

(19)



(11)

EP 2 401 938 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

04.01.2012 Bulletin 2012/01

(51) Int Cl.:

A45D 20/12 (2006.01)

(21) Application number: **11166912.3**

(22) Date of filing: **20.05.2011**

(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

(30) Priority: **30.06.2010 JP 2010149091**

(71) Applicant: **Panasonic Electric Works Co., Ltd.**

Kadoma-shi

Osaka 571-8686 (JP)

(72) Inventors:

- **Kodama, Naofumi**
Kadoma-shi Osaka 571-8686 (JP)
- **Yasui, Noriyuki**
Kadoma-shi Osaka 571-8686 (JP)

(74) Representative: **Appelt, Christian W.**

Forrester & Boehmert

Pettenkoferstrasse 20-22

80336 München (DE)

(54) **Hair care device**

(57) A portion that serves as a part of a housing 3 and covers an ion generation unit 8 is composed of a transparent or translucent decorative case 20 in which a decorative portion 21 is provided on a back surface, and

the decorative portion 21 is formed into a diamond cut-like polyhedral shape formed out by a thickness change of the decorative case 20.

EP 2 401 938 A1

Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is based upon and claims the benefit of priority from prior Japanese Patent Application P2010-149091 filed on June 30, 2010; the entire contents of which are incorporated by reference herein.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to a hair care device.

[0003] Heretofore, as disclosed in Japanese Patent No. 3160654, as a hair care device, a device has been known, in which a decorative body having patterns such as pictures and illustrations drawn thereon is inserted into an inner surface of a main body case, at least a part of which is made capable of being see-through.

SUMMARY OF THE INVENTION

[0004] However, in the above-described conventional technology, it is necessary to separately form the decorative body on which decorations are put up, and to insert and attach the decorative body into an inside of the main body case, and accordingly, there has been a problem that a cost increase and a weight increase are brought about.

[0005] In this connection, it is an object of the present invention to obtain a hair care device excellent in decorativeness while suppressing the cost increase and the weight increase.

[0006] In order to achieve the foregoing object, the present invention is a hair care device including: a housing having, in an inside thereof, a wind tunnel portion provided with an air inlet port and an air blower port; and an air blower unit that discharges, from the air blower port, air sucked from the air inlet port, characterized in that a transparent or translucent light transmission portion is formed in at least a part of the housing, and a decorative portion is provided on a back surface of the light transmission portion, and the decorative portion is formed of an aggregate of plural surfaces.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

Fig. 1 is a side view of a hair dryer according to a first embodiment of the present invention.

Fig. 2 is a back view of the hair dryer shown in Fig. 1.

Fig. 3 is a plan view of the hair dryer shown in Fig. 1.

Fig. 4 is a cross-sectional view along a line A-A in Fig. 3.

Fig. 5 is a perspective view where a protection frame main body, a mesh-like filter and a protection frame sub-body, which are attached to an air inlet port of

the hair dryer shown in Fig. 1, are arrayed.

Fig. 6 is a cross-sectional view showing a relationship between an ion generation unit cover of an ion generation unit provided in the hair dryer shown in Fig. 1 and a decorative case provided thereon.

Fig. 7 is a cross-sectional view along a line B-B in Fig. 3.

Fig. 8 is an enlarged cross-sectional view of a portion C in Fig. 7.

Fig. 9 is a cross-sectional view along a line D-D in Fig. 4.

Fig. 10 is a cross-sectional view along a line E-E in Fig. 4.

Fig. 11 is a cross-sectional view along a line F-F in Fig. 3.

Fig. 12 is an enlarged cross-sectional view of a portion G in Fig. 11.

Fig. 13 is a cross-sectional view along a line H-H in Fig. 3.

Fig. 14 is an enlarged cross-sectional view of a portion I in Fig. 13.

Fig. 15 is an enlarged cross-sectional view of a portion J in Fig. 4.

Fig. 16 is a bottom view of a decorative case, which shows a first modification example of the first embodiment of the present invention, when viewed from an inside thereof.

Fig. 17 is a cross-sectional view along a line K-K in Fig. 16.

Fig. 18 is a side view of a decorative case showing a second modification example of the first embodiment of the present invention.

Fig. 19 is a back view of the decorative case shown in Fig. 18 when viewed from rear.

Fig. 20 is a front view of the decorative case shown in Fig. 18 when viewed from front.

Fig. 21 is a plan view showing a main body portion of a brush-added hair dryer according to a second embodiment of the present invention.

Fig. 22 is a cross-sectional view along a line L-L in Fig. 21.

Fig. 23 is a side view where a protection frame main body, a mesh-like filter and a protection frame sub-body, which are attached to an air inlet port of the hair dryer shown in Fig. 21, are arrayed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0008] A description is made below in detail of embodiments of the present invention while referring to the drawings. Note that similar constituents are included in a plurality of the following embodiments. Hence, in the following, common reference numerals are assigned to those similar constituents, and a duplicate description is omitted.

(First Embodiment)

[0009] A hair dryer is illustrated as a hair care device in this embodiment. Note that, in Fig. 1, reference symbol Fr denotes a forward direction, and reference symbol Up denotes an upward direction.

[0010] As shown in Fig. 1 to Fig. 4, a hair dryer (hair care device) 1 according to this embodiment includes: a housing 3 having a wind tunnel portion 2 that exerts a hair care function by hot wind/cold wind; and a grip portion 5 coupled, so as to be freely foldable, to a grip attachment portion 31 protruded from a lower side of a rear end portion of the housing 3 while interposing a coupling portion 3. Note that the housing 3 is formed by combining and coupling housing parts, which are divided into right and left halves, to each other.

[0011] In the wind tunnel portion 2, on a rear end portion thereof (that is, a right side in Fig. 1), an air inlet port 2a is provided, and on a front end portion thereof (that is, a left side in Fig. 1), air blower port 2b is provided. In an inside of the wind tunnel portion 2, an air blower unit and a heater (not shown) are arranged in series from the rear toward the front. Moreover, the wind tunnel portion 2 is set to the housing 3 in a state of ensuring an air flow passage, which is cylindrical, with an inner surface of the housing 3, and these wind tunnel portion 2 and housing 3 are integrated with each other. Then, onto a tip end of the wind tunnel portion 2, a connection 9 for connecting a nozzle 7 is attached. Note that, in this embodiment, the air blower port 2b is located on a tip end of the nozzle 7 attached onto the front end portion of the wind tunnel portion 2; however, in the case where this nozzle 7 is detached, the tip end (tip end of the connection portion 9) of the wind tunnel portion 2 serves as the air blower port 2b.

[0012] The air blower unit 6 is composed of: a fan 61; a motor 62 that rotates this fan 61; and flow adjustment stems 63 63 which support the motor 62 in the inside of the wind tunnel portion 2 and have a low adjustment function for air passing therethrough; and the like. Then, the fan 61 is rotationally driven by the motor 62, whereby an air flow is generated in the wind tunnel portion 2, and the air sucked from the air inlet port 2a is blown out from the air blower port 2b. At this time, when the heater is energized and heated, then the air blown from the air blower port 2b can be turned to the hot wind.

[0013] Moreover, on an upper part of the wind tunnel portion 2, an ion generation unit 8 that generates and discharges negative ions (ions) is provided. This ion generation unit 8 includes an ion generation block 81 that generates the negative ions. A high voltage, which is generated in a high voltage generation unit 82 arranged in the grip attachment portion 31, is applied to the ion generation unit 8, and a corona discharge is caused, whereby the negative ions are generated.

[0014] The ion generation unit 8 introduces a part of the air, which flows in the wind tunnel portion 2, from an opening portion 2K formed by partially cutting away the

upper part of the wind tunnel portion 2, and together with the introduced air, discharges the generated negative ions forward from an ion discharge port 83. As described above, the negative ions discharged from the ion discharge port 83 are blown to hair, whereby the hair can be given a gloss and a moist feeling, and curl of the hair can be taken out.

[0015] In this embodiment, the ion generation unit 8 is provided with an ion generation unit cover 85, which holds the ion generation block 81 (refer to Fig. 9), and in addition, forms an air introduction passage 84 for introducing the air from the wind tunnel portion 2, and forms the ion discharge port 83. This ion generation unit cover 85 is formed of a synthetic resin material.

[0016] On a front center portion of the grip portion 5, a switch SW that is freely switchable among a plurality of up and down stages is provided. By this switch SW, ON/OFF of the motor 62 and the heater and adjustment of a quantity of the air are performed. Moreover, a cord C to be connected to a power supply is attached to a lower end of the grip portion 5.

[0017] As shown in Fig. 4 and Fig. 5, to the air inlet port 2a, a protection frame main body 10 is attached, which finely divides an opening region of the air inlet port 2a concerned. By this protection frame main body 10, a relatively large foreign object is prevented from entering the wind tunnel portion 2 by mistake.

[0018] In the protection frame main body 10, as shown in Fig. 5, there are provided: a plurality of annular frame portions 10b arranged concentrically about a substantial center of the air inlet port 2a; and a plurality of linear frame portions 10c extended radially from the substantial center of the air inlet port 2a so as to intersect the respective annular frame portions 10b. Then, openings 10a are defined by these annular frame portions 10b and linear frame portions 10c.

[0019] At this time, with regard to the linear frame portions 10c, inside linear portions 10cA located in an inside of an annular frame portion 10bA, which serves as the innermost circumferential-side one among the plurality of annular frame portions 10b, and outside linear portions 10cB located on an outside of the annular frame portion 10bA concerned are shifted from each other with respect to linear directions as diameter directions.

[0020] The inside linear frame portions 10cA and the outside linear portions 10cB are shifted from each other as described above, whereby an edge is not erected on an intersection of the center portion. Accordingly, strength of a metal mold can be ensured, and in addition, a mesh-like filter 11 can also be arranged in the annular frame portion 10bA serving as the innermost circumferential-side one.

[0021] More on an outside of the protection frame main body 10, as shown in Fig. 5, the mesh-like filter 11 is arranged, which divides the openings 10a of the protection frame main body 10 more finely. The mesh-like filter 11 has a function to suppress relatively small foreign objects such as dirt, dust and hair from entering the wind

tunnel portion 2.

[0022] In this case, the mesh-like filter 11 is formed of metal mesh or mesh composed of fire-resistant resin such as polyester, and preferably, the mesh-like filter 11 has a mesh width as fine as 300 to 650 μm , in which an aperture ratio ranges from 50 to 90 percent (preferably, 50 to 75 percent). By using the mesh-like filter 11 with the fine mesh width as described above, small dust, hair and the like can be more effectively prevented from entering the fan 61, the motor 62 and the heater portion.

[0023] The protection frame main body 10 is formed of a synthetic resin material, and preferably, a thickness thereof is approximately 1.5 mm. Moreover, the protection frame main body 10 and the mesh-like filter 11 are molded integrally with each other by a synthetic resin material, and at this time, among such synthetic resin materials for use in the molding, it is preferable to use ABS, which has a low melting point, in terms of preventing a deterioration of the mesh-like filter 11 at the time of the molding.

[0024] Incidentally, in the case where the protection frame main body 10 and the mesh-like filter 11 are simply joined to each other by thermal welding and the like, the mesh-like filter 11 becomes prone to be peeled off at the time of performing cleanup therefor; however, if the protection frame main body 10 and the mesh-like filter 11 are molded integrally with each other, then the mesh-like filter 11 can be suppressed from being peeled off from the protection frame main body 10. As described above, the protection frame main body 10 and the mesh-like filter 11 are molded integrally with each other, whereby it becomes possible to prevent the peeling off of the mesh-like filter 11 more surely at the time of performing the cleanup therefor. Moreover, the protection frame main body 10 and the mesh-like filter 11 are molded integrally with each other, whereby a sense of togetherness of both thereof is enhanced, thus making it possible to further enhance the exterior appearance thereof.

[0025] Moreover, with regard to the linear frame portions 10c of the protection frame main body 10, in this embodiment, there are provided: first frames 10c1, which serve as main frames; and second frames 10c2 and third frames 10c3, which serve as sub-frames. Then, preferably, a width of the first frames 10c1 is set at approximately 2 mm, and a width of the second frames 10c2 and the third frames 10c3 is set at approximately 1.5 mm. At this time, preferably, the number of first frames 10c1, which serve as the main frames and have the largest width, is different from the number of flow adjustment stems 63 and the number of fins of the fan 61 in the air blower unit 6 in consideration of a problem of noise caused by a resonance. In this embodiment, as shown in Fig. 2 and Fig. 7, the number of flow adjustment stems 63 is set at seven, the number of fins of the fan 61 is set at six, and the number of first frames 10c1 is set at eight.

[0026] Furthermore, the second frames 10c2 are arranged at intermediate points between the first frames 10c1, whereby strength of the protection frame main

body 10 can be further increased. The third frames 10c3 are made capable of ensuring strength of the mesh-like filter 11 at the time when the protection frame main body 10 is molded integrally with the mesh-like filter 11.

[0027] Note that strength of the air inlet port 2a is enhanced by increasing the arrangement number of bars such as the annular frame portions 10b and the linear frame portions 10c, and a breakage of the air inlet port 2a, which may be caused by droppage and an impact, can be further reduced. Meanwhile, in terms of performance, the quantity of the air is decreased by the increase of the bars. Therefore, in consideration of a balance among these factors, the number of annular frame portions 10b and the number of linear frame portions 10c in the protection frame main body 10 are decided.

[0028] Moreover, in this embodiment, a shape of each of the openings 10a of the protection frame main body 10 is a substantially trapezoidal shape by the annular frame portions 10b and the linear frame portions 10c; however, without being limited to this, it is also possible to form the protection frame main body 10 so that a honeycomb structure in which each of the openings 10a becomes hexagonal can be adopted therefor.

[0029] If the honeycomb structure is adopted for the protection frame main body 10 including the openings 10a, then strength of the bar portions can be kept uniform. In addition, a total area of the openings 10a can be further increased. Accordingly, the quantity of the air can be further increased.

[0030] Moreover, as shown in Fig. 5, a protection frame sub-body 12 is provided more on an outside of the mesh-like filter 11. Openings 12a of this protection frame sub-body 12 corresponds to the openings 10a of the protection frame main body 10, and a shape thereof is substantially the same as the shape of the openings 10a. That is to say, the protection frame sub-body 12 includes annular frame portions 12b and linear frame portions 12c, which are similar to those of the protection frame main body 10. Then, the openings 10a and 12a of these protection frame main body 10 and support frame sub-body 12 are allowed to substantially coincide with an inflow direction of the air.

[0031] As described above, the openings 10a of the protection frame main body 10 and the openings 12a of the protection frame sub-body 12 are allowed to coincide with each other, whereby strength thereof can be ensured while suppressing the quantity of the air from being decreased.

[0032] Moreover, the protection frame sub-body 12 is molded of a synthetic resin material in a similar way to the protection frame main body 10 and the mesh-like filter 11, and these protection frame main body 10, mesh-like filter 11 and protection frame sub-body 12 are molded integrally with one another.

[0033] As described above, the protection frame main body 10 and the mesh-like filter 11 are molded integrally with each other, whereby it becomes possible to prevent the peeling off of the mesh-like filter 11 more surely.

Moreover, the outside of the mesh-like filter 11 can be covered with the protection frame sub-body 12, and accordingly, the breakage of the mesh-like filter 11 owing to rubbing and the like can be suppressed, and durability of the mesh-like filter 11 can be further enhanced.

[0034] Furthermore, the protection frame sub-body 12 is formed so that a thickness thereof can be thinner than the thickness of the protection frame main body 10. For example, in the case where the thickness of the protection frame main body 10 is approximately 1.5 mm, it is preferable that the protection frame sub-body 12 be formed at a thickness of approximately 0.2 mm.

[0035] As described above, the protection frame sub-body 12 is formed so that the thickness thereof can be thinner than the thickness of the protection frame main body 10, whereby it is facilitated to remove the dust in the case where the dust adheres onto the mesh-like filter 11.

[0036] Furthermore, in this embodiment, the protection frame main body 10 is coupled integrally or tightly to the housing 3 so as to be undetachable therefrom. As described above, the protection frame main body 10 is made undetachable, whereby the mesh-like filter 11 and the protection frame sub-body 12, which are molded integrally therewith, also become undetachable. Specifically, as shown in Fig. 4, attachment projections 10d are formed on a plurality of spots or entire circumference of a peripheral edge portion of the protection frame main body 10, and the attachment projections 10d are adhered or inserted with pressure to the housing 3 at the time of fitting the attachment projections 10d concerned to an outer circumference of the rear end portion of the housing 3. In such a way, the detachment of the protection frame main body 10 is not performed easily, and the protection frame main body 10 can be made undetachable in a usual operation.

[0037] As described above, the protection frame main body 10 is coupled integrally or tightly to the housing 3 so as to be undetachable therefrom. In such a way, in comparison with the case where a filter member such as a protection frame body is freely detachably attached to the air inlet port 2a, the number of parts can be reduced, and a cost reduction, a weight reduction and a size reduction can be thereby achieved. For example, when the filter member is freely detachably attached to the air inlet port 2a, it is necessary to install still another filter on a depth side in order to prevent the finger and the like from entering the wind tunnel portion 2 in the case of detaching the filter member concerned. In the case where another filter member is provided, the filter member adopts a double structure, and accordingly, a cost increase, a weight increase and a size increase, which are caused by an increase of the number of parts, are brought about. However, the protection frame main body 10 is made undetachable as in this embodiment, whereby it becomes unnecessary to install another filter member, and the number of parts can be reduced. Accordingly, the cost reduction, the weight reduction and the size reduction

can be achieved.

[0038] Moreover, the protection frame main body 10 is made undetachable in advance, whereby an apprehension is eliminated that the protection frame main body 10 may be lost.

[0039] Here, in this embodiment, a transparent or translucent light transmission portion is formed in at least a part of the housing 3.

[0040] Specifically, at least a part of the housing 3, that is, a portion, which covers the ion generation unit 8 provided in an upper part of the housing 3 in this embodiment, is composed of a transparent or translucent decorative case 20 in which a decorative portion 21 is provided on a back side (a center direction side of the housing 3). This decorative case 20 is integrally molded of a transparent or translucent synthetic resin material.

[0041] Then, on a back surface of this decorative case (light transmission) 20, the decorative portion 21 formed of an aggregate of plural surfaces is provided.

[0042] In this embodiment, the decorative portion 21 provided on the back surface of the decorative case 20 is formed into a diamond cut-like polyhedral shape formed out by a thickness change of the decorative case 20 as shown in Fig. 10.

[0043] Then, the decorative portion 21 with the polyhedral shape is coated with paint (an opaque material) having metallic gloss. That is to say, the decorative portion 21 contains an opaque material. Note that the decorative portion 21 may be subjected to impregnation of metal foil and printing by various colors besides the metallic painting. Moreover, an outer surface of the decorative case 20 may be subjected to the decoration by the printing.

[0044] As shown in Fig. 7 and Fig. 8, the decorative case 20 is attached to the housing 3 in such a manner that engagement pieces 23 provided on both sides of a substantial center portion thereof in a fore-and-aft direction are engaged with hook pieces 32 protruded from the inside of the housing 3. Moreover, as shown in Fig. 15, an engagement piece 24 provided on a rear end portion of the decorative case 20 is engaged with an engagement portion 2c that is located in the inside of the housing 3 and is protruded from the outside of the wind tunnel portion 2. Furthermore, as shown in Fig. 11 to Fig. 13, hook portions 22 provided on both sides of a front end portion of the decorative case 20 are allowed to sink into insides of the connection portions 9, whereby the decorative case 20 is attached to the housing 3. At this time, the engagement pieces 23, the hook portions 22 and the engagement pieces 24 are allowed to individually perform the engagement at positions invisible from the outside.

[0045] Moreover, the ion generation unit cover 85 is arranged in the inside of the decorative case 20; however, this ion generation unit cover 85 is adapted not to be engaged with the decorative case 20. Specifically, as shown in Fig. 4 and Fig. 15, an engagement portion (a right end portion in Fig. 4) 85a of the ion generation unit

cover 85 is engaged with an engagement piece 33 of the housing 3, and in addition, as shown in Fig. 13 and Fig. 14, engagement portions 85b formed on a front end of the ion generation unit cover 85 are allowed to sink into the insides of the connection portions 9 and to engage therewith. At this time, the engagement portions 85a and 85b of the ion generation unit cover 85 are set to state of being invisible from the outside through the transparent or translucent decorative case 20. As described above, in this embodiment, in a state of being arranged in the inside of the decorative case (light transmission portion) 20, the ion generation unit cover 85 is engaged and held on a region of the housing 3, which is other than the decorative case (light transmission portion) 20, that is, a region in which the light transmission portion is not formed.

[0046] In the hair dryer 1 with such a configuration, the fan 61 rotates by turning on the switch SW, and the air is introduced into the wind tunnel portion 2. Then, the air introduced from the air inlet port 2a is blown out toward the hair from the air blower port 2b. Note that such a blown wind can be switched between a hot wind and a cold wind by turning on and off the heater, whereby styling and drying of the hair can be arbitrarily performed. Moreover, the ion generation unit 8 is actuated, whereby the negative ions can be discharged toward the hair from the ion discharge port 83 of the ion generation unit 8. In such a way, the gloss and the moist feeling are given to the hair, and the curl of the hair is taken out effectively, and so on.

[0047] As described above, in accordance with this embodiment, the transparent or translucent light transmission portion is formed in the decorative case (at least a part of the housing 3) 20, and in addition, the decorative portion 21 formed of the polyhedral shape (the aggregate of the plural surfaces) is provided on the back surface of the light transmission portion. Therefore, when the decorative case 20 is viewed from the outside, light is reflected on the polyhedral shape of the decorative portion 21, whereby a shade pattern excellent in design can be generated. In such a way, a profound decorative effect that has not been present heretofore can be produced, an exterior appearance of the hair dryer 1 can be further enhanced, and a commercial value thereof can be thereby further enhanced. Moreover, the decorative portion 21 is provided on the back side of the decorative case 20, whereby the number of parts is reduced, thus making it possible to suppress the cost increase and the weight increase. As described above, in accordance with this embodiment, the hair dryer (hair care device) 1 excellent in decorativeness can be obtained while suppressing the cost increase and the weight increase. Furthermore, the number of parts can be reduced, and accordingly, a reduction of production steps can be achieved, and production efficiency can also be suppressed from being decreased.

[0048] Moreover, in this embodiment, the decorative portion 21 is formed into the polyhedral shape by the

thickness change of the decorative case 20. Therefore, the shade pattern of the light reflected on the decoration of the back surface of the decorative case 20 is changed in response to the thickness change of the transparent or translucent decorative case 20. In such a way, the hair dryer (hair care device) 1 with more profoundness and excellent design can be obtained.

[0049] Moreover, the decorative portion 21 contains the opaque material such as the metallic paint. Accordingly, when the transparent or translucent decorative case 20 is viewed from the outside, the engagement portions in the inside thereof can be made invisible by hiding the same by the opaque portion of the decorative portion 21. In such a way, the shade pattern of the light reflected by the decorative portion 21 on the back surface is prevented from being damaged by the engagement portions. Accordingly, the exterior appearance of the hair dryer (hair care device) 1 is made favorable, thus making it possible to further enhance the commercial value thereof.

[0050] Moreover, in this embodiment, the hair dryer (hair care device) 1 includes the ion generation unit 8 that generates and discharges the ions. In addition, this ion generation unit 8 has the ion generation unit cover 85, and the ion generation unit cover 85 is engaged and held on the region of the housing 3, in which the decorative case (light transmission portion) 20 is not formed, in a state of being arranged in the inside of the decorative case (light transmission portion) 20.

[0051] That is to say, in a state where the ion generation unit cover 85 is arranged in the inside of the decorative case 20, this ion generation unit cover 85 is held by being engaged with only the housing 3. In such a way, the ion generation unit cover 85 is not engaged with the decorative case 20, and the engagement portions of the ion generation unit cover 85 can be made invisible from the outside of the transparent or translucent decorative case 20. As a result, the exterior appearance of the portion of the decorative case 20 is made favorable, thus making it possible to further enhance the commercial value.

[0052] Moreover, the decorative case 20, which is replaceable (detachable), is used as the transparent or translucent light transmission portion. In such a way, a plurality of the decorative cases 20 patterned with pictures and illustrations are prepared, and these decorative cases 20 are replaced, whereby the hair dryer (hair care device) 1, which have a variety of variations, can be obtained.

[0053] Next, a description is made of modification examples of the hair dryer (hair care device) 1 according to this embodiment.

(First modification example)

[0054] Fig. 16 and Fig. 17 show a first modification example of the first embodiment. In this modification example, the decorative case 20 and the ion generation

unit cover 85, which are formed of the synthetic resin material, are molded integrally with each other. At this time, the decorative portion 21 as a light reflection surface is formed on a boundary surface between the decorative case 20 and the ion generation unit cover 85.

[0055] Also by this modification example described above, functions and effects, which are similar to those of the above-mentioned first embodiment, can be exerted.

[0056] Moreover, in accordance with this modification example, the decorative case 20 and the ion generation unit cover 85 are molded integrally with each other by the synthetic resin material, and accordingly, the number of parts can be reduced. Furthermore, at the time of assembly, only the decorative case 20 just needs to be engaged with the housing 3 side. Accordingly, enhancement of assembly workability can be achieved, and the hair dryer (hair care device) 1 with lower cost can be obtained.

(Second modification example)

[0057] Fig. 18 to Fig. 20 show a second modification example of the first embodiment, and show the case where an outside of the decorative case 20 is covered with a transparent or translucent second decorative case (second light transmission portion) 30.

[0058] The second decorative case 30 is formed substantially along an outer shape of the decorative case 20, and is formed a little smaller than the decorative case 20. Then, the second decorative case 30 is joined integrally to the outside of the decorative case 20. This second decorative case 30 is subjected to arbitrary decoration that enables the inside decorative case 20 to be seen through.

[0059] Also by this modification example described above, the functions and the effects, which are similar to those of the above-mentioned first embodiment, can be exerted.

[0060] Moreover, in accordance with this modification example, the outside of the decorative case (light transmission portion) 20 is covered with the transparent or translucent second decorative case (second light transmission portion) 30. Accordingly, the decoration of the second decorative case 30 transmits through the decorative case 20, becomes a shade, and is projected on the decorative portion 21 on the back surface thereof. In such a way, in combination with the shade of the light of the decorative case 20, the hair dryer (hair care device) 1, which is excellent in design, can be obtained.

(Second Embodiment)

[0061] In this embodiment, a brush-added hair dryer 1A is illustrated as the hair care device. Note that Fig. 21 and Fig. 22 show only a main body portion 100 of the hair dryer 1A, from which a brush portion is detached, and in Fig. 22, reference symbol Fr denotes the forward

direction, and reference symbol Up denotes the upward direction.

[0062] As shown in Fig. 21 and Fig. 22, the hair dryer 1A according to this embodiment basically has a similar configuration to that of the hair dryer 1 of the above-mentioned first embodiment; however does not have the grip portion 5, and is used by directly gripping the main body portion 100.

[0063] In the inside of the housing 3, the main body portion 100 includes the wind tunnel portion 2 having the air blower unit 6. Then, onto the air inlet port 2a provided on the rear end portion of the wind tunnel portion 2, there are attached the protection frame main body 10, the mesh-like filter 11 and the protection frame sub-body 12 as shown in Fig. 23. Note that these protection frame main body 10, mesh-like filter 11 and protection frame sub-body 12 are formed into shapes matched with the air inlet port 2a according to this embodiment.

[0064] Moreover, in this embodiment, the cord C to be connected to the power supply penetrates the center portions of the protection frame main body 10, the mesh-like filter 11 and the protection frame sub-body 12, and is then connected to the inside of the housing 3. Moreover, in Fig. 22, a heater device H is provided downstream of the air blower unit 6, and the switch SW that controls ON/OFF, the quantity of the air and a temperature of the hot wind is provided on a side surface of the main body portion 100.

[0065] Then, in this embodiment, the air blower port 2b is provided on the front end portion of the wind tunnel portion 2, and this air blower port 2b serves as an attachment hole to which a brush (not shown) is freely detachably fitted.

[0066] Moreover, also in this embodiment, the ion generation unit 8 is provided on the upper part of the wind tunnel portion 2 in a similar way to the above-mentioned first embodiment, and the portion that covers this ion generation unit 8 is composed of a decorative case (light transmission portion) 20A. In a similar way to the above-mentioned first embodiment, on a back surface of this decorative case 20A, a decorative portion 21 formed into a diamond cut shape is provided, and the decorative portion 21 is subjected to metallic painting and the like.

[0067] In the event of using the brush-added hair dryer 1A having such a configuration, the brush (not shown) is attached to the air blower port 2b, and the switch SW is turned on, whereby the wind such as the cold wind and the hot wind is blown out from the air blower port 2b. Then, the wind thus blown out passes through an inside of the brush, and is blown out from a surface on which bristles of the brush are formed. In such a way, the wind can be blown to the hair while combing the hair by the brush. Furthermore, the negative ions are discharged toward the hair from the ion generation unit 8, whereby the gloss and the moist feeling can be given to the hair, and the curl of the hair can be taken out effectively.

[0068] Also by this embodiment described above, the functions and the effects, which are similar to those of

the above-mentioned first embodiment, can be exerted.

[0069] Note that, also in this embodiment, the modification examples illustrated in the above-mentioned first embodiment are applicable.

[0070] The description has been made above of the preferred embodiments of the present invention; however, the present invention is not limited to the above-mentioned embodiments, and is modifiable in various ways.

[0071] For example, in the respective embodiments and modification examples, which are mentioned above, those are illustrated, in each of which the light transmission portion is provided in the portion that covers the ion generation unit; however, without being limited to this, the light transmission portion may be provided in a spot other than the ion generation unit, or may be provided entirely in the housing.

[0072] Moreover, in the respective embodiments and modification examples, which are mentioned above, the diamond cut-like polyhedrons are illustrated as the aggregates of the plural surfaces; however, without being limited to this, each aggregate of the plural surfaces may be formed, for example, by combining a plurality of curved surfaces with one another or combining curved surfaces and flat surfaces with one another. At this time, boundary portions between the respective surfaces may be made linear or curved.

[0073] Moreover, the present invention is also applicable to a hair care device in which the ion generation unit is not provided.

[0074] Furthermore, specifications (shapes, sizes, layout and the like) of the housing, the light transmission portion and other details are also appropriately changeable.

Claims

1. A hair care device (1) comprising:

a housing (3) including, in an inside thereof, a wind tunnel portion (2) provided with an air inlet port (2a) and an air blower port (2b); and an air blower unit (6) that discharges, from the air blower port (2b), air sucked from the air inlet port (2a), wherein a transparent or translucent light transmission portion (20) is formed in at least a part of the housing (3), and a decorative portion (21) is provided on a back surface of the light transmission portion (20), and the decorative portion (21) is formed of an aggregate of plural surfaces.

2. The hair care device (1) according to claim 1, wherein the aggregate of the plural surfaces of the decorative portion (21) is formed by a thickness change of the light transmission portion (20) .

3. The hair care device (1) according to claim 1 or 2, wherein the decorative portion (21) contains an opaque material.

4. The hair care device (1) according to any one of claims 1 to 3, wherein the hair care device (1) includes an ion generation unit (8) that generates and discharges ions, and the ion generation unit (8) has an ion generation unit cover (85), and the ion generation unit cover (85) is engaged and held on a region of the housing (3) in a state of being arranged in an inside of the light transmission portion (20), the region being without the light transmission portion (20) formed therein.

5. The hair care device (1) according to claim 4, wherein the ion generation unit cover (85) is molded integrally with the inside of the light transmission portion (20).

6. The hair care device (1) according to any one of claims 1 to 5, wherein a transparent or translucent second light transmission portion (30) is formed on an outside of the light transmission portion (20).

7. The hair care device (1) according to any one of claims 1 to 6, wherein the housing (3) has a detachable decorative case (20), and the light transmission portion (20) is formed in the decorative case (20).

35

40

45

50

55

FIG. 1

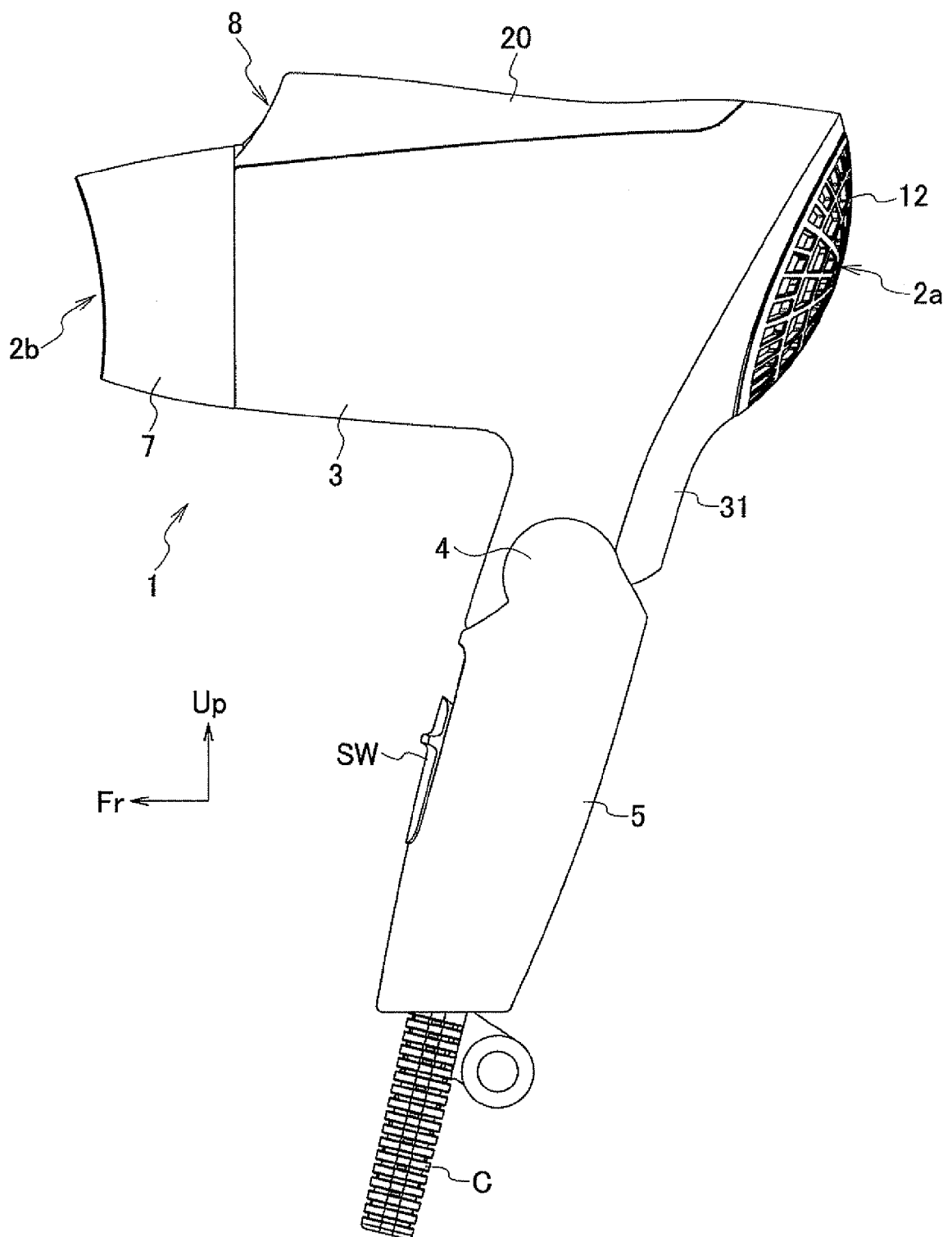


FIG. 2

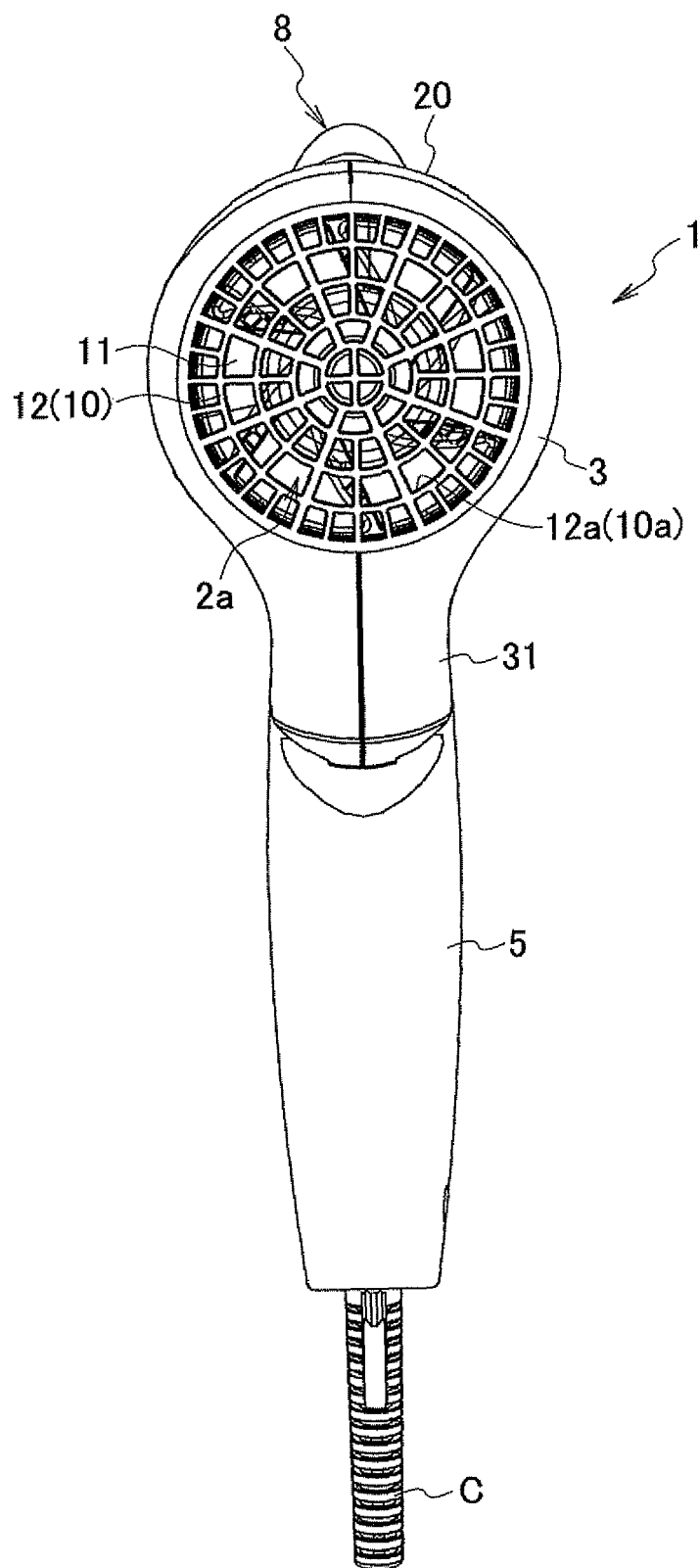


FIG. 3

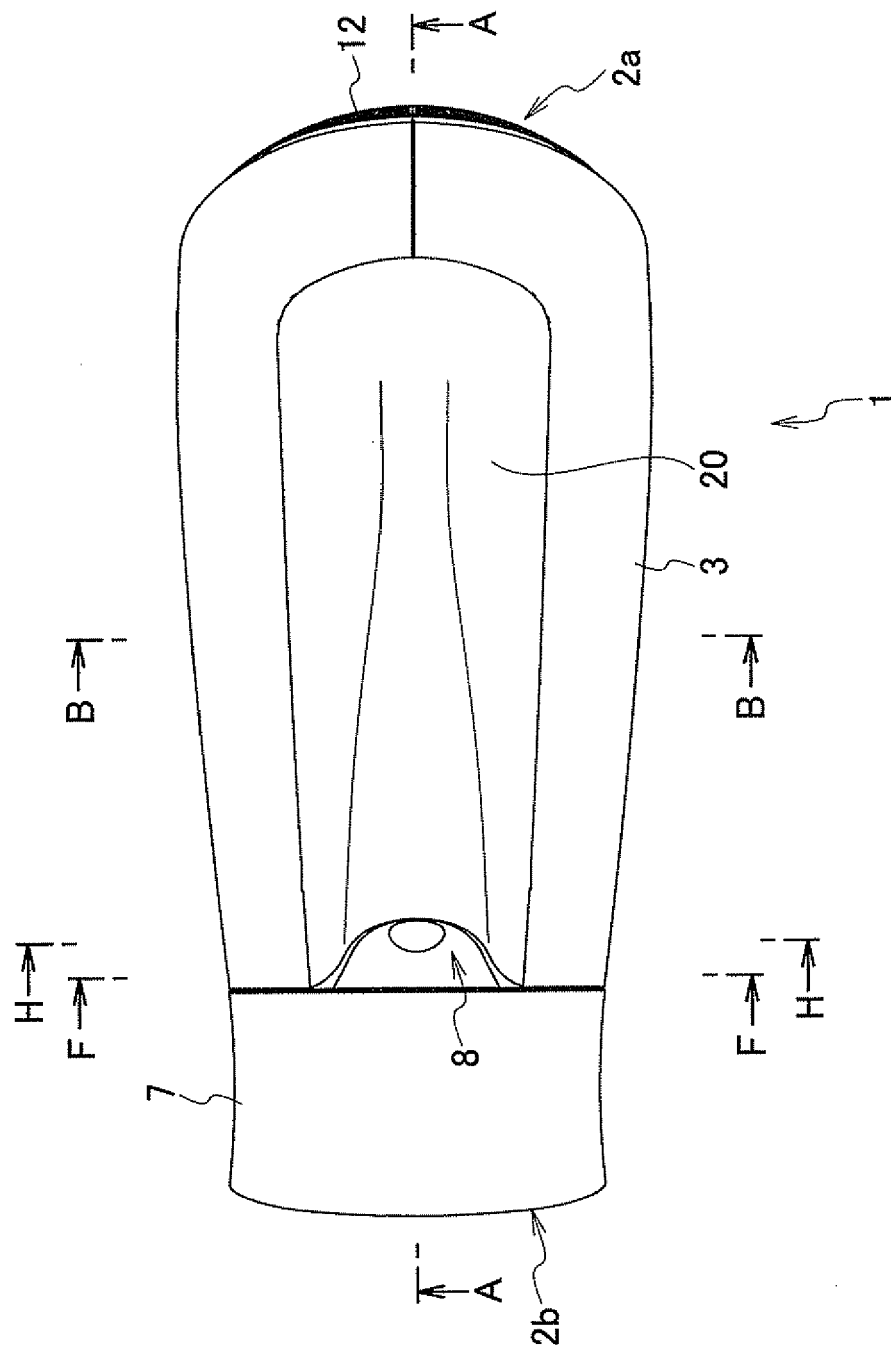


FIG. 4

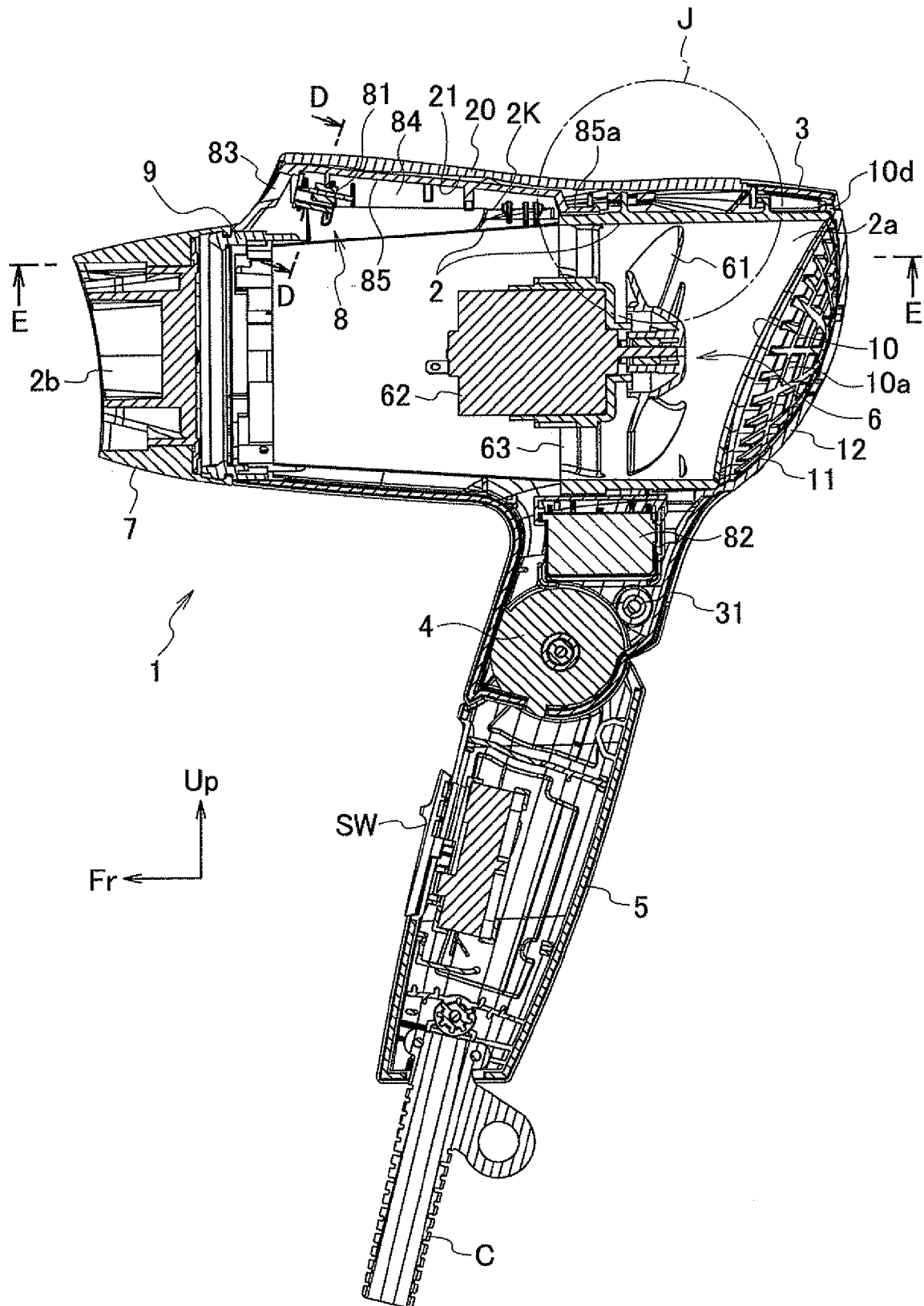


FIG. 5

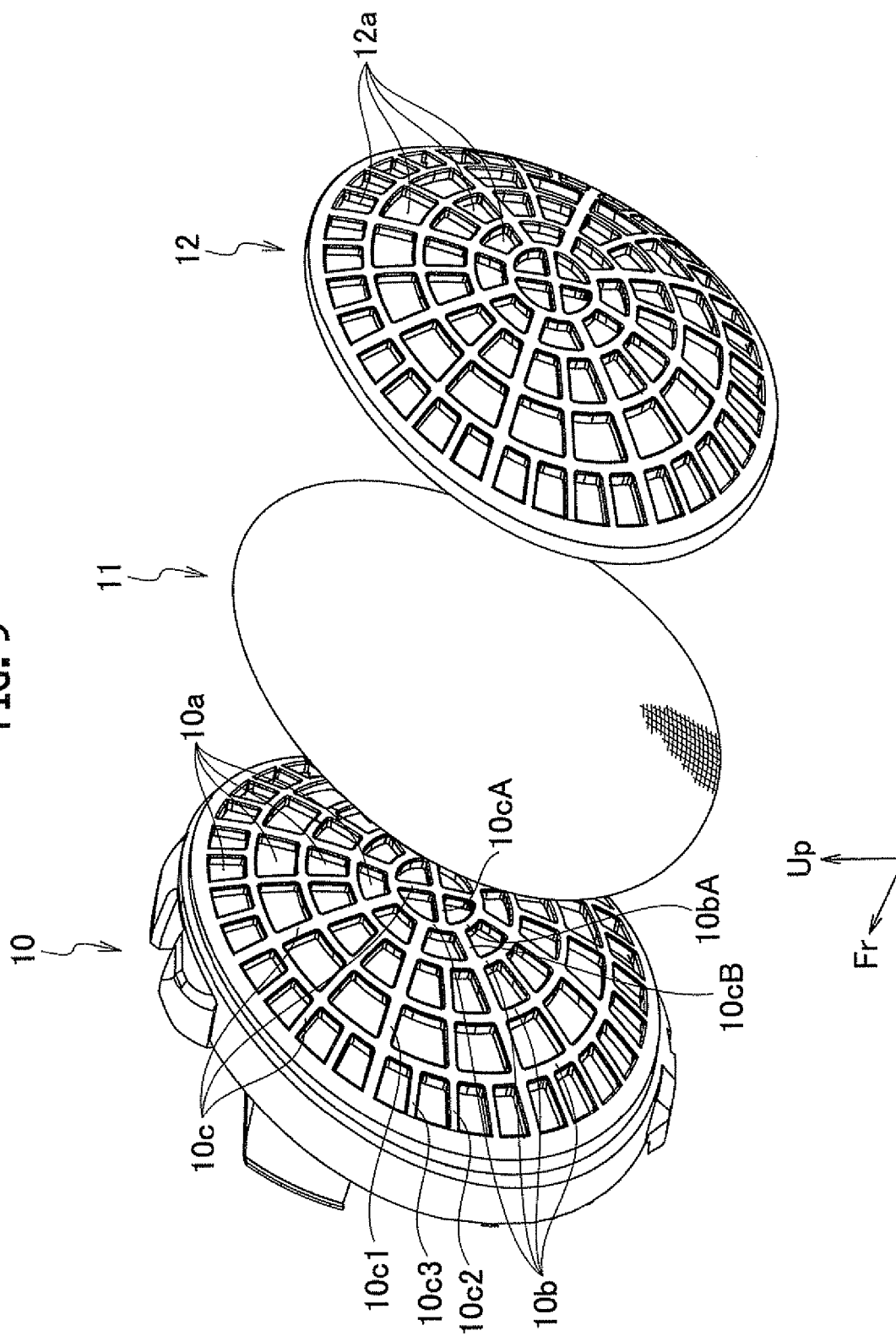


FIG. 6

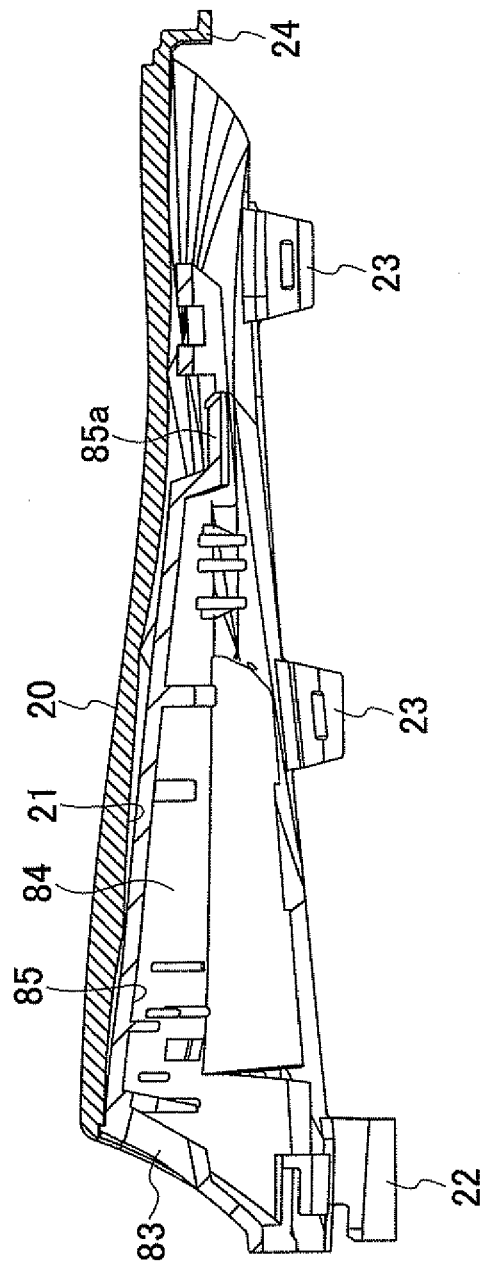


FIG. 7

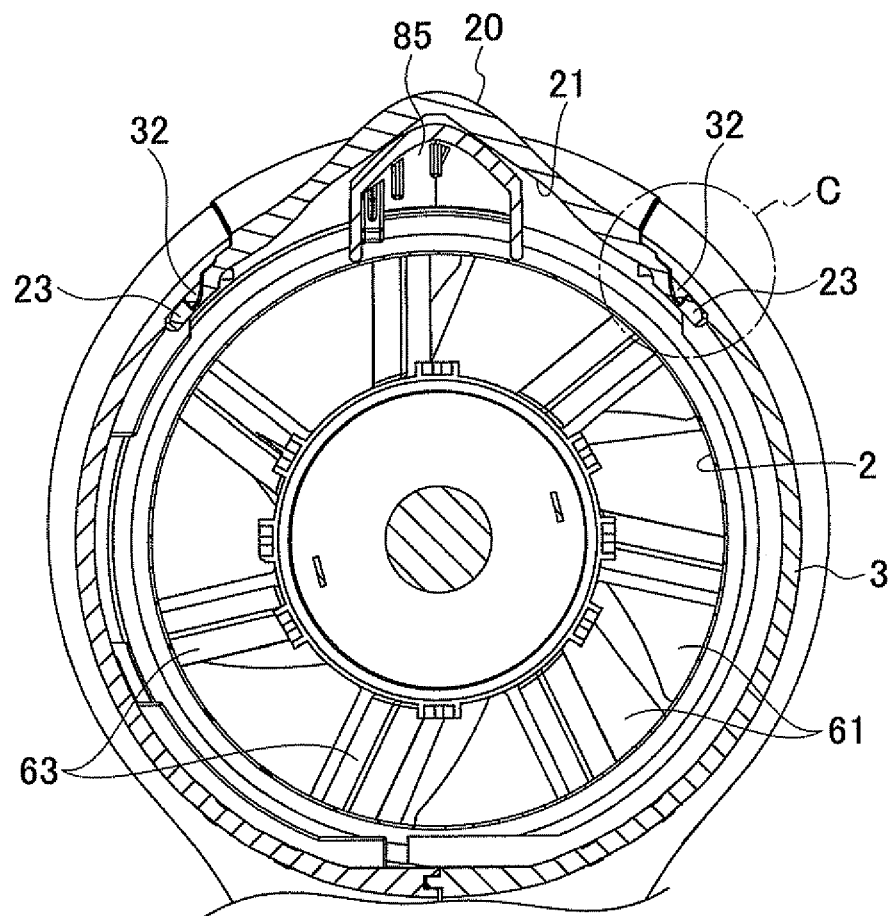


FIG. 8

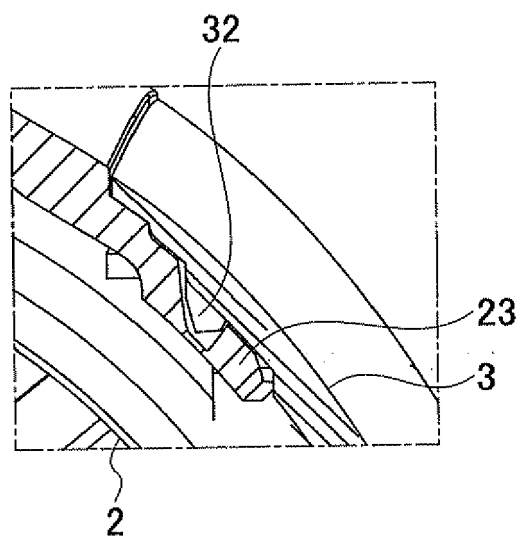


FIG. 9

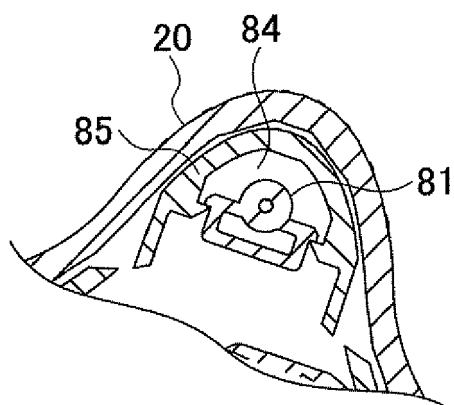


FIG. 10

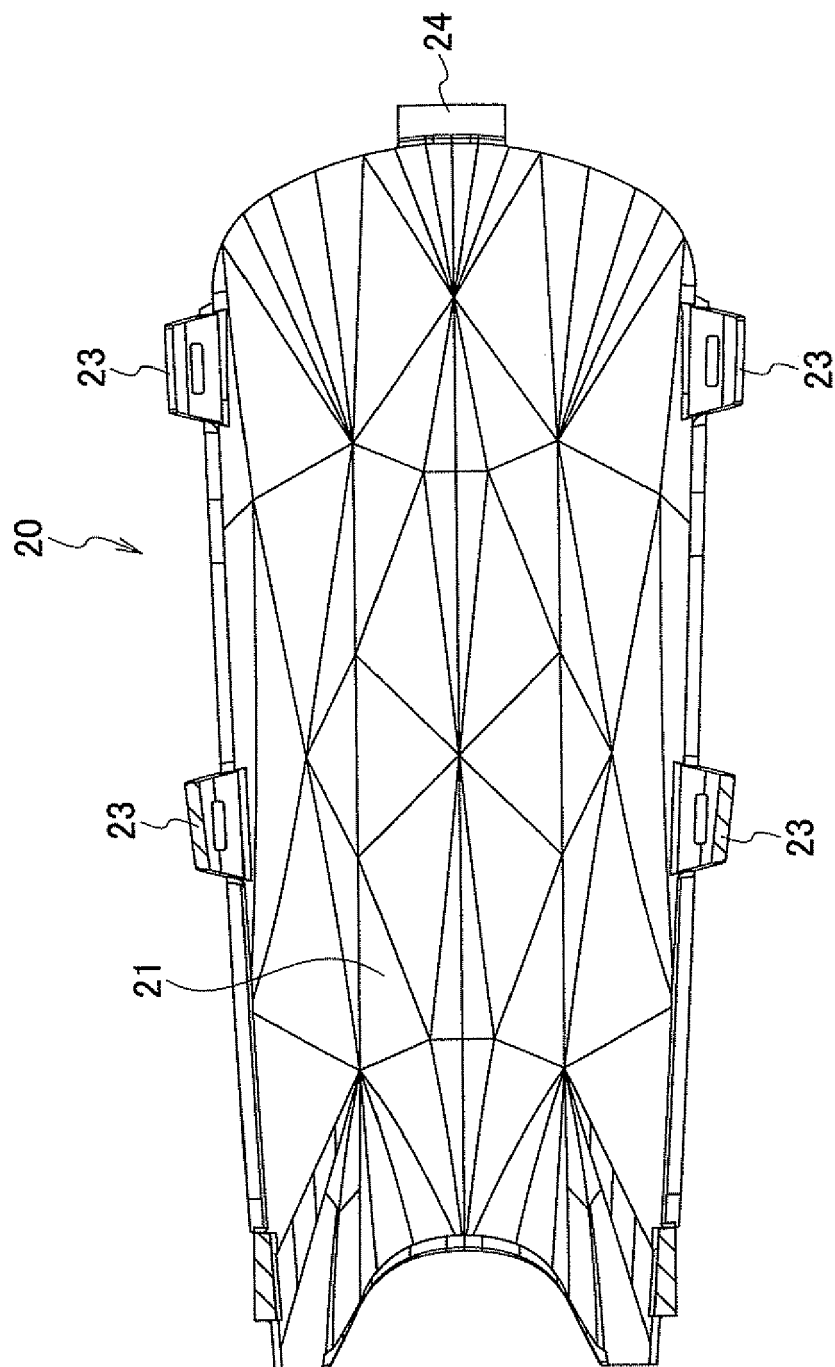


FIG. 11

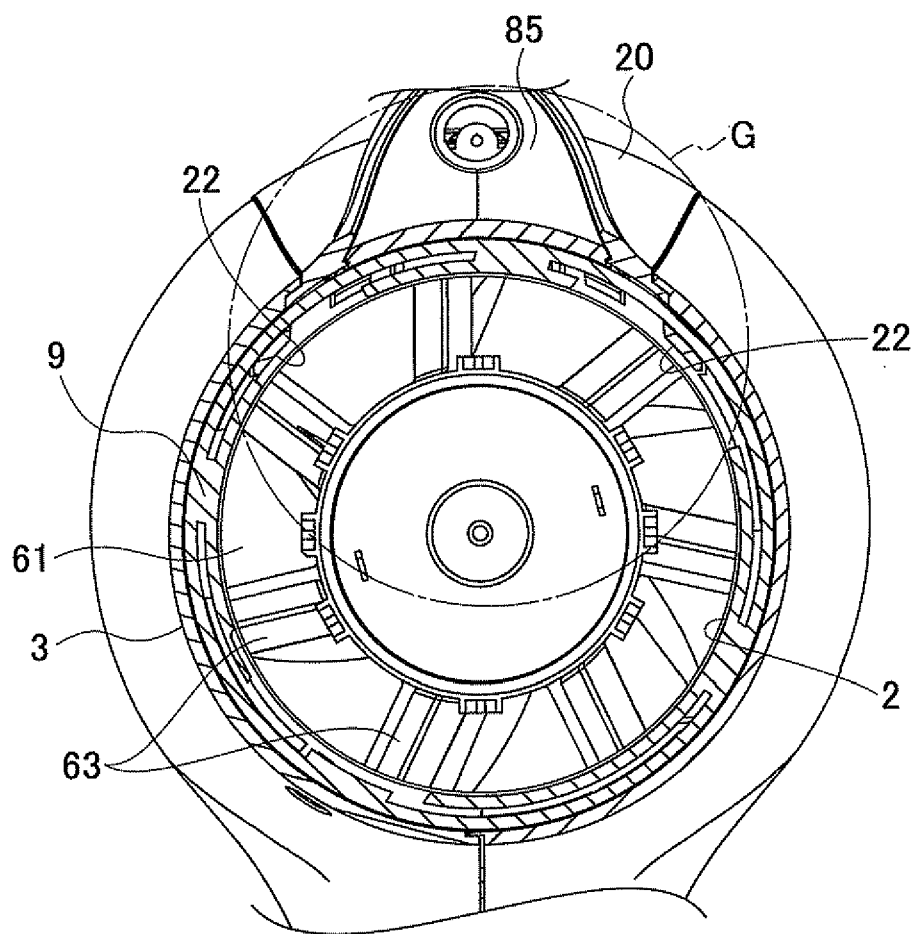


FIG. 12

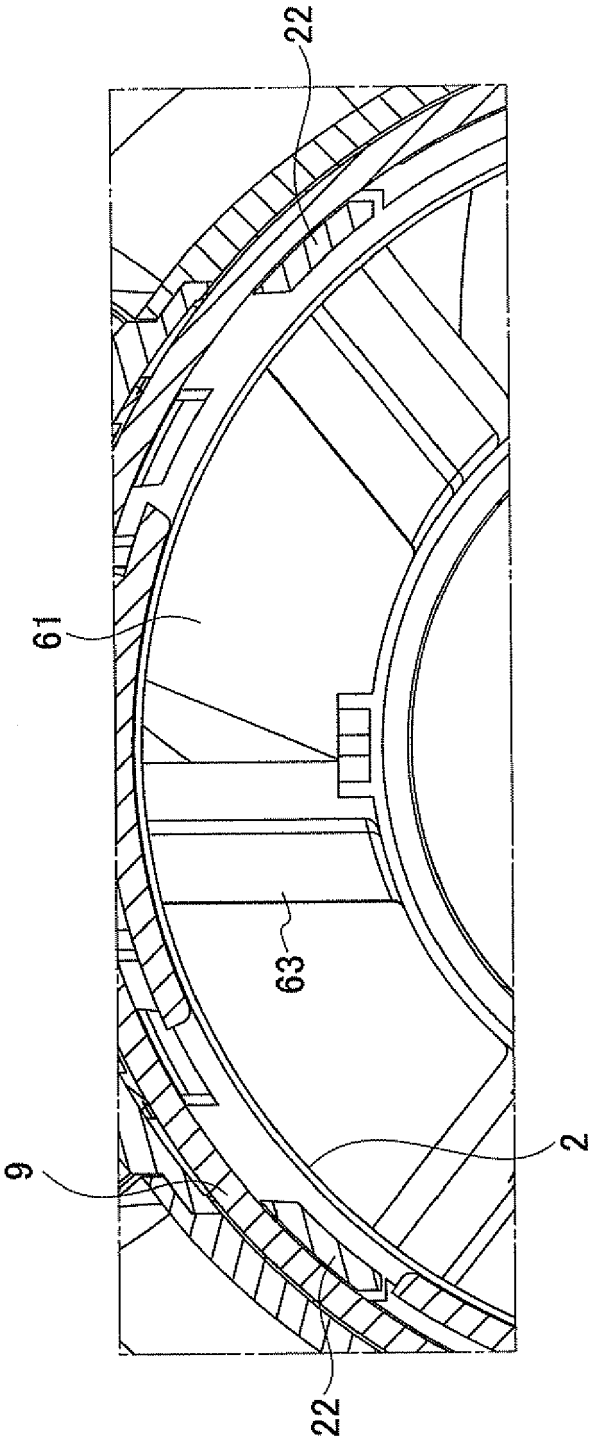


FIG. 13

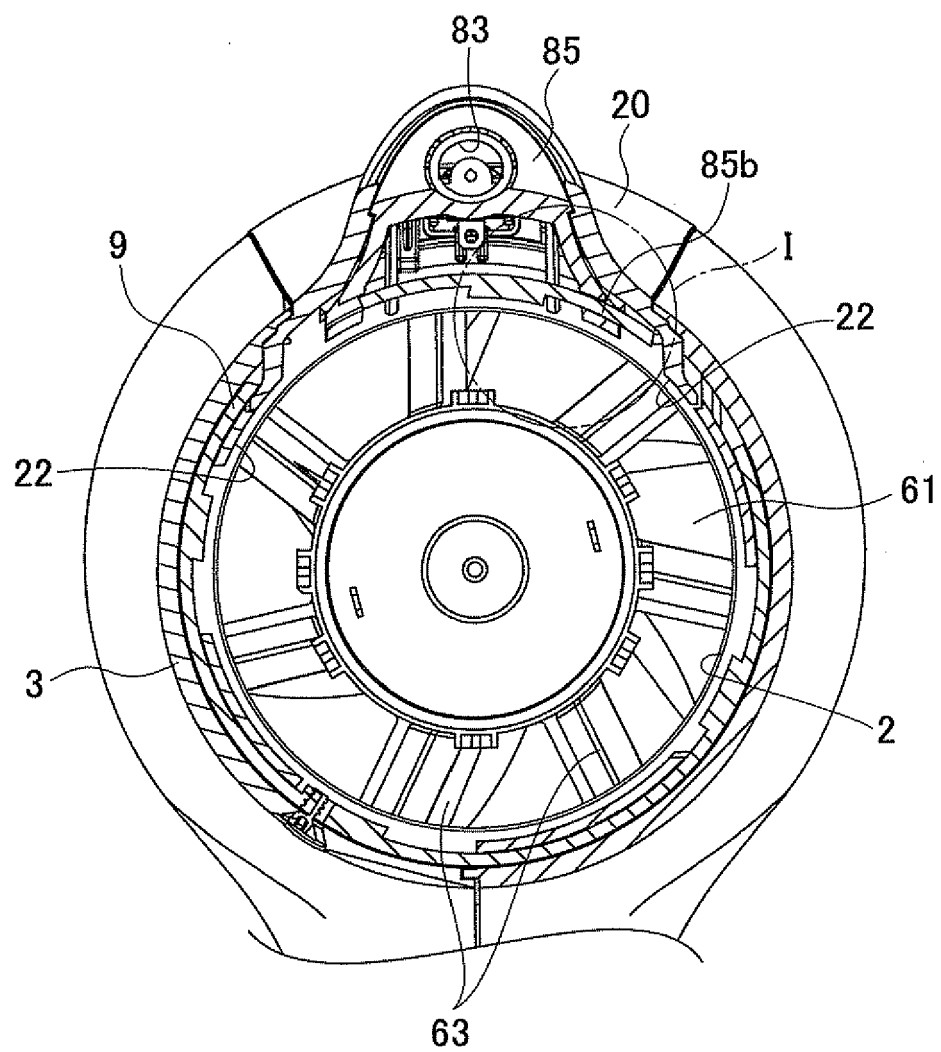


FIG. 14

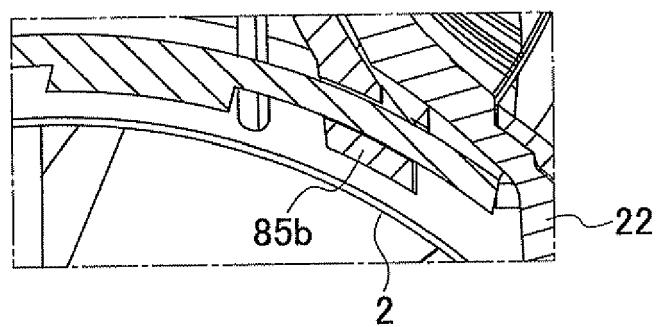


FIG. 15

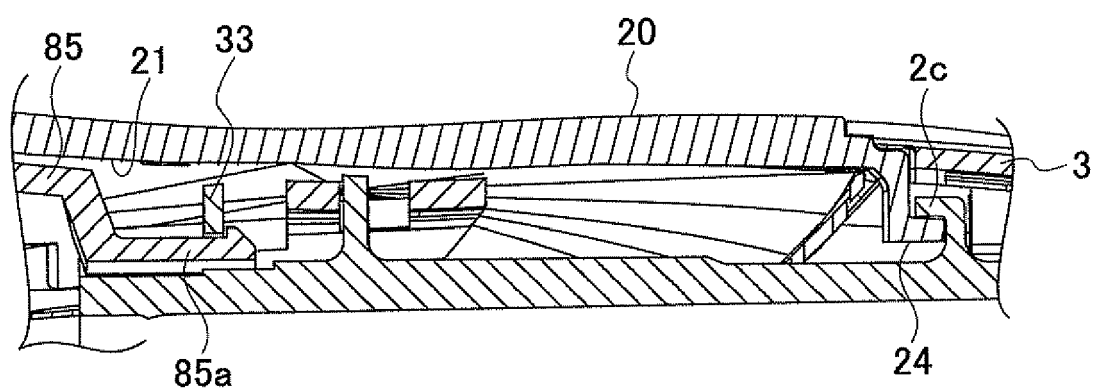


FIG. 16

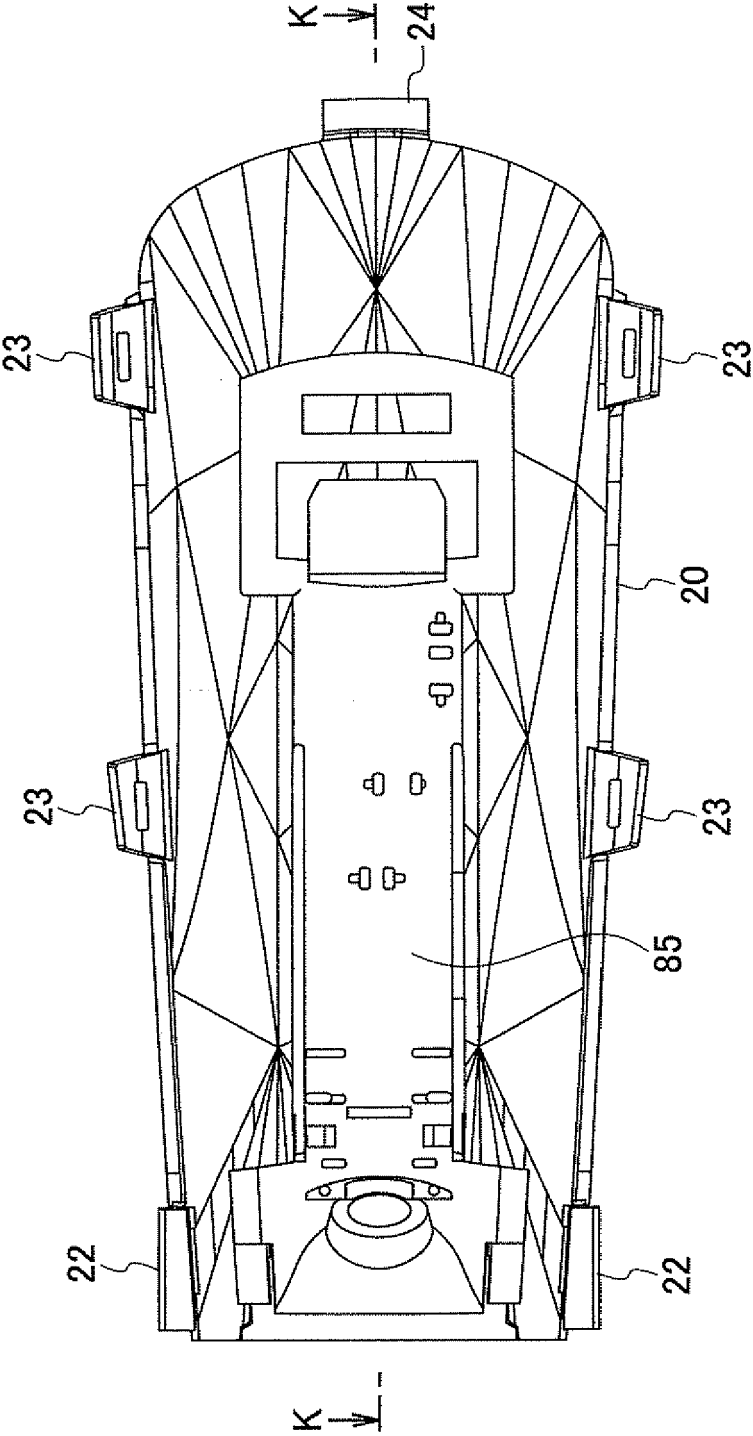


FIG. 17

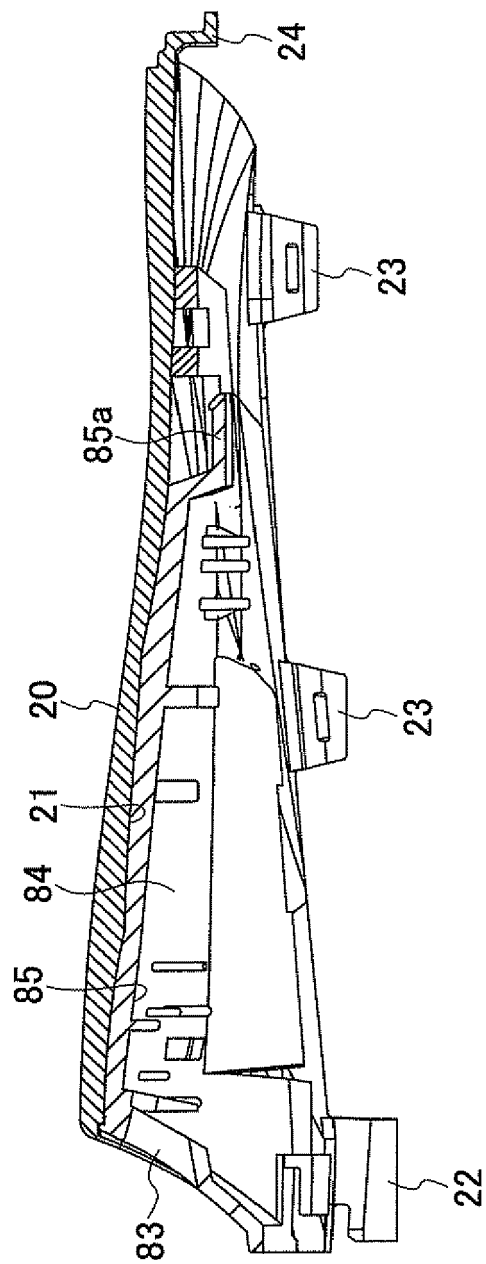


FIG. 18

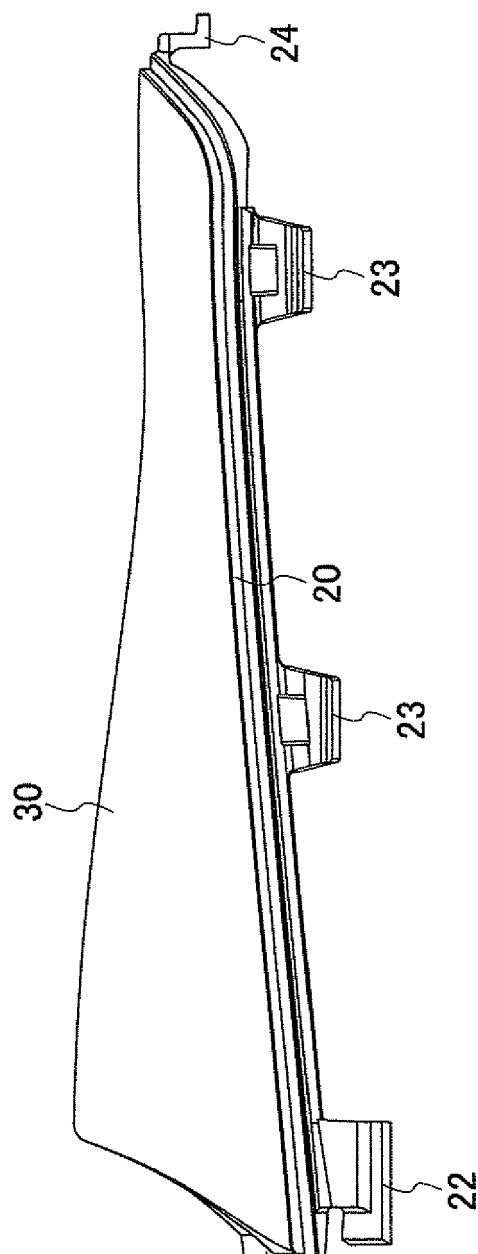


FIG. 19

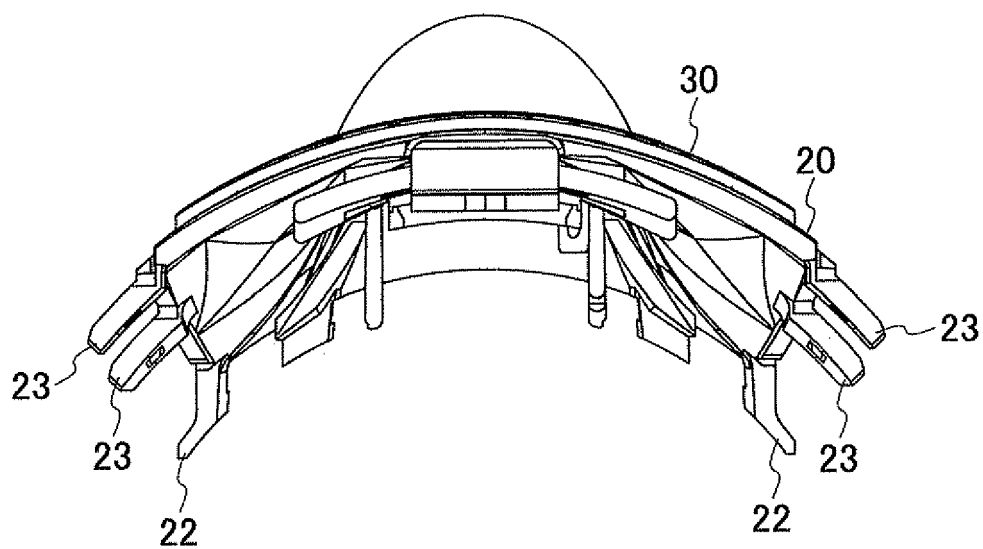


FIG. 20

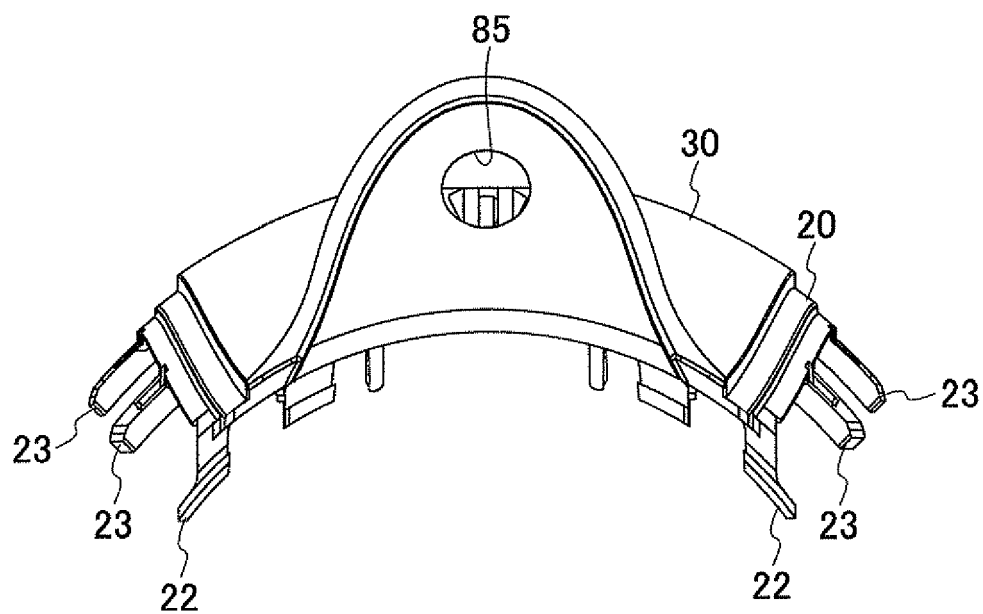


FIG. 21

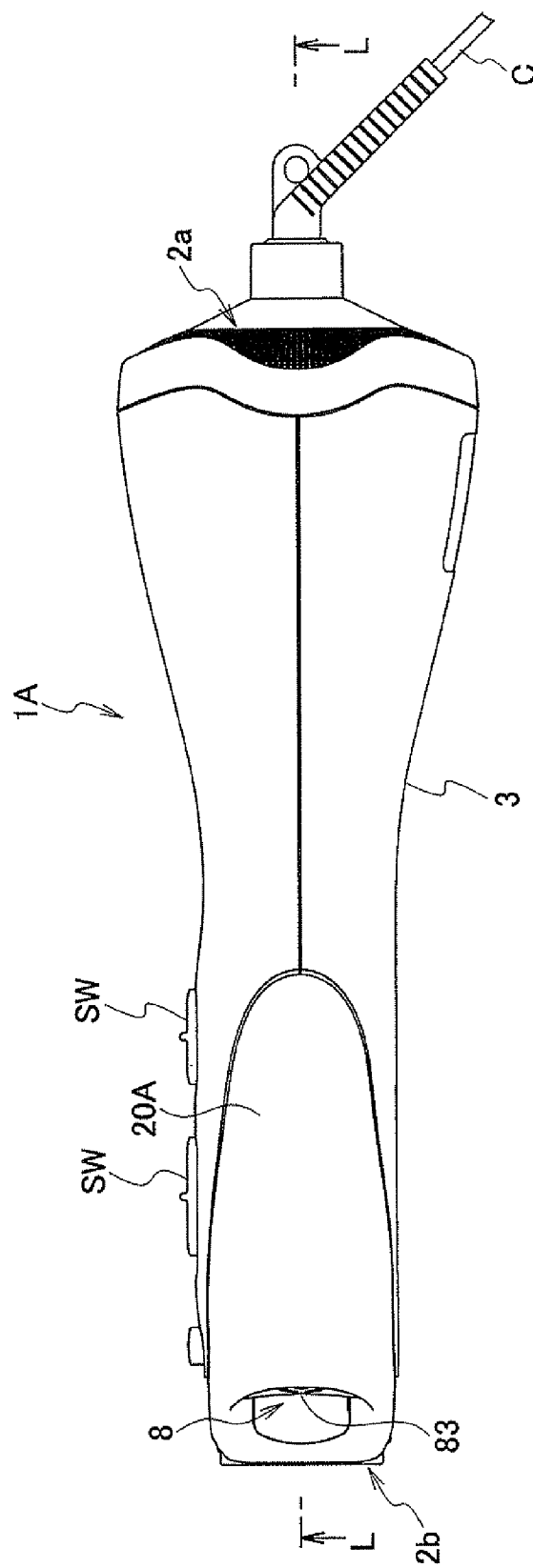


FIG. 22

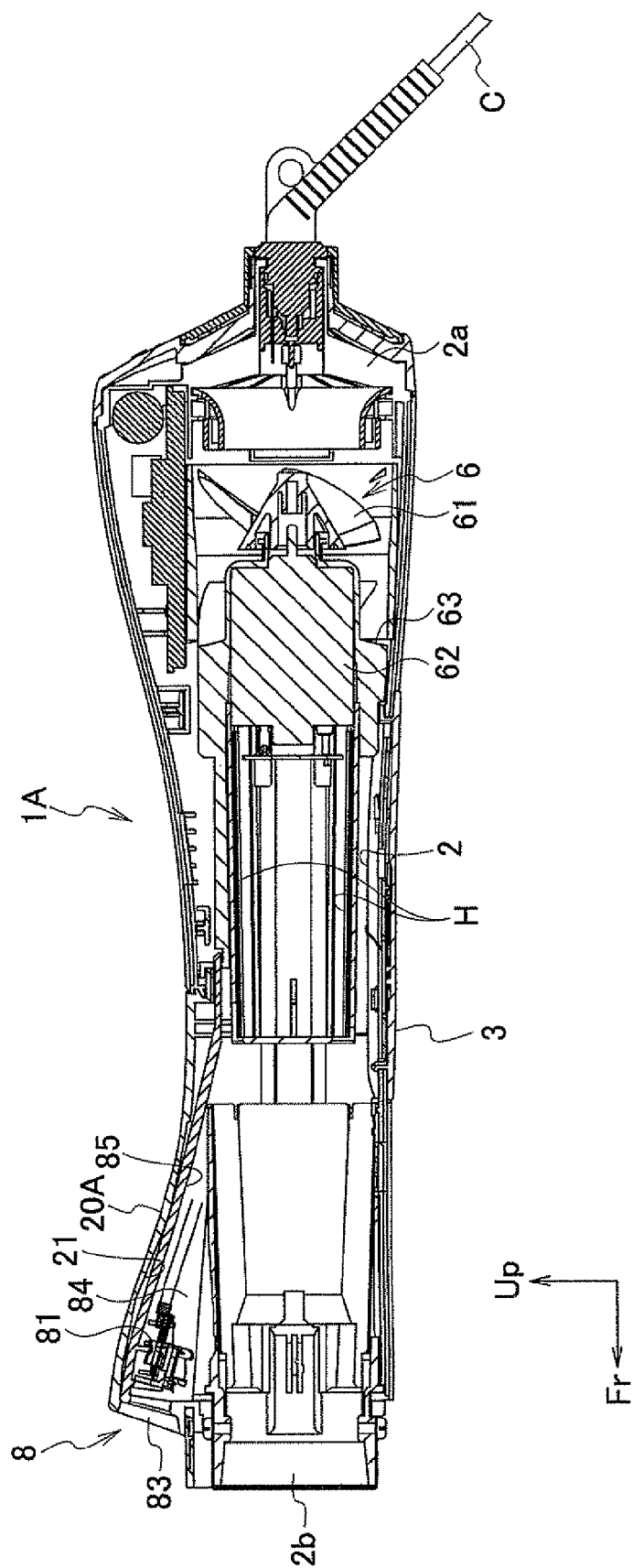
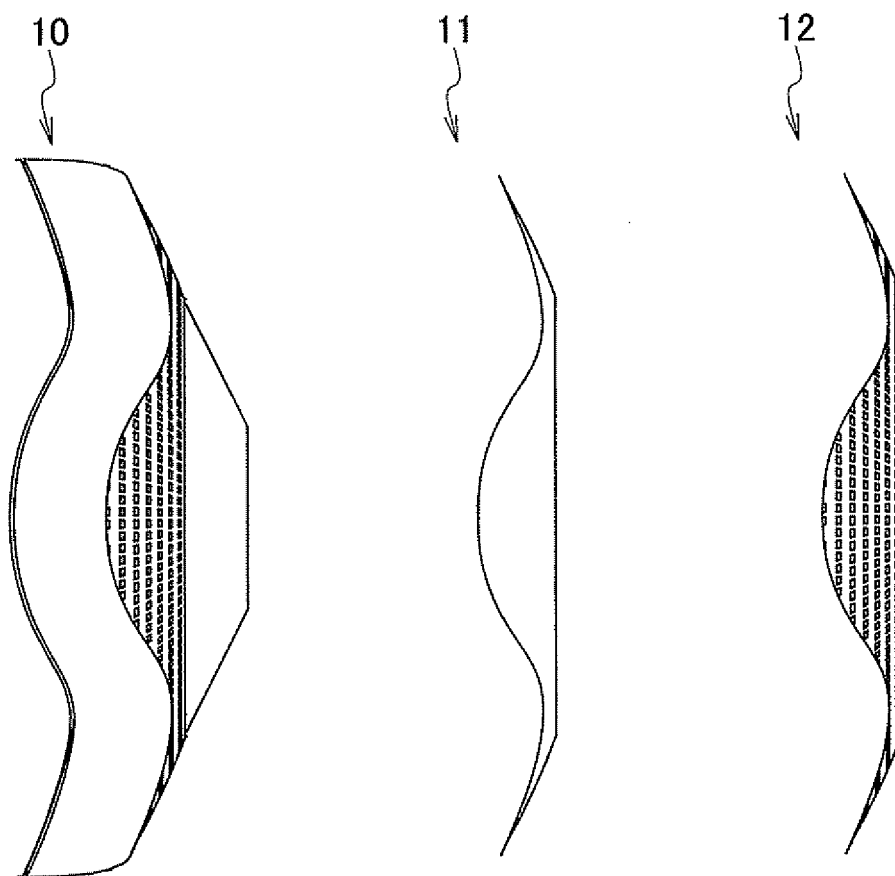


FIG. 23





EUROPEAN SEARCH REPORT

Application Number
EP 11 16 6912

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	WO 2006/013283 A1 (SEB SA [FR]; LEGRAIN MARC [FR]) 9 February 2006 (2006-02-09) * page 3, line 1 - page 14, line 19; figures 1,2, 3a, 3b, 4a-4f * -----	1-7	INV. A45D20/12
			TECHNICAL FIELDS SEARCHED (IPC) A45D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 July 2011	Examiner Ionescu, C
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			

 1
 EPO FORM 1503 03.82 (P04C01)

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

EP 11 16 6912

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.

19-07-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006013283 A1	09-02-2006	CN 1859857 A	08-11-2006
		EP 1763309 A1	21-03-2007
		FR 2872685 A1	13-01-2006

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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 P2010149091 B [0001]
- JP 3160654 B [0003]