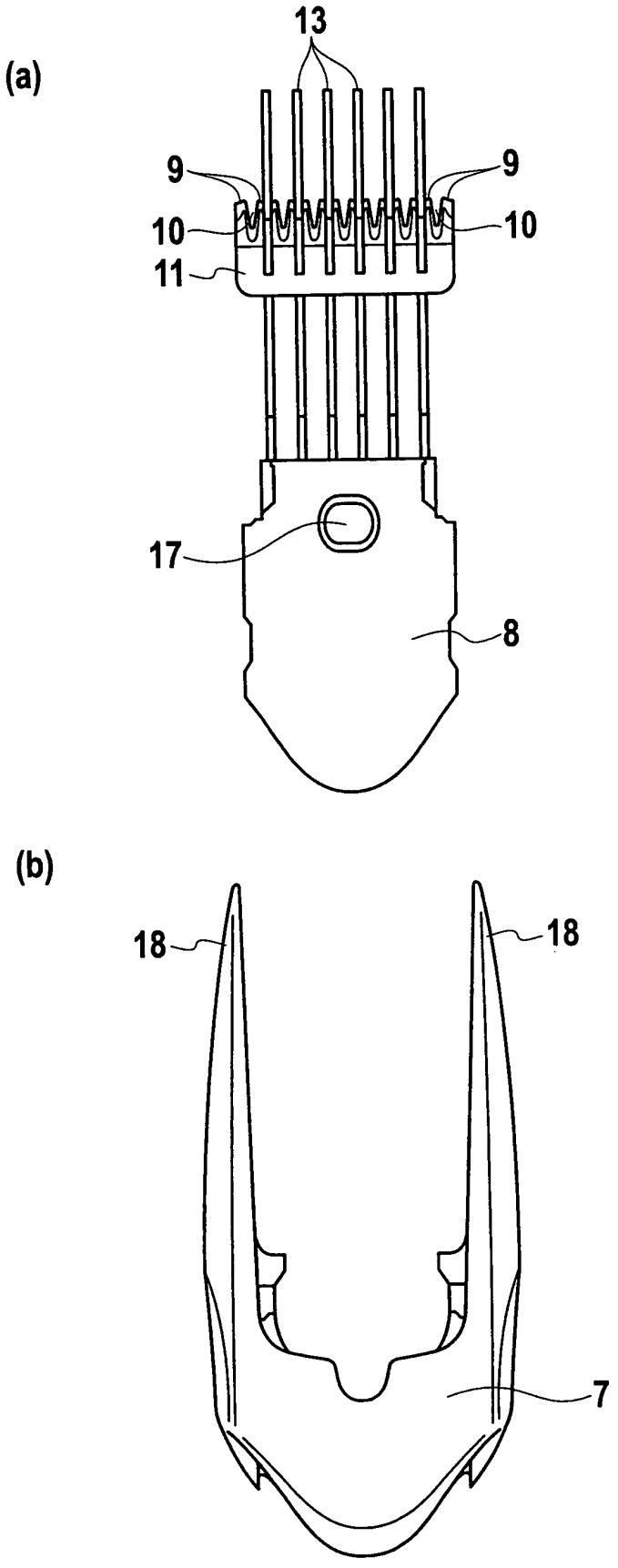


FIG. 4

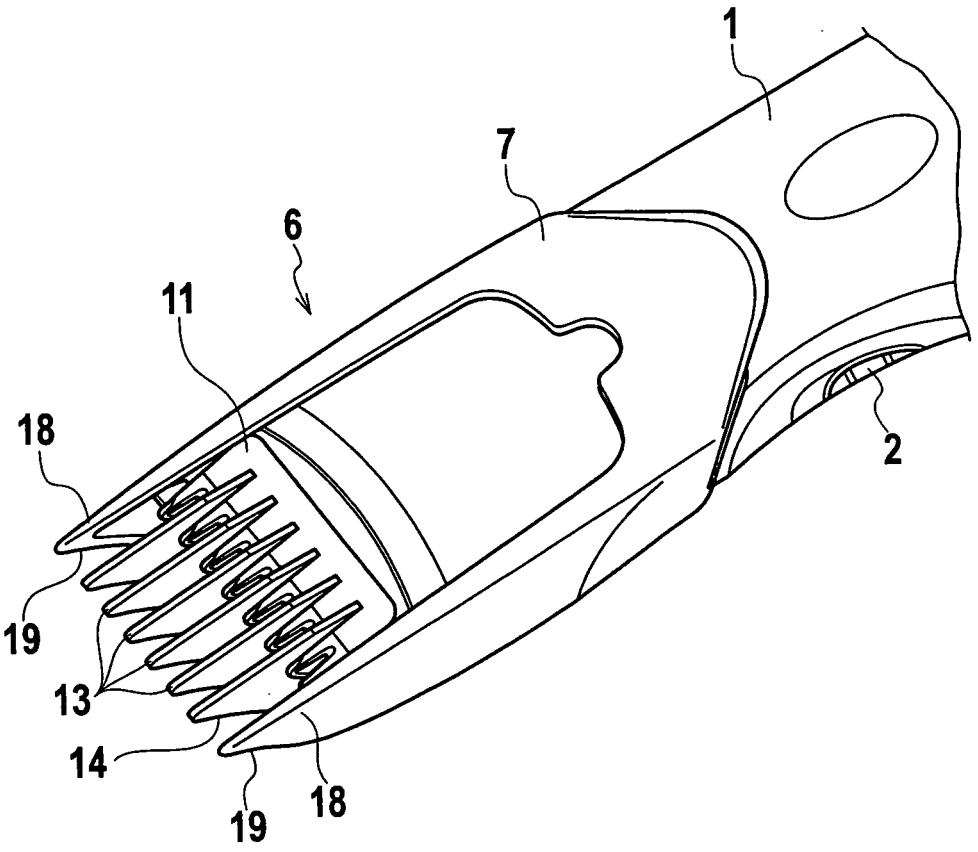
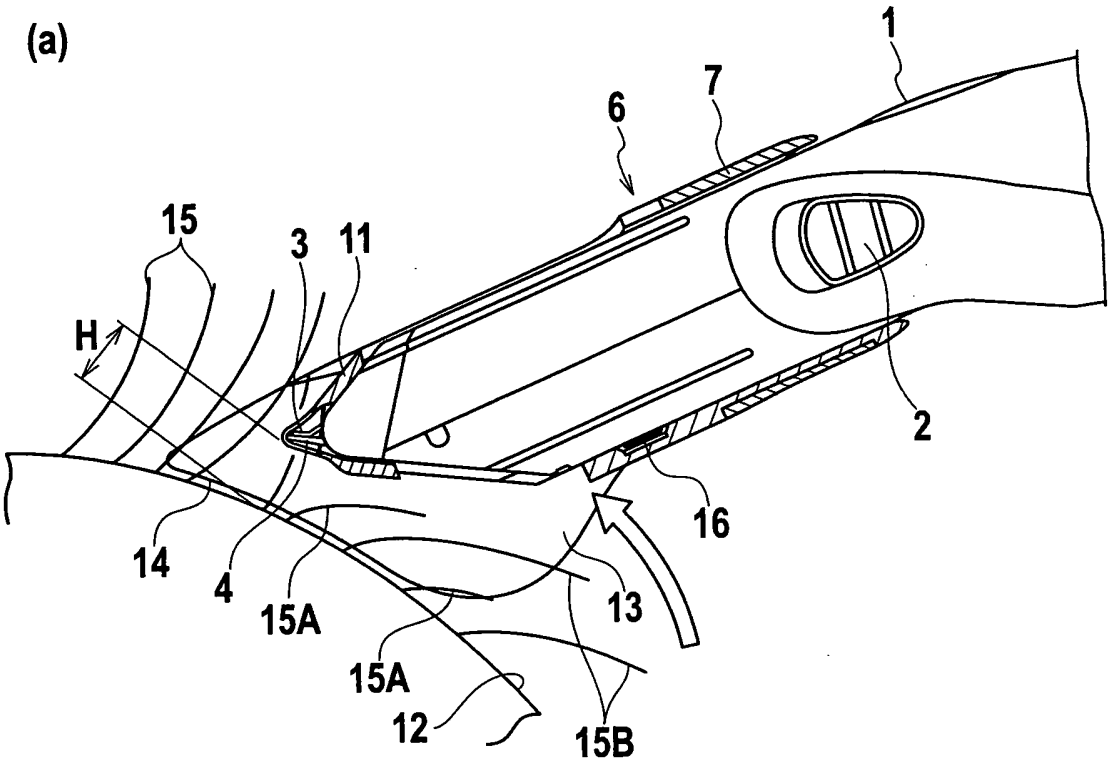


FIG. 5



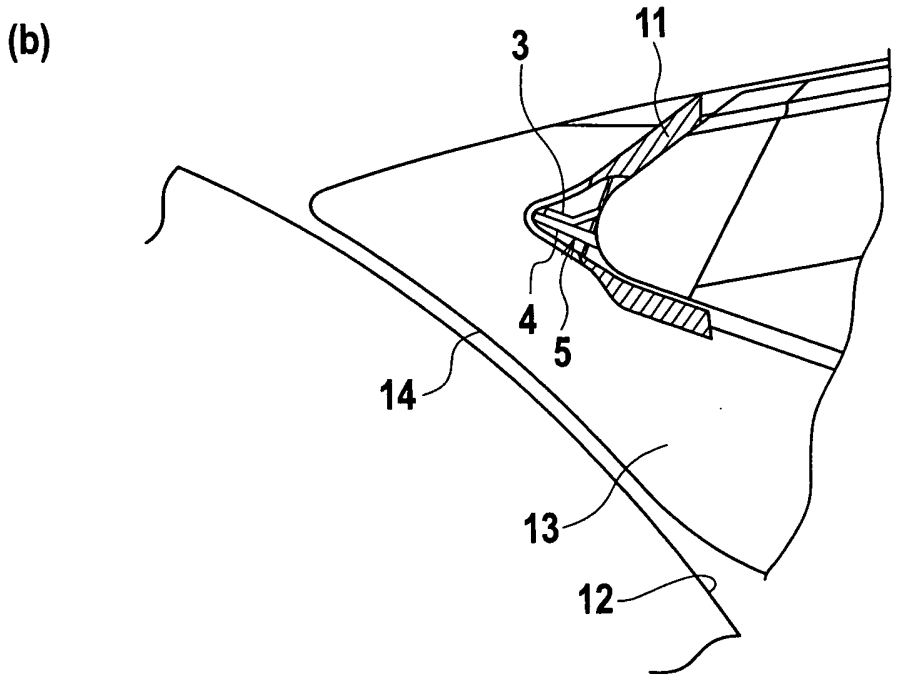



FIG. 6

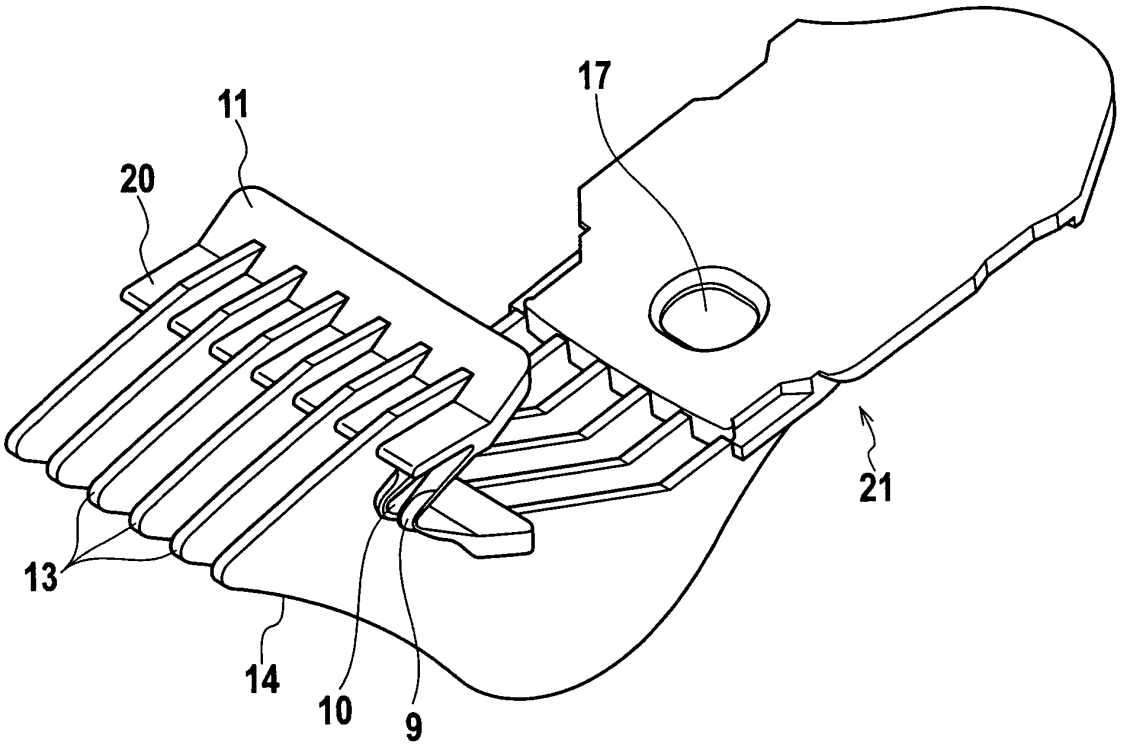


FIG. 7

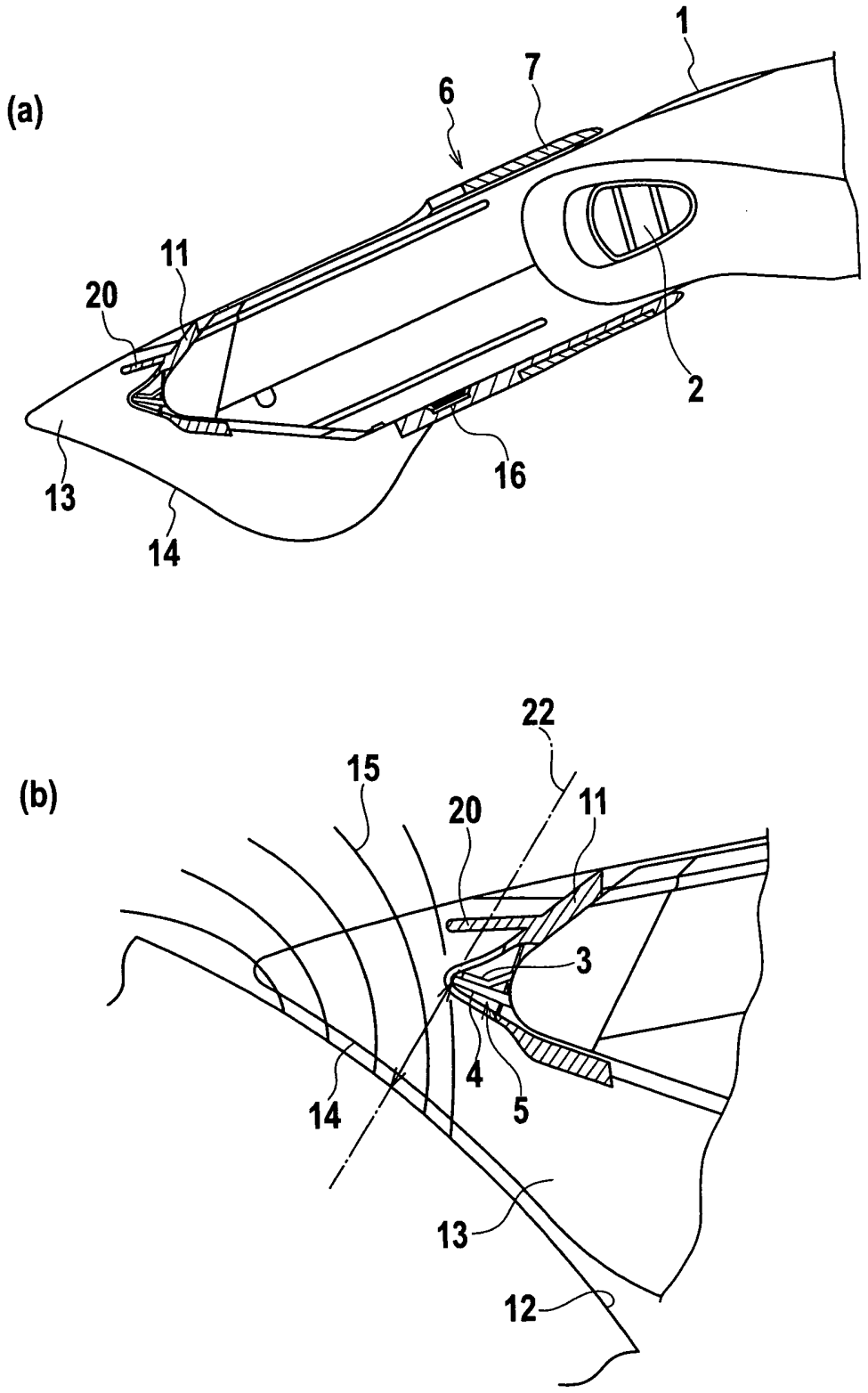
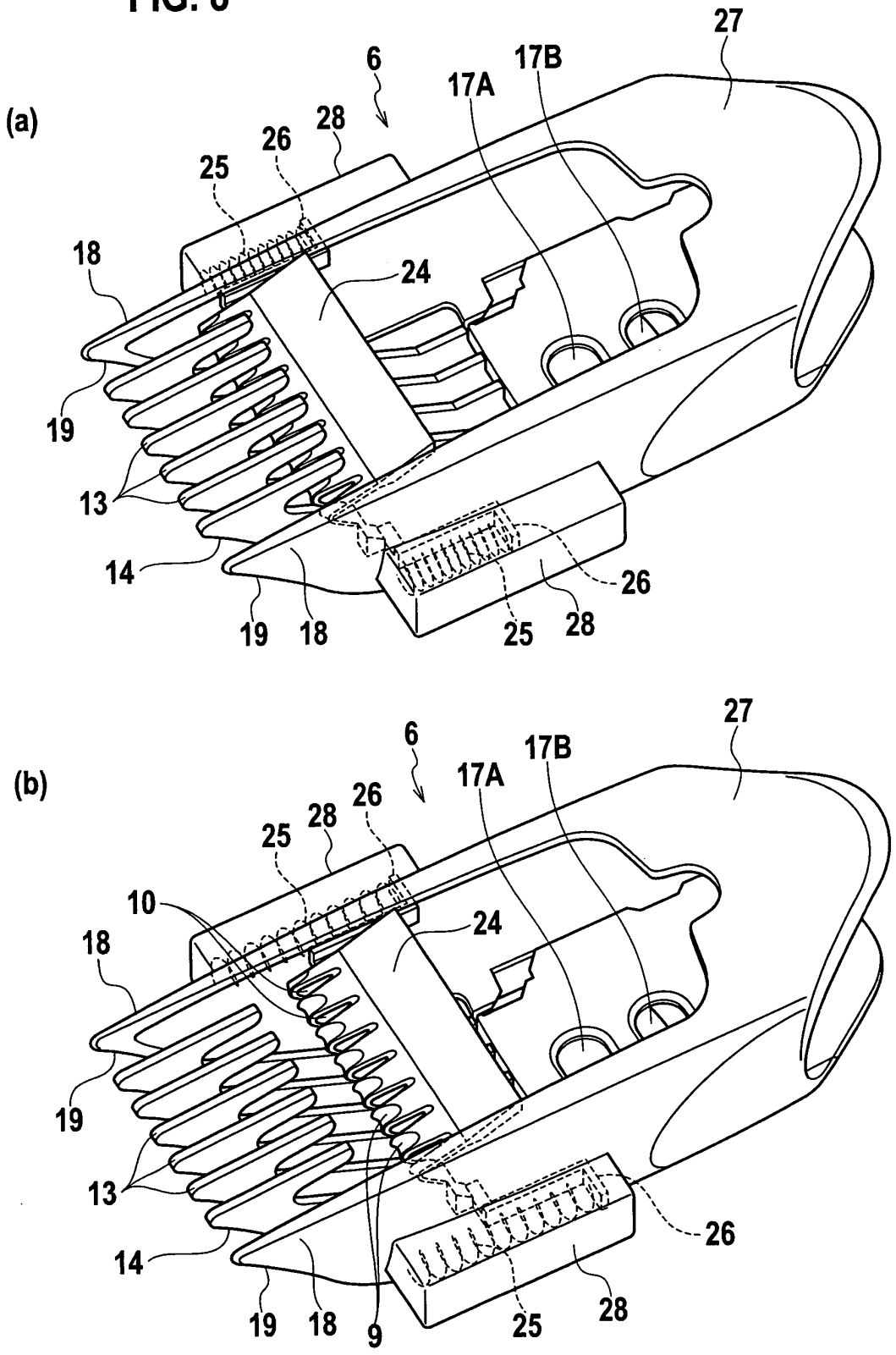


FIG. 8


(a)
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17A
17B
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(b)
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FIG. 9

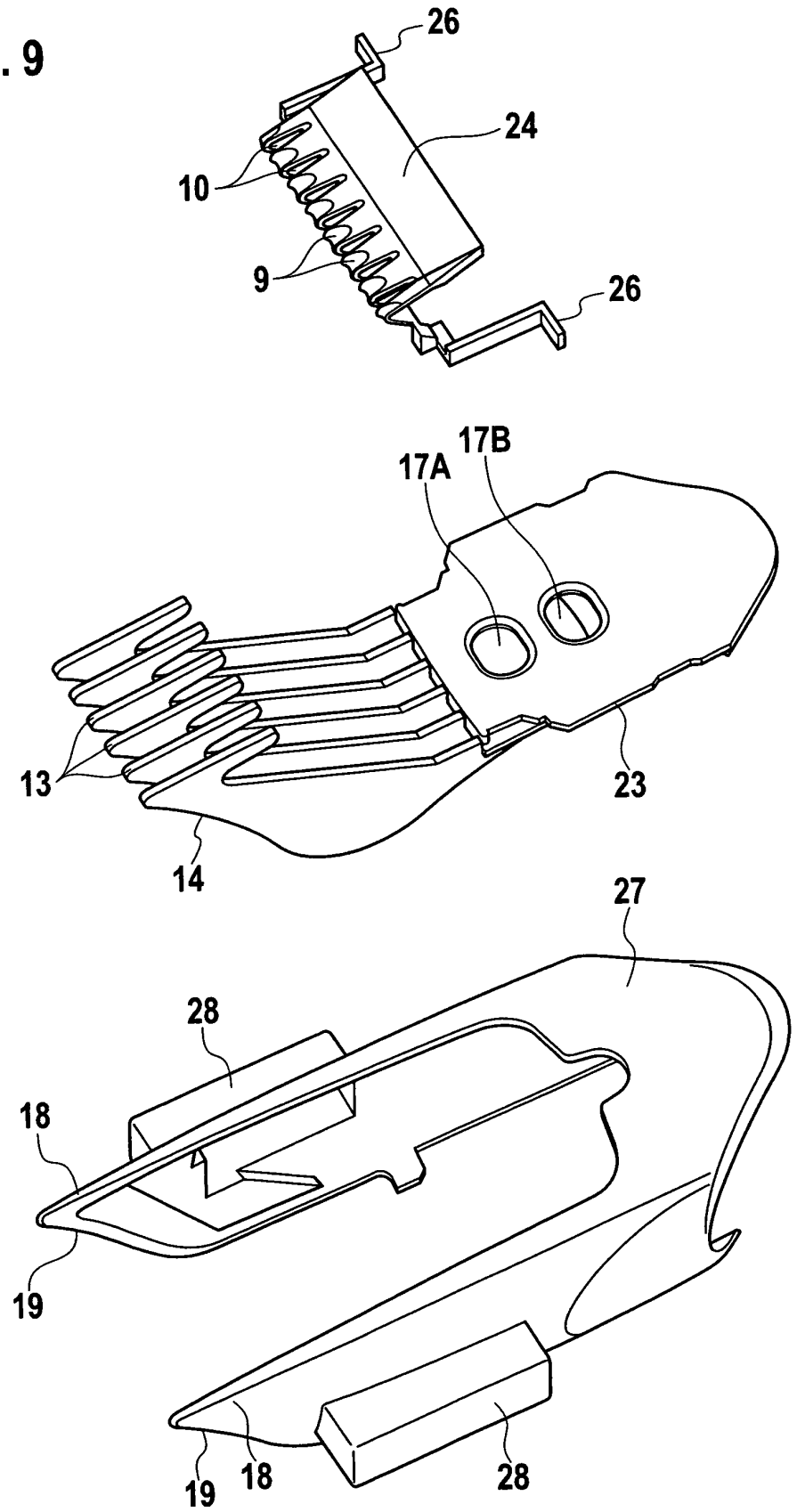


FIG. 10

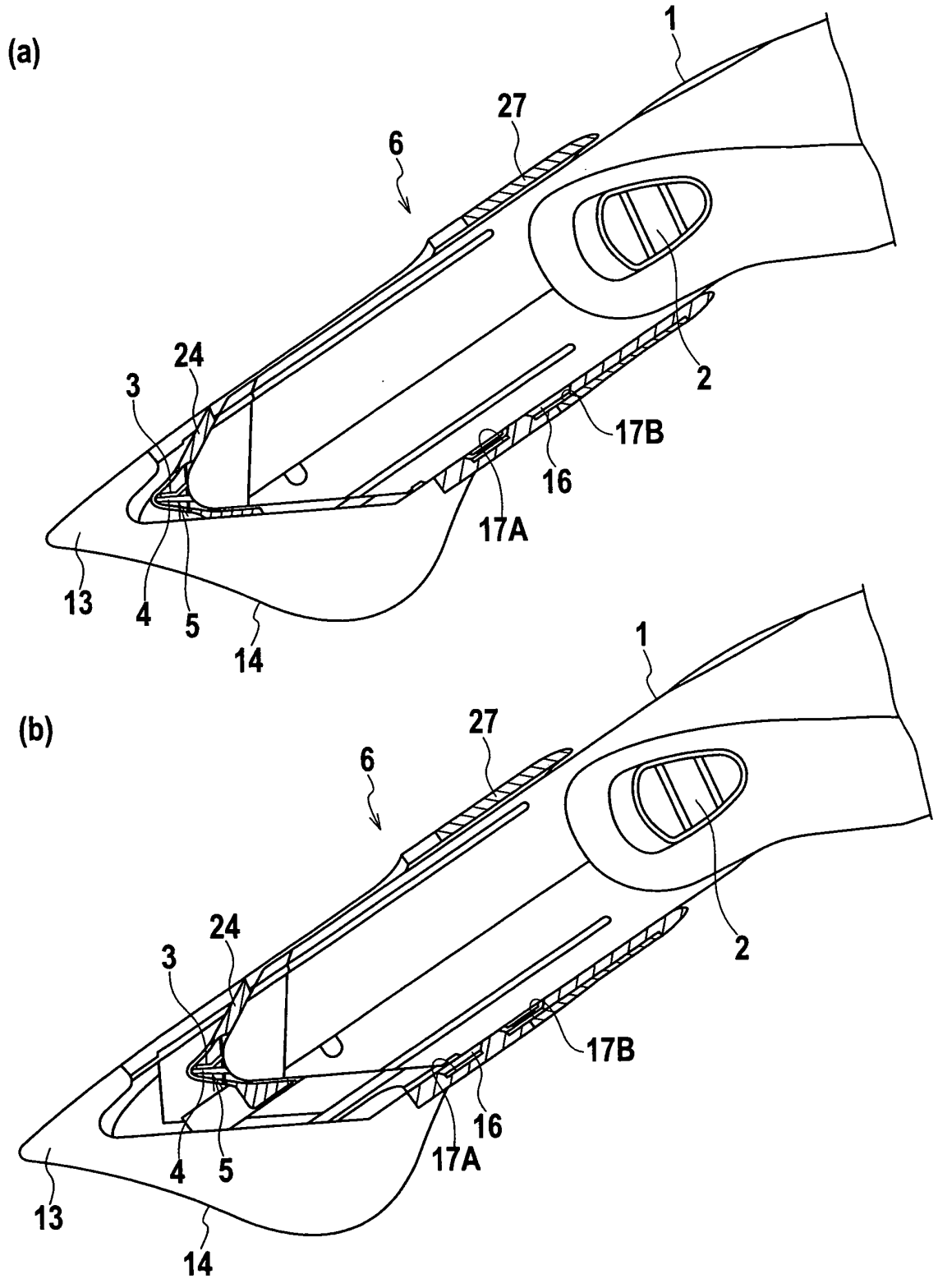


FIG. 11

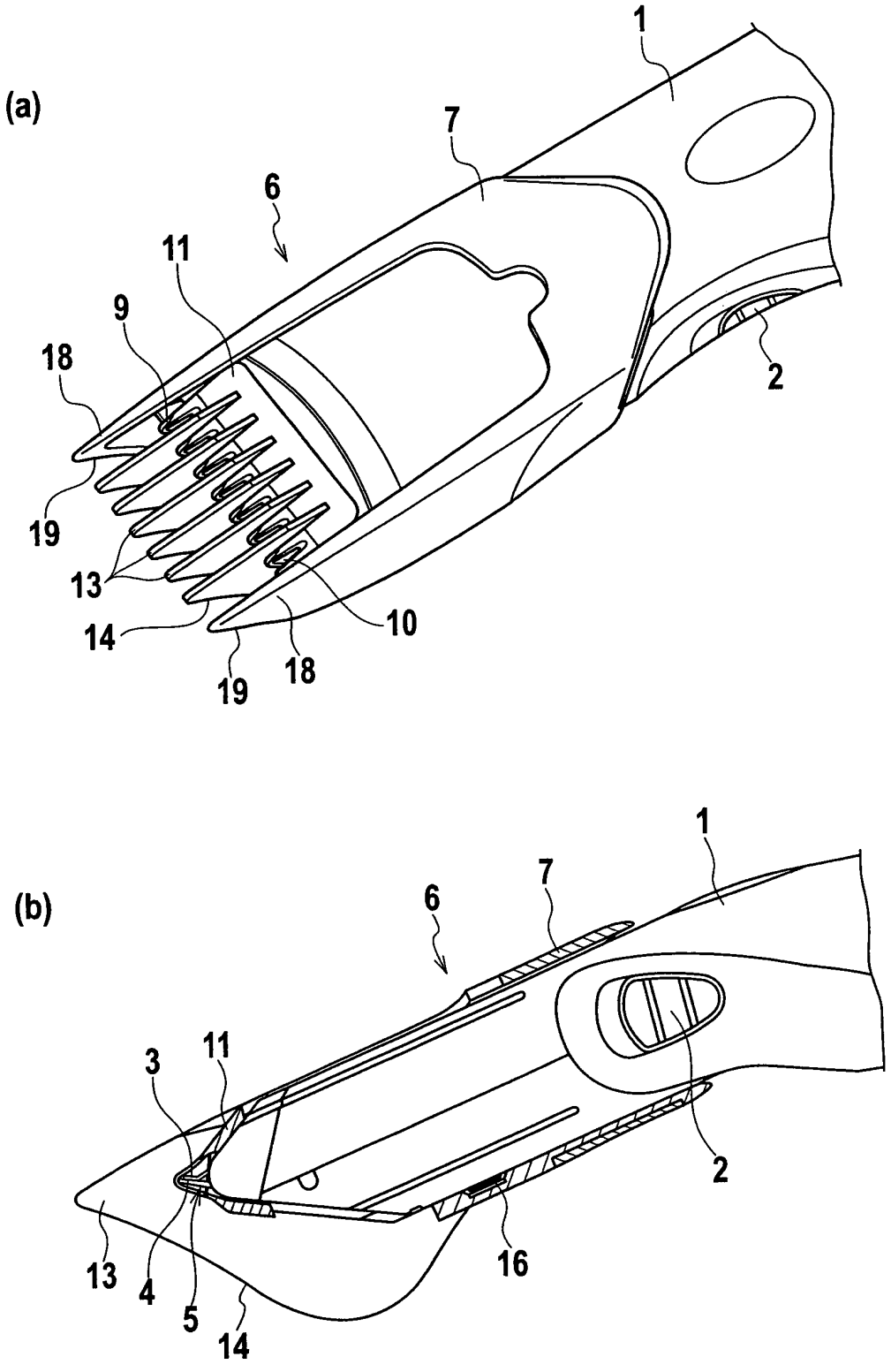
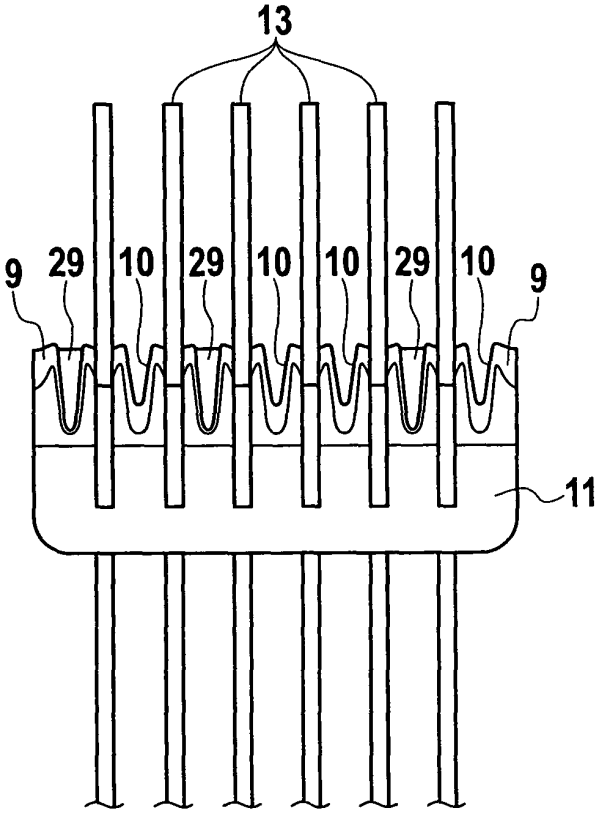


FIG. 12

(a)




(b)

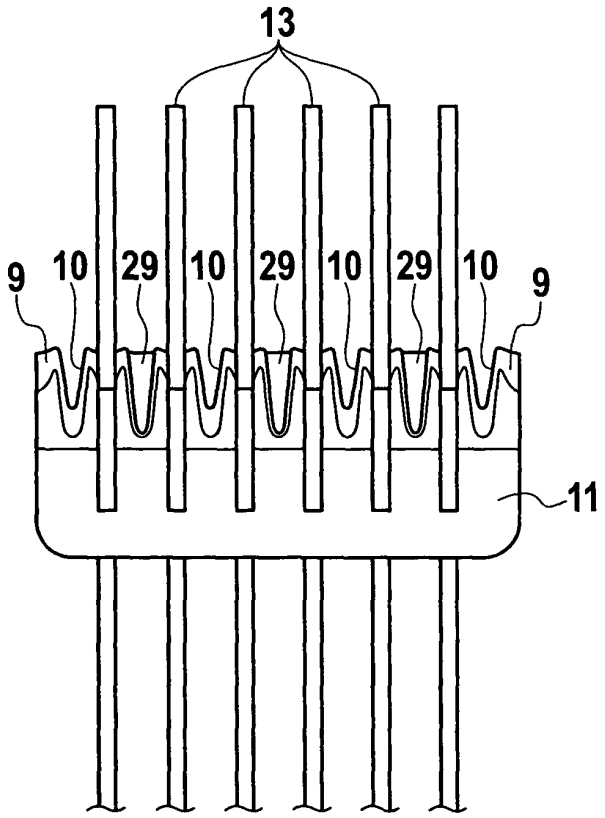


FIG. 13

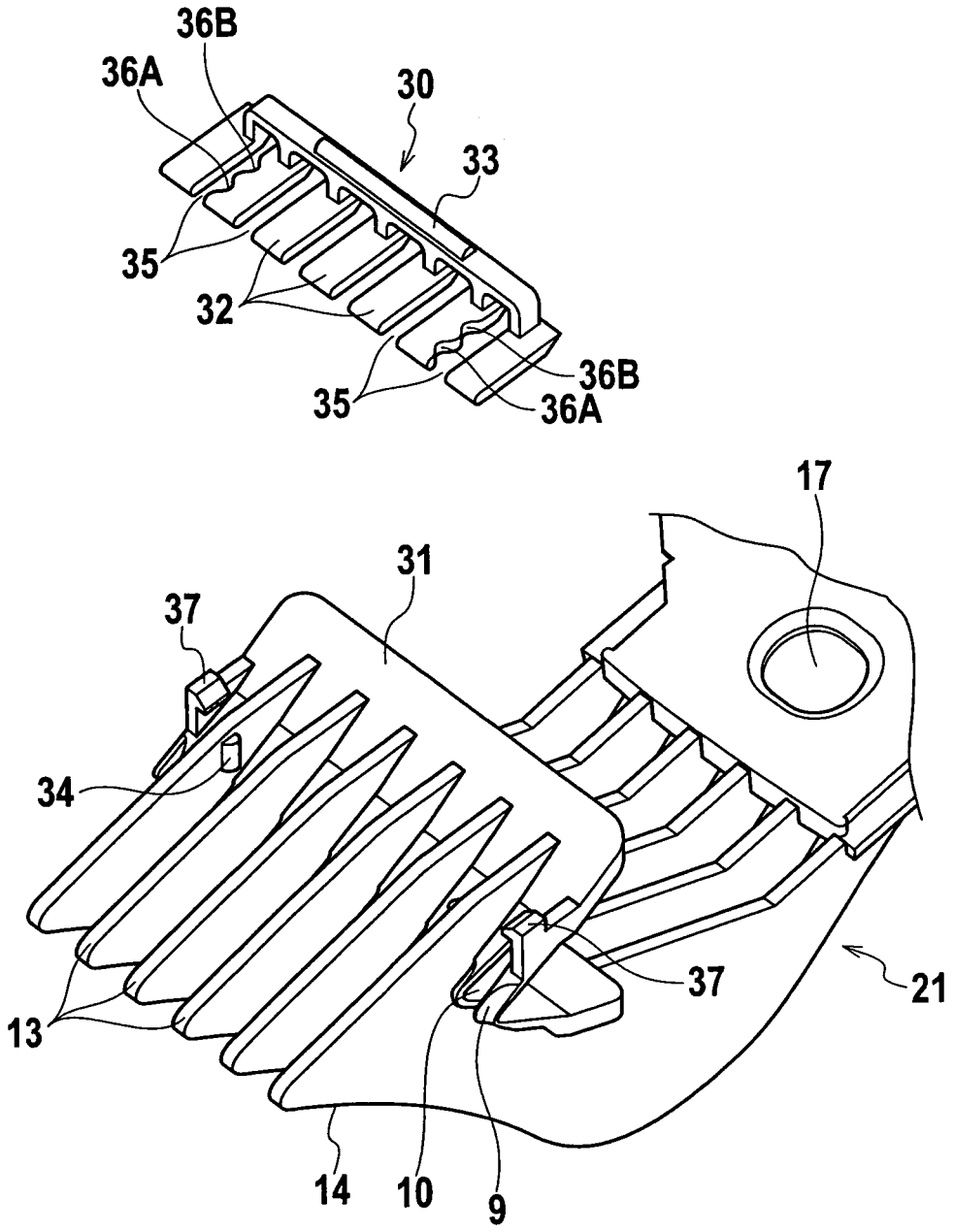
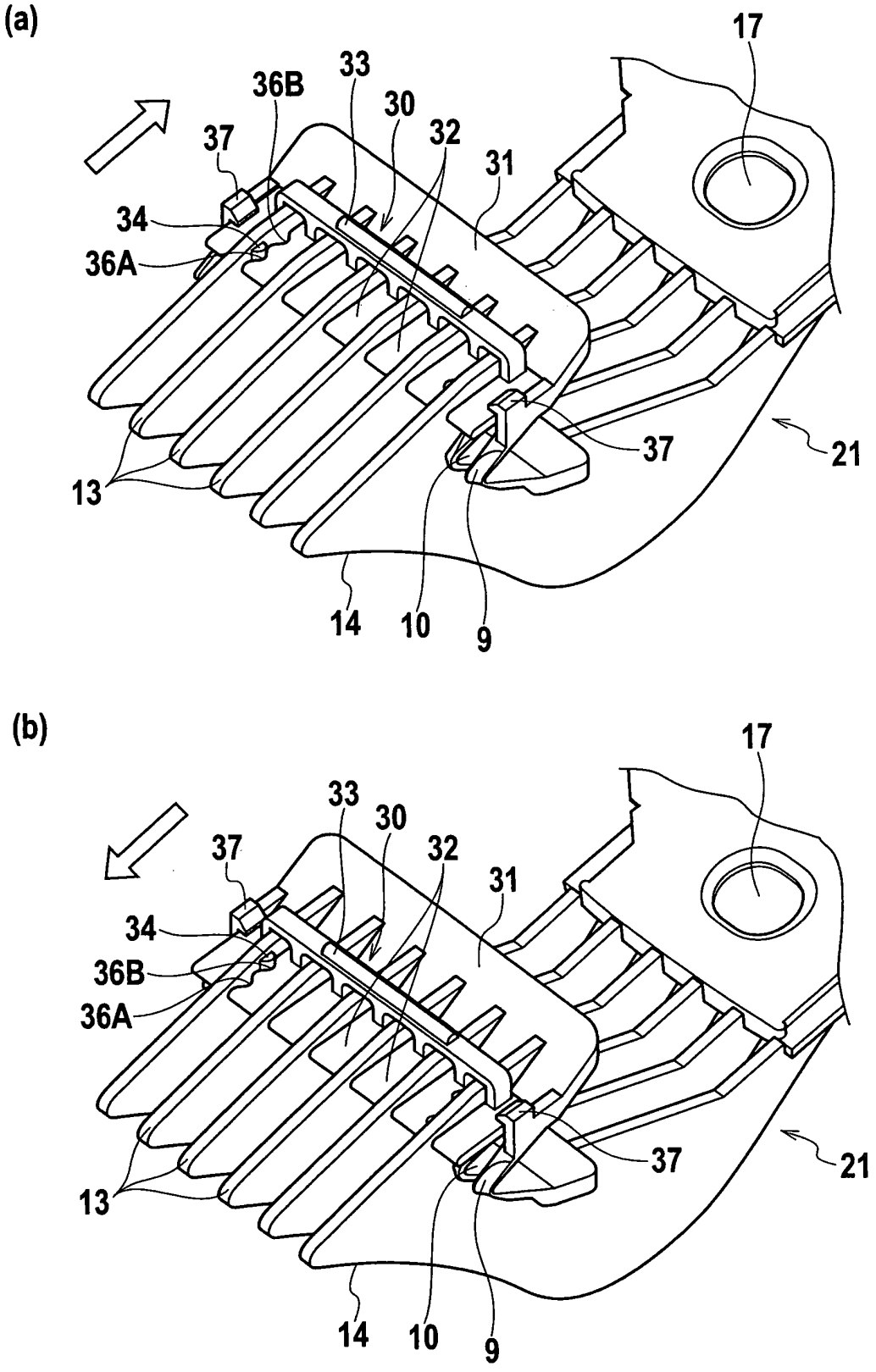


FIG. 14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(b)
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36B
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FIG. 15

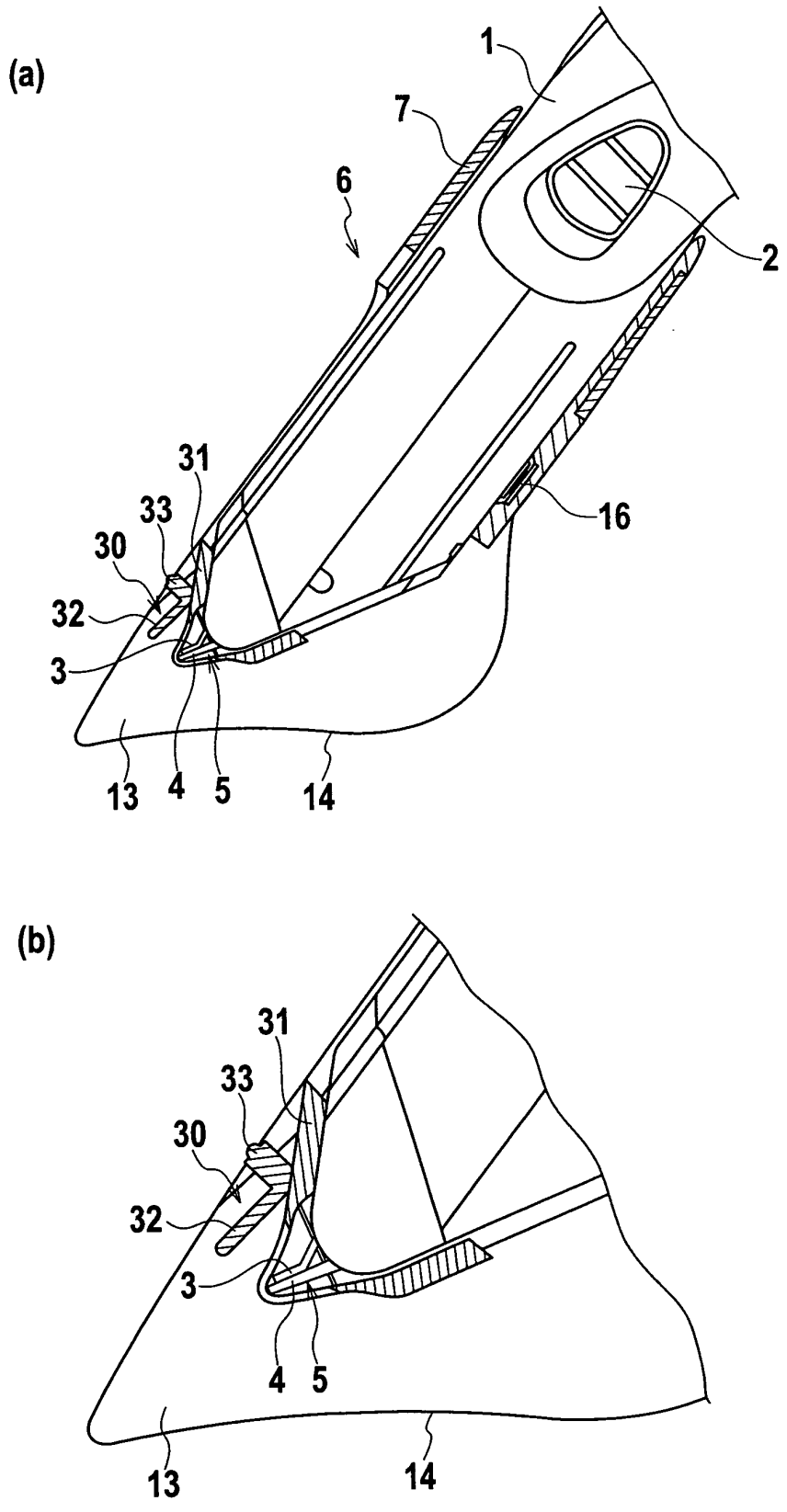
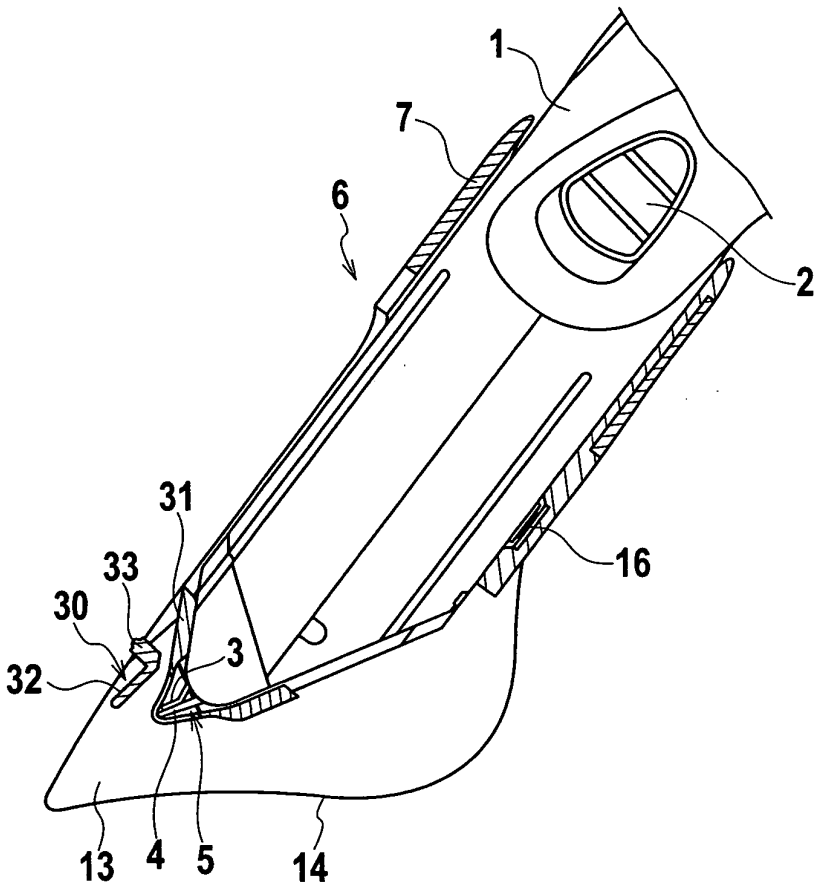


FIG. 16

(a)




(b)

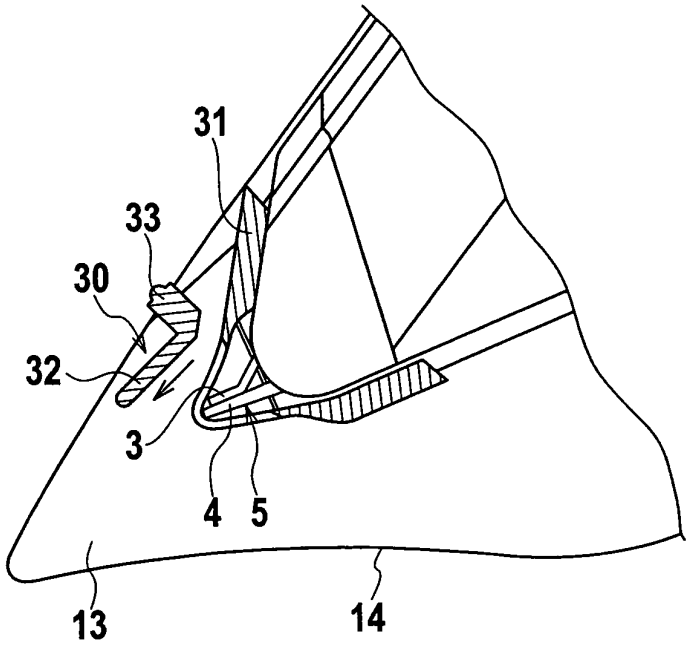


FIG. 17

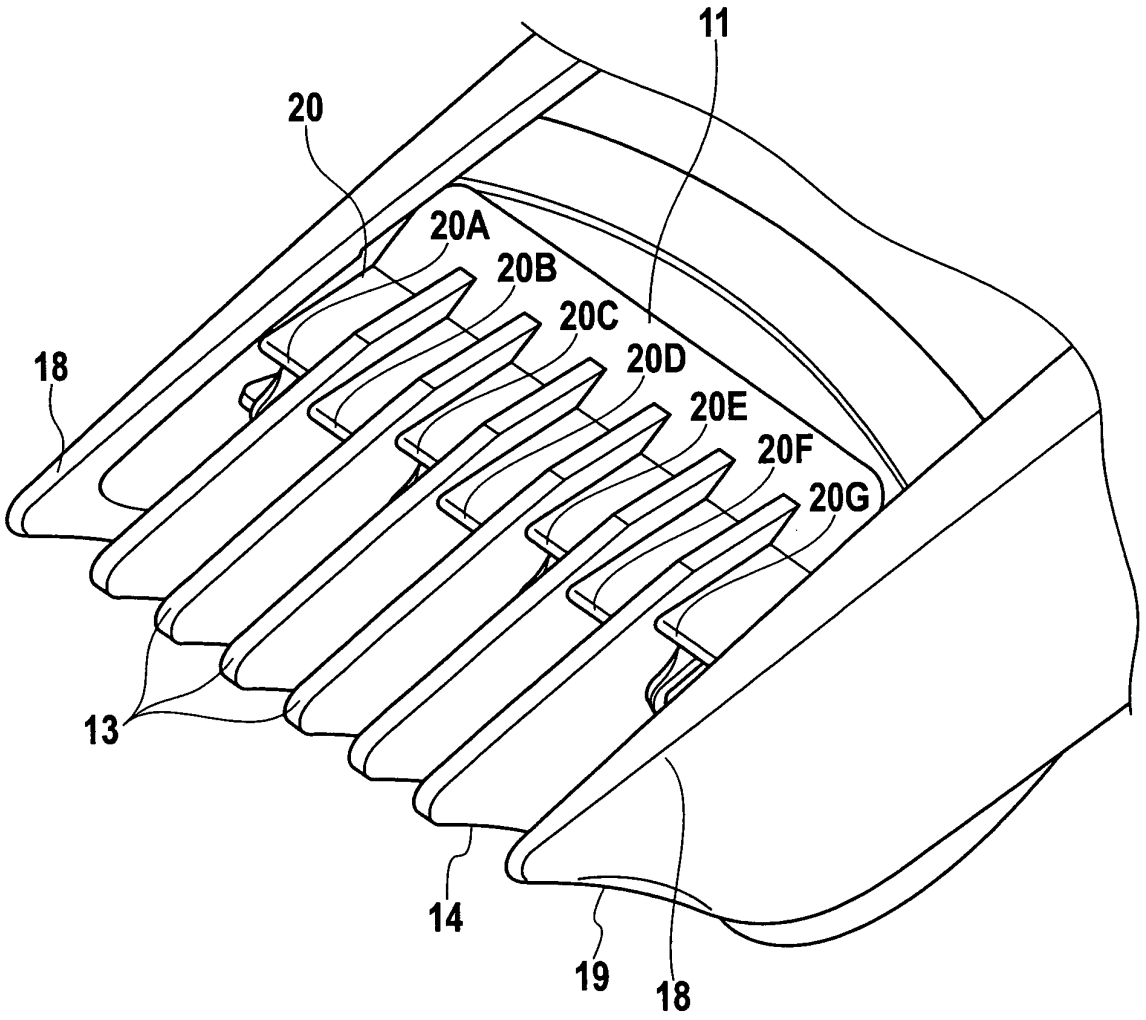


FIG. 18

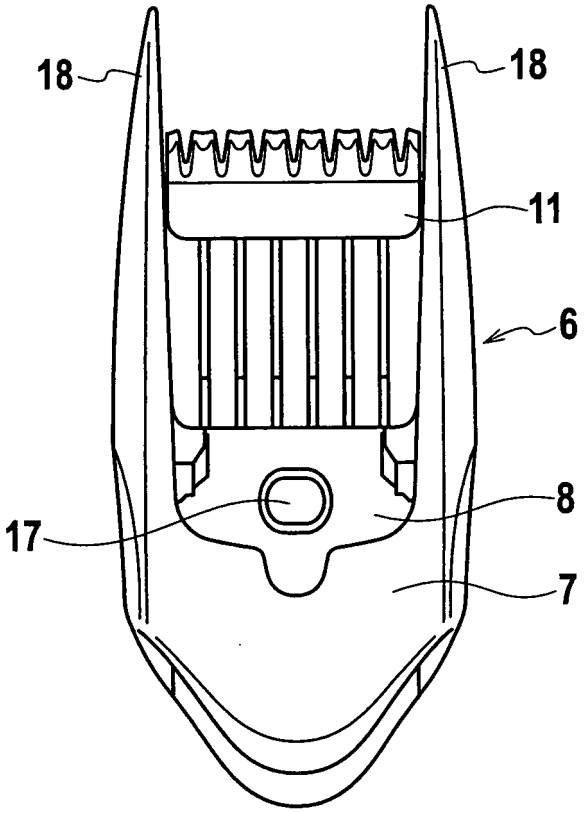


FIG. 19

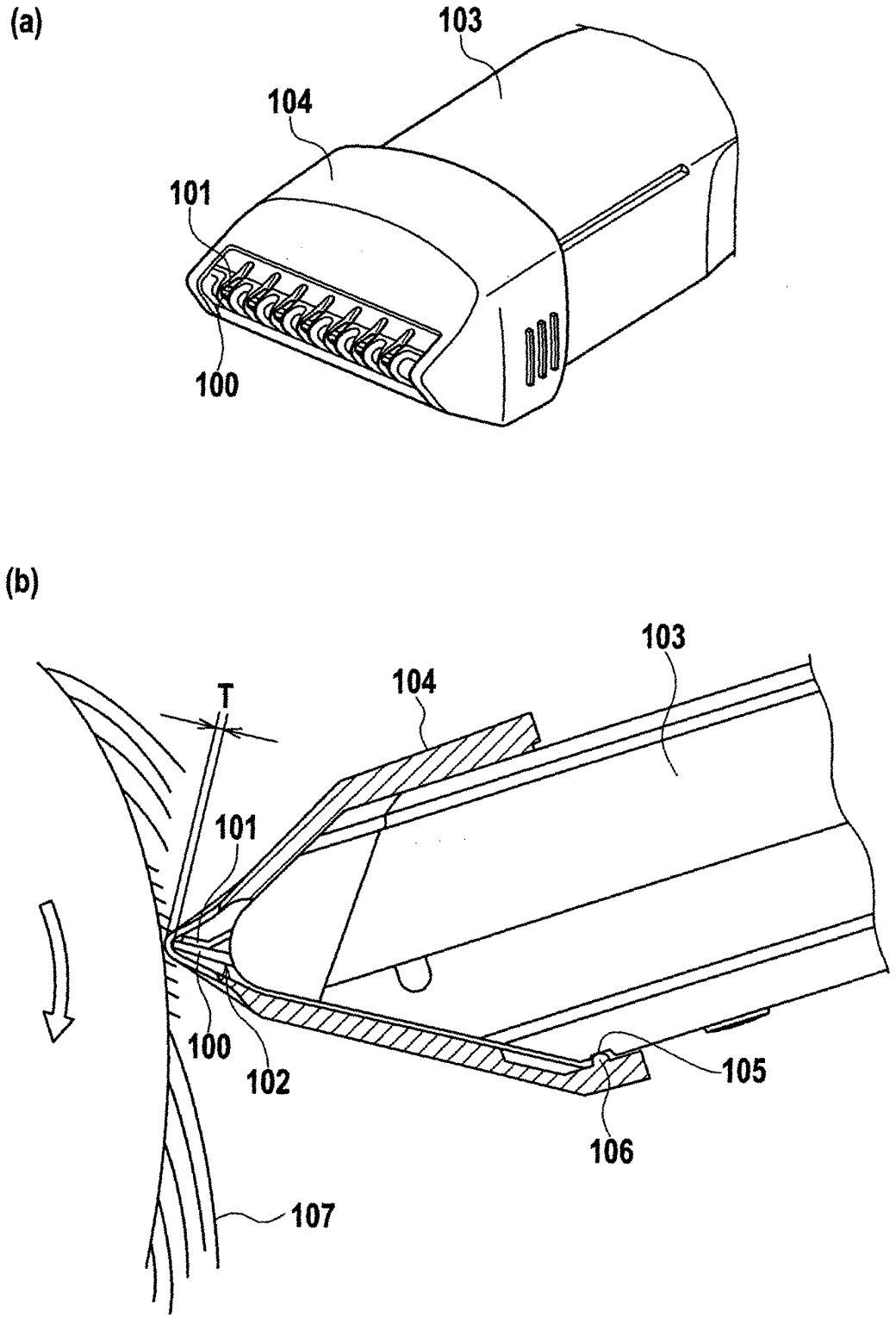
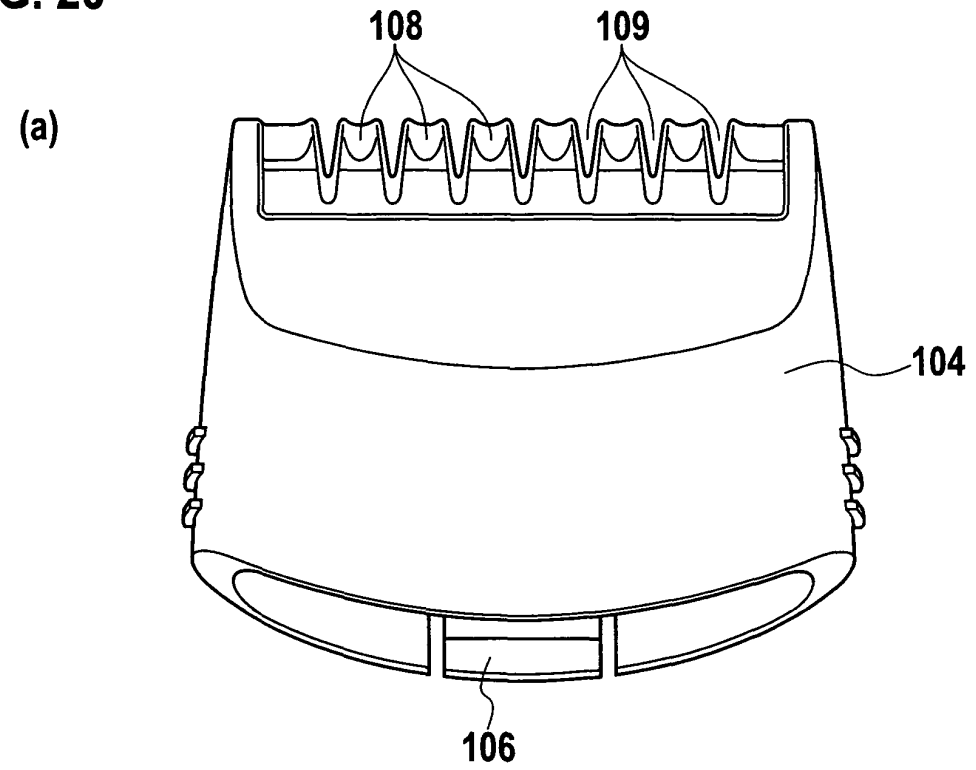
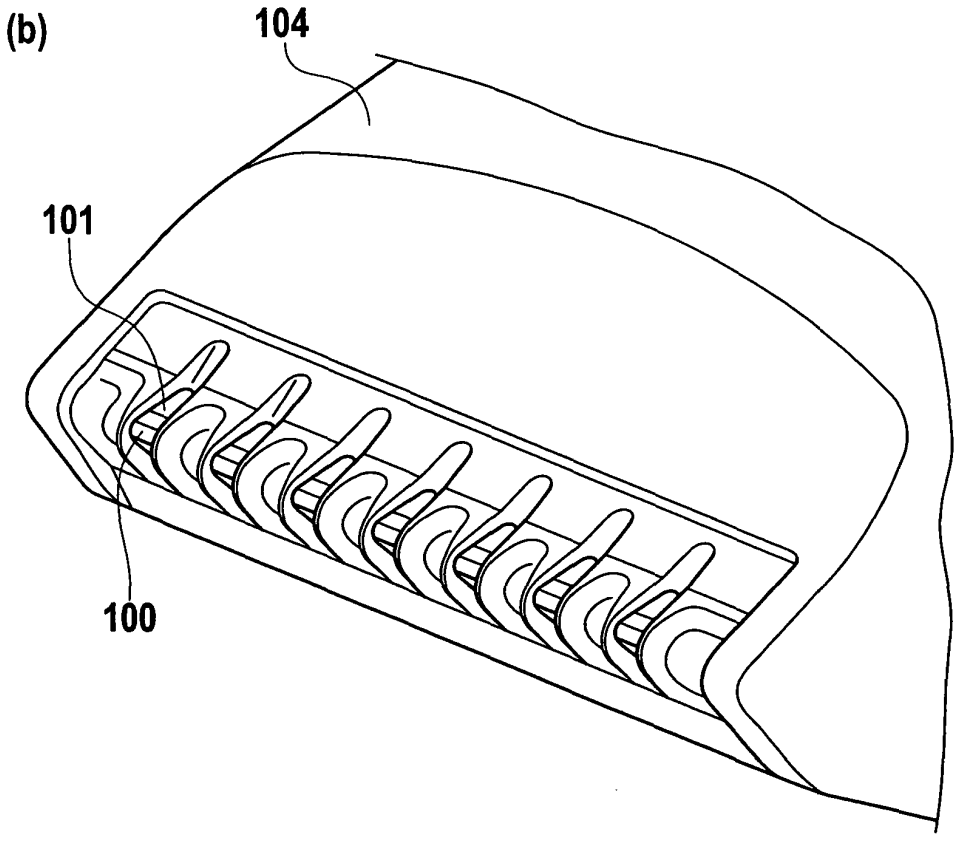


FIG. 20



**INTERNATIONAL SEARCH REPORT**

International application No.
PCT/JP2007/064598

A. CLASSIFICATION OF SUBJECT MATTER
*B26B19/22*(2006.01)i, *B26B19/20*(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)
B26B19/22, B26B19/20

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 | 1996-2007 |
| Kokai Jitsuyo Shinan Koho | 1971-2007 | Toroku Jitsuyo Shinan Koho | 1994-2007 |

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<br>Y<br>A | JP 58-103489 A (Matsushita Electric Works, Ltd.),<br>20 June, 1983 (20.06.83),<br>Page 2, lower left column, line 5 to page 3, lower left column, line 15; Figs. 1 to 7; page 3, lower left column, line 19 to lower right column, line 14; Figs. 8, 9; page 3, lower right column, line 16 to page 5, upper right column, line 9; Figs. 10 to 22<br>& US 4557050 A & DE 3246258 A1 | 1,2,6<br>4,5,7<br>3 |
| Y | JP 60-135083 A (Matsushita Electric Works, Ltd.),<br>18 July, 1985 (18.07.85),<br>Page 2, upper left column, line 6 to lower left column, line 5; Fig. 4<br>(Family: none) | 4 |

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 10 October, 2007 (10.10.07) | 23 October, 2007 (23.10.07) |
| Name and mailing address of the ISA/<br>Japanese Patent Office<br><br>Facsimile No. | Authorized officer<br><br>Telephone No. |

Form PCT/ISA/210 (second sheet) (April 2007)

**INTERNATIONAL SEARCH REPORT**

International application No.
PCT/JP2007/064598

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | JP 6-238071 A (Matsushita Electric Works, Ltd.),<br>30 August, 1994 (30.08.94),<br>Par. No. [0016]; Fig. 2<br>(Family: none) | 5 |
| Y | Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 70741/1979(Laid-open No. 170068/1980)<br>(Sanyo Electric Co., Ltd.),<br>06 December, 1980 (06.12.80),<br>Page 4, line 12 to page 5, line 6; Figs. 3 to 6<br>(Family: none) | 7 |
| A | JP 63-171580 A (Kyushu Hitachi Maxell Kabushiki Kaisha),<br>15 July, 1988 (15.07.88),<br>(Family: none) | 1-7 |
| A | Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 47729/1972(Laid-open No. 8186/1974)<br>(Matsushita Electric Works, Ltd.),<br>24 January, 1974 (24.01.74),<br>(Family: none) | 1-7 |
| A | JP 60-150780 A (Matsushita Electric Works, Ltd.),<br>08 August, 1985 (08.08.85),<br>(Family: none) | 1-7 |
| A | JP 8-33779 A (Matsushita Electric Works, Ltd.),<br>06 February, 1996 (06.02.96),<br>(Family: none) | 1-7 |
| A | JP 60-108074 A (Matsushita Electric Works, Ltd.),<br>13 June, 1985 (13.06.85),<br>& US 4614036 A & DE 3441060 A1 | 1-7 |

Form PCT/ISA/210 (continuation of second sheet) (April 2007)

**INTERNATIONAL SEARCH REPORT**

International application No.
PCT/JP2007/064598

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

There is no special technical feature in the inventions of claims 1, 2, 6.
Furthermore, there is no special technical feature common to claims 1, 2 and 6, claim 3, claim 4, claim 5, and claim 7.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

the

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

Form PCT/ISA/210 (continuation of first sheet (2)) (April 2007)

## REFERENCES CITED IN THE DESCRIPTION

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

### Patent documents cited in the description


- JP SHOWA55198047885 B **[0002]**
- JP 55047885 A **[0002]**