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- **KIM, Hyoungjun**
Seoul 07796 (KR)
- **SEO, Minji**
Seoul 07796 (KR)
- **AHN, Kwangwoon**
Seoul 07796 (KR)
- **KIM, Jongchul**
Seoul 07796 (KR)
- **LEE, Seongjae**
Seoul 07796 (KR)

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(71) Applicant: **LG Electronics Inc.**
Yeongdeungpo-gu
Seoul 07336 (KR)

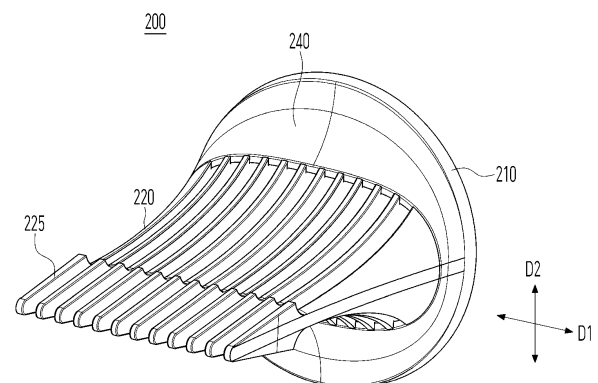
(74) Representative: **Ter Meer und Partner mbB**
Nymphenburger Str. 4
Zugang Dachauer Str. 63
80335 München (DE)

(72) Inventors:
• **LIM, Chulhee**
Seoul 07796 (KR)

(54) **HAIR STYLING NOZZLE AND HAIR DRYER**

(57) This styling nozzle coupled to an air discharge unit of a hair dryer comprises: a rear coupling unit coupled to the air discharge unit; and comb plates extending forward from the rear coupling unit and arranged at a predetermined interval in a first direction, wherein the comb plates have a rear end having both opposing ends in a second direction perpendicular to the first direction coupled to the rear coupling unit, the length in the second direction progressively becoming more narrow in the forward direction, and the rear coupling unit is located on the periphery of the air discharge unit and includes a ring coupling unit to which the both opposing ends in the second direction of the rear end of the comb plates are coupled. The styling nozzle may induce wind to gather in a straight line from the circular air discharge unit.

Fig. 14



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Description

[Technical Field]

[0001] The present disclosure relates to a hair styling nozzle for fixing a shape of hair and a hair dryer including the same.

[Background]

[0002] When reflowing moisture from human hair in a wet state as desired or styling the human hair from a current shape into a desired shape, a hair dryer that discharges gas through an air outlet may be used.

[0003] A fan unit or the like for flowing gas may be embedded in the hair dryer, and the hair dryer including such an internal configuration may be designed so that a user may conveniently use the hair dryer in consideration of its own weight and the like.

[0004] When a heater module is located in a head portion and a temperature of a case also increases due to heat of the heater module, there may be a risk of burns, and internal components such as a controller may be affected. Therefore, a structure is needed in which the heat of the heater module is not transferred to the outside or to other locations, but is entirely transferred to air passing through an airflow path.

[0005] In particular, in order to use the hair dryer wirelessly, a battery needs to be embedded, a space for mounting the battery in the hair dryer needs to be additionally secured, and components such as an ion generator may be additionally provided for functional expansion.

[0006] The hair dryer may be used for hair styling in addition to drying hair. In order to perform hair styling, a separate tool such as a hair brush or a hair iron that applies heat is needed, or professional skill is needed, and thus it is difficult to directly perform highly satisfactory styling at home.

[0007] Various types of accessories for expanding functions of the hair dryer are being developed so that hair styling may be performed more easily even at home.

[Summary]

[Technical Purpose]

[0008] A purpose of the present disclosure is to provide a hair styling nozzle for creating volume and a hair dryer including the same.

[Technical Solutions]

[0009] Provided is a styling nozzle coupled to an air outlet of a hair dryer, the styling nozzle including: a rear coupling portion fastened to the air outlet; and comb plates extending in a frontward direction from the rear

coupling portion and arranged so as to be spaced from each other by a predetermined spacing in a first direction, wherein each of the comb plates has a rear end coupled to the rear coupling portion and has a length in a second direction perpendicular to the first direction decreasing as each of the comb plates extends in the frontward direction.

[0010] Each of the comb plates may have opposing end portions in the second direction, and each of the opposing end portions may extend in a curved shape concave toward a center in the second direction.

[0011] The rear coupling portion may include a ring coupling portion located around the air outlet and coupled to both opposing ends in the second direction of the rear end of each of the comb plates, and a central coupling portion located inwardly of the ring coupling portion and coupled to a central portion in the second direction of the rear end of each of the comb plates, and the central coupling portion may be fastened to a magnet located at a center of the air outlet.

[0012] The styling nozzle may include a phase plug extending in a frontward direction from the central coupling portion and having a length in the second direction decreasing as the phase plug extends in the frontward direction, and a length in the second direction of the phase plug may be smaller than a length in the second direction of each of the plurality of comb plates.

[0013] The ring coupling portion, the comb plates, and the phase plug may be injection-molded in an integral manner with each other.

[0014] Each of both opposing end portions in the second direction of the phase plug may extend in a curved shape concave toward a center in the second direction.

[0015] The phase plug may extend in the frontward direction while a distance between an end portion in the second direction of each of the comb plates and an end portion in the second direction of the phase plug is maintained as a constant distance.

[0016] The styling nozzle may include an outer guide extending in a frontward direction from an outer circumference of the ring coupling portion and surrounding an outer circumference of the comb plates.

[0017] Each of both opposing end portions in the first direction of the outer guide may protrude in the frontward direction beyond a central portion in the first direction of the outer guide.

[0018] The styling nozzle may include a central coupling portion located inwardly of the ring coupling portion and coupled to a center of the air outlet of the hair dryer, and a phase plug extending in a frontward direction from the central coupling portion and having a vertical cross-sectional area decreasing as the phase plug extends in the frontward direction, and a length in a front-rear direction of the outer guide may be shorter than a length in a front-rear direction of the phase plug.

[0019] An array of the comb plates may include an outer comb plate located at each of both opposing end areas in the first direction of the array, wherein the out-

er comb plate may have a width in the first direction at a rear end thereof greater than a width in the first direction at a front end thereof.

[0020] Each of the comb plates may include a catching end portion having an enlarged size at a front end portion thereof.

[0021] According to another aspect of the present disclosure, provided is a hair dryer including a hair dryer main body including a ring-shaped air outlet, and a styling nozzle coupled to the air outlet, wherein the styling nozzle includes: a rear coupling portion fastened to the air outlet; and comb plates extending in a forward direction from the rear coupling portion and arranged so as to be spaced from each other by a predetermined spacing in a first direction, and each of the comb plates has a rear end having both opposing ends in a second direction perpendicular to the first direction coupled to the rear coupling portion and has a length in the second direction decreasing as each of the comb plates extends in the frontward direction.

[Advantageous Effects]

[0022] The hair styling nozzle of the present disclosure may guide air such that air from a circular air outlet is collected in a linear form.

[0023] In addition, the hair styling nozzle of the present disclosure may apply heat while fixing a shape of hair without separately using a brush.

[0024] In addition, the hair styling nozzle of the present disclosure has an advantage in that hair styling is easier because a catching protrusion is formed at an end portion, and thus hair is not separated from a comb during styling.

[0025] The effects obtainable from the present disclosure are not limited to the effects mentioned above, and other effects not mentioned will be clearly understood by those skilled in the art from the following description.

[Brief Description of the Drawings]

[0026]

FIG. 1 is a front perspective view illustrating a hair dryer according to an embodiment of the present disclosure.

FIG. 2 is a rear perspective view illustrating the hair dryer according to an embodiment of the present disclosure.

FIG. 3 is a cross-sectional view illustrating an inside of the hair dryer according to an embodiment of the present disclosure.

FIG. 4 is a perspective view of a styling nozzle according to a first embodiment of the present disclosure.

FIG. 5 is a cross-sectional view of the styling nozzle according to the first embodiment of the present

disclosure.

FIG. 6 is a front view of the styling nozzle according to the first embodiment of the present disclosure.

FIG. 7 is a plan view of the styling nozzle according to the first embodiment of the present disclosure.

FIG. 8 is a diagram illustrating airflow of the styling nozzle according to the first embodiment of the present disclosure.

FIG. 9 is a cross-sectional view of a styling nozzle according to a second embodiment of the present disclosure.

FIG. 10 is a diagram illustrating airflow of the styling nozzle according to the second embodiment of the present disclosure.

FIG. 11 is a perspective view of a styling nozzle according to a third embodiment of the present disclosure.

FIG. 12 is a cross-sectional view of the styling nozzle according to the third embodiment of the present disclosure.

FIG. 13 is a diagram illustrating airflow of the styling nozzle according to the third embodiment of the present disclosure.

FIG. 14 is a perspective view of a styling nozzle according to a fourth embodiment of the present disclosure.

FIG. 15 is a cross-sectional view of the styling nozzle according to the fourth embodiment of the present disclosure.

FIG. 16 is a diagram illustrating airflow of the styling nozzle according to the fourth embodiment of the present disclosure.

[Best Mode]

[0027] Hereinafter, an embodiment of the present disclosure will be described in detail with reference to the accompanying drawings to be easily implemented by those skilled in the art to which the present disclosure belongs.

[0028] However, the present disclosure may be implemented in many different forms and is not limited to embodiments described herein. In addition, in order to clearly describe the present disclosure, components irrelevant to the description are omitted, and like reference numerals are assigned to similar components throughout the specification.

[0029] In this specification, duplicate descriptions of the same components are omitted.

[0030] Further, in this specification, it will be understood that when a component is referred to as being "connected with" another component, the component may be directly connected with the other component or intervening components may also be present. In contrast, it will be understood that when a component is referred to as being "directly connected with" another component in this specification, there are no interven-

ing components present.

[0031] Further, in this specification, the terminology used herein is for the purpose of describing a specific embodiment only and is not intended to be limiting of the present disclosure.

[0032] Further, in this specification, the singular forms "a" and "an" are intended to include the plural forms as well, unless the context clearly indicates otherwise.

[0033] Further, in this specification, it will be further understood that the terms "comprises," "comprising," "includes," and "including" specify the presence of certain features, numbers, steps, operations, elements, and parts or combinations thereof, but do not preclude the presence or addition of one or more other features, numbers, steps, operations, elements, and parts or combinations thereof.

[0034] Further, in this specification, the term "and/or" includes a combination of a plurality of listed items or one of the plurality of listed items. In this specification, "A or B" may include "A," "B," or "both A and B."

[0035] The present disclosure relates to a portable device capable of being used handheld by a user and, more particularly, to an electronic device that is small in size and designed to be used handheld by a user. Since the portable device is not used in a stationary position but rather is held and used directly by the user, the portable device needs to be lightweight, and grip comfort of a handle 102 is important. Additionally, because the portable device is prone to contamination from external substances, a waterproof feature may be necessary. It is necessary to seal a gap between a case and a frame so that internal air is not discharged to a region other than an air outlet.

[0036] The portable device of the present disclosure relates to beauty devices. For example, the portable device relates to a hair dryer 100. While the present disclosure is described based on the hair dryer 100, the present disclosure is not limited thereto. Portable devices such as handheld skincare devices or body care devices may also be included in the scope of the present disclosure.

[0037] FIG. 1 is a front perspective view of the hair dryer 100 according to an embodiment of the present disclosure. FIG. 2 is a rear perspective view of the hair dryer 100 according to an embodiment of the present disclosure. FIG. 3 is a cross-sectional view of the hair dryer 100 according to an embodiment of the present disclosure, taken along line A-A of FIG. 2.

[0038] In the drawings, the x-axis represents the left-right direction, the y-axis represents the front-rear direction, and the z-axis represents the up-down direction. When viewed from the front, +x is to the right, and -x is to the left. Further, +y is a frontward direction, -y is a rearward direction, +z is an upward direction, and -z is a downward direction.

[0039] The hair dryer 100 according to an embodiment of the present disclosure includes a main body

including a head portion 101 and a handle portion 102. The handle portion 102 includes, at a lower portion thereof, an air inlet 104 through which air is introduced from the outside, and the head portion 101 includes an air outlet 103 through which air is discharged, a heater module 150, and a touch display 135 on a rear surface.

[0040] An inside of the main body 101 and 102 of the hair dryer 100 includes an airflow path extending from the air inlet 104 to the air outlet 103. The airflow path of the present disclosure is not a straight path. Specifically, as shown in FIG. 3, air in the airflow path flows vertically in the handle portion 102 and then bends horizontally in the head portion 101.

[0041] The air inlet 104 may be located at the lower portion of the handle portion 102, and the air outlet 103 may be located at a front of the head portion 101. The handle portion 102 and the head portion 101 may have shapes corresponding to a direction in which the airflow path extends. For usability, the handle portion 102 may extend in a direction slightly tilted in a frontward direction from a vertical direction with respect to the head portion 101.

[0042] The handle portion 102 may be formed in a cylindrical shape with a diameter that may be gripped by the user, and the head portion 101 may be formed in a cylindrical shape with a diameter greater than that of the handle portion 102. The diameter of the handle portion 102 may be uniform from the bottom to the top, but the head portion 101 may have a slightly smaller diameter at the front to guide air toward the air outlet 103.

[0043] The air inlet 104 may include air intake holes 1283 formed around a circumference of the handle portion 102 and a filter to prevent introduction of other foreign substances such as dust. A filter frame to which the filter is fixed may be located at a lower portion of the handle portion 102 and may constitute the air inlet 104.

[0044] The filter is made of a material different from that of cases 111 and 121 forming an exterior of the hair dryer 100 and is a thin film-shaped member, and thus may be damaged by an external impact. Therefore, a filter cover 128 for protecting the filter may be further included, and the filter cover 128 may be configured to be detachable for cleaning and replacement of the filter.

[0045] The air outlet 103 may be located at the front of the head portion 101 and may include a ring-shaped opening. As illustrated in FIG. 3, a heating wire 156 of the heater module 150 of the present disclosure has a donut shape in which a central portion is empty and is wound around a cylindrical heater housing 158. The air outlet 103 may also have a ring shape corresponding to the arrangement of the heating wire 156. That is, a center of the air outlet 103 may be blocked to form the ring shape.

[0046] A hair styling nozzle 200 coupled to the air outlet 103 may be further included to expand functions of the hair dryer 100. The hair styling nozzle 200 may be easily detachably implemented through a magnet

located at a central portion of the air outlet 103.

[0047] FIG. 4 is a perspective view of a styling nozzle 200 according to the first embodiment of the present disclosure, and FIG. 5 is a cross-sectional view of the styling nozzle 200 according to the first embodiment of the present disclosure. FIG. 6 is a front view of the styling nozzle 200 according to the first embodiment of the present disclosure, and FIG. 7 is a plan view of the styling nozzle 200 according to the first embodiment of the present disclosure.

[0048] The styling nozzle 200 of the present disclosure is detachable from the air outlet 103 of the hair dryer 100 and serves to guide a flow of hot air discharged from the air outlet 103.

[0049] The styling nozzle 200 of the present disclosure may be used for volume-up styling in which heat is applied to hair roots to lift the hair from the scalp. For volume-up styling, a method is used in which hair near the scalp is wound using a roll-type comb, and then heat is applied using the hair dryer 100 to fix a shape of the hair.

[0050] However, there is a problem in that volume-up styling is difficult because it is difficult to shape hair by oneself using a roll comb and fix the hair by applying heat using the hair dryer 100. The styling nozzle 200 of the present disclosure is an auxiliary accessory that may be coupled to the hair dryer 100 so that volume-up styling is easy by easily lifting hair from the scalp without a separate roll comb.

[0051] The styling nozzle 200 of the present embodiment includes a rear coupling portion 210 contacting the air outlet 103, and comb plates 220 extending in a frontward direction from the rear coupling portion 210 and arranged so as to be spaced from each other by a predetermined spacing in a first direction. The rear coupling portion 210 may include a ring coupling portion 211 coupled to a circumference of the air outlet 103, and a central coupling portion 215 located at a center of the ring coupling portion 211 and fastened to the nozzle coupling portion 113 of the main body.

[0052] The first direction D1 means a horizontal direction in the drawings, and the second direction D2 means a vertical direction in the drawings. When the styling nozzle 200 is coupled to the air outlet 103 of the hair dryer 100, the styling nozzle 200 may be freely coupled at 360 degrees, and therefore the styling nozzle 200 will be described using the first direction D1 and the second direction D2 instead of the expressions horizontal and vertical.

[0053] When the styling nozzle 200 is coupled to the main body, the ring coupling portion 211 contacts an outer circumference of the air outlet 103. Hot air discharged from the air outlet 103 passes through a ring-shaped space between the ring coupling portion 211 and the central coupling portion 215, and the styling nozzle 200 includes the plurality of comb plates 220 extending in a frontward direction from a front surface of the ring coupling portion 211.

[0054] The plurality of comb plates 220 may be arranged to be spaced apart from each other by a predetermined distance in the first direction D1, and each of the comb plates 220 is a plate-shaped member extending in the second direction D2 perpendicular to the first direction D1. As illustrated in FIG. 5, a rear end of each of the comb plates 220 may have both opposing end portions in the second direction D2 coupled to the ring coupling portion 211, and an intermediate portion coupled to the central coupling portion 215.

[0055] Referring to FIG. 7, the plurality of comb plates 221 are spaced apart from each other at equal spacings in the first direction D1, and a thickness in the first direction D1 may have the same value in the front-rear direction. However, each of the outer comb plates 222 located at both opposing end portions in the first direction D1 may have a rear end having a thickness greater than a front end in the first direction D1. As illustrated in FIG. 6, a maximum thickness in the first direction D1 of the rear end of the outer comb plate 222 may have a value corresponding to a width of the ring coupling portion 211.

[0056] Because air is not discharged at a portion where the ring coupling portion 211 is located, it is not necessary to further provide a comb plate 220. Since the outer comb plates 222 are portions directly affected by external impact, rear ends thereof may be constructed to have a large thickness, thereby improving rigidity of the styling nozzle 200.

[0057] As illustrated in FIG. 5, a width in the second direction D2 of each comb plate 220 is greatest at a rear end and decreases as the comb plate extends in the frontward direction, so that a pointed shape of the comb plate may be formed. A section of the comb plate 220 having a narrow width in the second direction D2 may be constructed to be longer so that the comb plate 220 may be easily inserted between hairs and natural volume-up styling is possible. As illustrated in FIG. 5, an inclination of a rear end portion may be formed steeply so as to form an inclined surface concave toward a center in the second direction D2.

[0058] When hot air is applied after the comb plate 220 is inserted into hair, the hot air may be provided to hair caught by the comb plate 220, and thus volume-up styling may be performed without a separate roll comb.

[0059] Referring to FIG. 1, the air outlet 103 of the hair dryer 100 may have a ring shape and may include the nozzle coupling portion 113 provided with a magnet in a blocked portion at the center and configured to be coupled to the styling nozzle 200.

[0060] The styling nozzle 200 may include the central coupling portion 215 including a nozzle magnet facing the magnet of the nozzle coupling portion 113 with an opposite polarity. The central coupling portion 215 may be located at the center of the ring coupling portion 211 and may be disposed to have a uniform spacing from an inner circumference of the ring coupling portion 211.

[0061] A center of the central coupling portion 215

and a center of the ring coupling portion 211 may be disposed concentrically to be the same, and a space between an outer circumference of the ring coupling portion 211 and an outer circumference of the central coupling portion 215 may correspond to a ring-shaped outlet of the air outlet 103.

[0062] The styling nozzle 200 may include a phase plug 230 protruding in a frontward direction from the central coupling portion 215. As illustrated in FIG. 5, the phase plug 230 may have a pointed front end and may serve as a guide for collecting hot air discharged in a ring shape toward a center in the second direction D2.

[0063] In addition, since the plurality of comb plates 220 are connected to the ring coupling portion 211 only at both end portions in the second direction D2 of the comb plates, the comb plates 220 may be vulnerable to impact in the first direction D1 and thus may be damaged. The phase plug 230 may be integrally formed with the plurality of comb plates 220 to improve rigidity of the comb plates 220.

[0064] That is, the comb plates 220 may be coupled to the ring coupling portion 211 or the phase plug 230 at rear ends thereof, except for a section between the ring coupling portion 211 and the central coupling portion 215, thereby preventing the comb plates 220 from shaking in the first direction D1 or being damaged.

[0065] The phase plug 230 may be visually exposed between the plurality of comb plates 220 as illustrated in FIGS. 6 and 7, but as illustrated in FIG. 5, a size in the second direction D2 of the phase plug 230 is smaller than that of the comb plates 220, and therefore the phase plug 230 does not protrude from the comb plates 220.

[0066] The central coupling portion 215 has a circular shape in which a shape in the first direction D1 and a shape in the second direction D2 are the same, as illustrated in FIG. 6, so as to correspond to the nozzle coupling portion 113 of the hair dryer 100. However, because the phase plug 230 serves as a guide for collecting air toward a center in the second direction, a shape in the first direction D1 and a shape in the second direction D2 of the phase plug 230 may be different as illustrated in FIGS. 5 and 7.

[0067] Air in the first direction D1 is prevented from spreading laterally by the plurality of comb plates 220, and the shape of the phase plug 230 does not greatly affect the direction of the air. Therefore, as illustrated in FIG. 7, the phase plug 230 may form a curved surface convex in the frontward direction, may have a rectangular shape, or may have a shape in which an outline in a plan view forms a straight line.

[0068] However, because no blocking structure is provided on upper and lower sides in the second direction D2, the airflow in the second direction D2 is affected by a cross-sectional shape of the phase plug 230 in the second direction D2. FIG. 8 is a diagram illustrating a flow of hot air of the styling nozzle 200

according to the first embodiment of the present disclosure, in which (a) in FIG. 8 illustrates a flow of hot air in a portion (a) of FIG. 7 and (b) in FIG. 8 illustrates a flow of hot air in a cross-section (b) of FIG. 7.

[0069] (a) in FIG. 8 illustrates a flow of hot air in a central portion in the first direction D1, where the phase plug 230 protrudes the most, and (b) in FIG. 8 illustrates a flow of hot air in an end portion. As illustrated in (a), in the central portion in the first direction D1, hot air is discharged from both sides of the phase plug 230 in the second direction D2, and air flows along an outer surface of the phase plug 230. Therefore, it may be confirmed that air flows corresponding to the shape of the phase plug 230.

[0070] As illustrated in (b) of FIG. 8, in the end portion in the first direction D1, a gas outlet is located only at the center in the second direction D2, and hot air is discharged linearly from the central portion. However, as illustrated in (a) of FIG. 8, it may be confirmed that the central portion tends to spread widely in the second direction D2.

[0071] The shape of the phase plug 230 may be changed in order to guide the flow of hot air in the central portion in the first direction D1 to be concentrated at the center in the second direction D2.

[0072] FIG. 9 is a cross-sectional view of a styling nozzle 200 according to a second embodiment of the present disclosure, and FIG. 10 is a diagram illustrating airflow of the styling nozzle 200 according to the second embodiment of the present disclosure.

[0073] As illustrated in FIG. 9, unlike the above-described embodiment, a cross-sectional shape of the phase plug 230 in the second direction D2 has a concave shape. Like the comb plate 220, the inclination at a rear end side is steeper and the inclination at a front end is gentler, thereby forming a pointed shape, and an outer surface of a cross-section in the second direction D2 may be disposed at the same distance from an outer contour of the comb plate 220.

[0074] (a) in FIG. 10 illustrates a flow of hot air in a central portion in the first direction D1 of the embodiment of FIG. 9, and (b) in FIG. 10 illustrates a flow of hot air in an end portion in the first direction D1 of the embodiment of FIG. 9. Referring to (b) in FIG. 10, the flow of hot air in the end portion in the first direction D1 is not significantly different from that in the above-described embodiment. That is, the flow of hot air in the end portion in the first direction D1 is not greatly affected by the shape of the phase plug 230.

[0075] However, referring to (a) in FIG. 10, in the central portion, hot air flows along the outer surface of the phase plug 230, and therefore it may be confirmed that the hot air tends to be collected toward the central direction compared to (a) in FIG. 8.

[0076] FIG. 11 is a perspective view of a styling nozzle 200 according to a third embodiment of the present disclosure, and FIG. 12 is a cross-sectional view of the styling nozzle 200 according to the third embodiment of

the present disclosure. The styling nozzle 200 of the present embodiment may include an enlarged catching end portion at a front end portion of the comb plate 220. The catching end portion refers to a portion having a shape protruding from the front end portion of the comb plate 220, and may include a first catching end portion 225 enlarged in the second direction D2 as illustrated in FIG. 12.

[0077] The first catching end portion 225 may extend only to one side in the second direction D2, but as illustrated in FIG. 12, may have a shape symmetrically enlarged toward both sides in the second direction D2. The first catching end portion 225 may include a first inclined surface 225d extending from a maximum protruding portion 225a to a front end portion 225c, and a second inclined surface 225e extending from the maximum protruding portion 225a to a rear end portion 225b.

[0078] The first inclined surface 225d and the second inclined surface 225e may be symmetrical to each other. Alternatively, as illustrated in FIG. 12, the second inclined surface 225e may be steeper than the first inclined surface 225d or may be configured as a stepped portion forming 90 degrees.

[0079] The first catching end portion 225 may be configured in a shape like an arrowhead by making inclination degrees of the first inclined surface 225d and the second inclined surface 225e different from each other. The first catching end portion 225 is characterized in that insertion between hairs is easy, but removal from hair is easy only in a direction in which there is no interference with the first catching end portion 225.

[0080] A width a in the second direction D2 of the maximum protruding portion 225a of the first catching end portion 225 may be constructed to have 150% or 250% of a width b of the rear end portion 225b. If the width is too large, there is no hair catching effect, and if the width is too small, a problem of hair tangling may occur. Thus, the width may be constructed to have a size within a range of 1.5 times to 2.5 times.

[0081] FIG. 13 is a diagram illustrating airflow of the styling nozzle 200 according to the third embodiment of the present disclosure. (a) in FIG. 13 illustrates a flow of hot air in a central portion in the first direction D1, and (b) in FIG. 13 illustrates a flow of hot air in an end portion in the first direction D1.

[0082] It may be confirmed that the flow of hot air illustrated in FIG. 13 is almost the same as that of FIG. 10, and thus, when the first catching end portion 225 is added to the front end portion of the comb plate 220, the flow of hot air is not adversely affected.

[0083] FIG. 14 is a perspective view of a styling nozzle 200 according to a fourth embodiment of the present disclosure, and FIG. 15 is a cross-sectional view of the styling nozzle 200 according to the fourth embodiment of the present disclosure. In the present embodiment, even though the shape of the phase plug 230 is modified in the above-described second embodiment

or third embodiment, air spreads in the second direction D2, and it is difficult to obtain a sufficient temperature for fixing hair.

[0084] Accordingly, in order to further concentrate air toward the center and increase a temperature of hot air, the present embodiment includes an outer guide 240 surrounding a periphery of a rear portion of the comb plates 220. The outer guide 240 extends in a frontward direction from an outer circumference of the ring coupling portion 211 and surrounds an outside of the comb plates 220.

[0085] As illustrated in FIG. 15, a diameter of a front end in the second direction D2 is smaller than a diameter of a rear end, and hot air discharged from the air outlet 103 may be guided to flow toward the center in the second direction D2 while flowing along a flow path between the outer guide 240 and the phase plug 230.

[0086] FIG. 16 is a diagram illustrating airflow of the styling nozzle 200 according to the fourth embodiment of the present disclosure. As illustrated in (a) in FIG. 16, the flow is guided toward the center, so that a speed of hot air is improved and hot air may be intensively supplied to a portion to be styled.

[0087] If a length of the outer guide 240 is too long, it is difficult to insert hair between the comb plates 220, and thus a length protruding more frontward than the phase plug 230 may be short.

[0088] That is, a position of a front end portion of the outer guide 240 is located behind a front end of the phase plug 230, and the embodiment of FIG. 14 is configured such that a position of a front end of the outer guide 240 forms a straight line. However, when the front end of the outer guide 240 extends only to the same position, as illustrated in FIG. 14, an end portion in the first direction D1 has a short length of the outer guide 240.

[0089] The comb plate 220 at the end portion in the first direction D1 has a short length in the second direction D2, and thus an extension length of the outer guide 240 is also relatively short compared to the central portion. The end portion in the first direction D1 has no effect of the outer guide 240, and therefore, the outer guide 240 may extend such that a front end portion of the outer guide 240 at an end portion in the first direction D1 is located farther frontward than a central portion thereof (not illustrated).

[0090] As described above, the hair styling nozzle 200 of the present disclosure may guide air such that air from the circular air outlet 103 is collected in a linear form.

[0091] In addition, the hair styling nozzle 200 of the present disclosure may apply heat while fixing a shape of hair without separately using a brush.

[0092] In addition, the hair styling nozzle 200 of the present disclosure has an advantage in that hair styling is easier because a catching protrusion is formed at an end portion, and thus hair is not separated from a comb during styling.

[0093] Although the present disclosure has been illustrated and described with reference to specific embodiments, it will be apparent to those skilled in the art that the present disclosure may be variously improved and changed without departing from the technical spirit of the present disclosure provided by the following claims.

[Mode]

[0094] With respect to various embodiments for implementing the present disclosure, duplicate descriptions as described above in the preceding section, Best Mode for Carrying Out the Disclosure are omitted.

[Industrial Applicability]

[0095] Since the present disclosure is applicable to hair dryers in various fields, industrial applicability is recognized.

Claims

1. A styling nozzle coupled to an air outlet of a hair dryer, the styling nozzle comprising:

a rear coupling portion fastened to the air outlet; and
comb plates extending in a frontward direction from the rear coupling portion and arranged so as to be spaced from each other by a predetermined spacing in a first direction, wherein each of the comb plates has a rear end coupled to the rear coupling portion and has a length in a second direction perpendicular to the first direction decreasing as each of the comb plates extends in the frontward direction, and
wherein the rear coupling portion includes a ring coupling portion located around the air outlet and coupled to both opposing ends in the second direction of the rear end of each of the comb plates.

2. The styling nozzle of claim 1, wherein each of the comb plates has opposing end portions in the second direction, and each of the opposing end portions extends in a curved shape concave toward a center in the second direction.

3. The styling nozzle of claim 1, further comprising a central coupling portion located inwardly of the ring coupling portion and coupled to a central portion in the second direction of the rear end of each of the comb plates, wherein the central coupling portion is fastened to a magnet located at a center of the air outlet.

4. The styling nozzle of claim 3, further comprising a phase plug extending in a frontward direction from the central coupling portion and having a length in the second direction decreasing as the phase plug extends in the frontward direction, wherein a length in the second direction of the phase plug is smaller than a length in the second direction of each of the plurality of comb plates.

5. The styling nozzle of claim 4, wherein the ring coupling portion, the comb plates, and the phase plug are injection-molded in an integral manner with each other.

6. The styling nozzle of claim 4, wherein each of both opposing end portions in the second direction of the phase plug extends in a curved shape concave toward a center in the second direction.

7. The styling nozzle of claim 6, wherein the phase plug extends in a frontward direction while a distance between an end portion in the second direction of each of the comb plates and an end portion in the second direction of the phase plug is maintained as a constant distance.

8. The styling nozzle of claim 1, further comprising an outer guide extending in a frontward direction from an outer circumference of the ring coupling portion and surrounding an outer circumference of the comb plates.

9. The styling nozzle of claim 8, wherein each of both opposing end portions in the first direction of the outer guide protrudes in the frontward direction beyond a central portion in the first direction of the outer guide.

10. The styling nozzle of claim 8, further comprising:

a central coupling portion located inwardly of the ring coupling portion and coupled to a center of the air outlet of the hair dryer; and
a phase plug extending in a frontward direction from the central coupling portion and having a vertical cross-sectional area decreasing as the phase plug extends in the frontward direction, wherein a length in a front-rear direction of the phase plug is greater than a length in the front-rear direction of the outer guide.

11. The styling nozzle of claim 1, wherein an array of the comb plates includes an outer comb plate located at each of both opposing end areas in the first direction of the array, and wherein the outer comb plate has a width in the first direction at a rear end thereof greater than a width in the first direction at a front end thereof.

12. The styling nozzle of claim 1, wherein each of the comb plates includes, at a front end portion thereof, a catching end portion having an enlarged size.

13. A hair dryer comprising:

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a hair dryer main body including a ring-shaped air outlet; and

a styling nozzle coupled to the air outlet,

wherein the styling nozzle includes:

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a rear coupling portion fastened to the air outlet; and

comb plates extending in a frontward direction from the rear coupling portion and arranged so as to be spaced from each other by a predetermined spacing in a first direction,

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wherein each of the comb plates has a rear end coupled to the rear coupling portion and has a length in a second direction perpendicular to the first direction decreasing as each of the comb plates extends in the frontward direction, and

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wherein the rear coupling portion includes a ring coupling portion located around the air outlet and coupled to both opposing ends in the second direction of the rear end of each of the comb plates.

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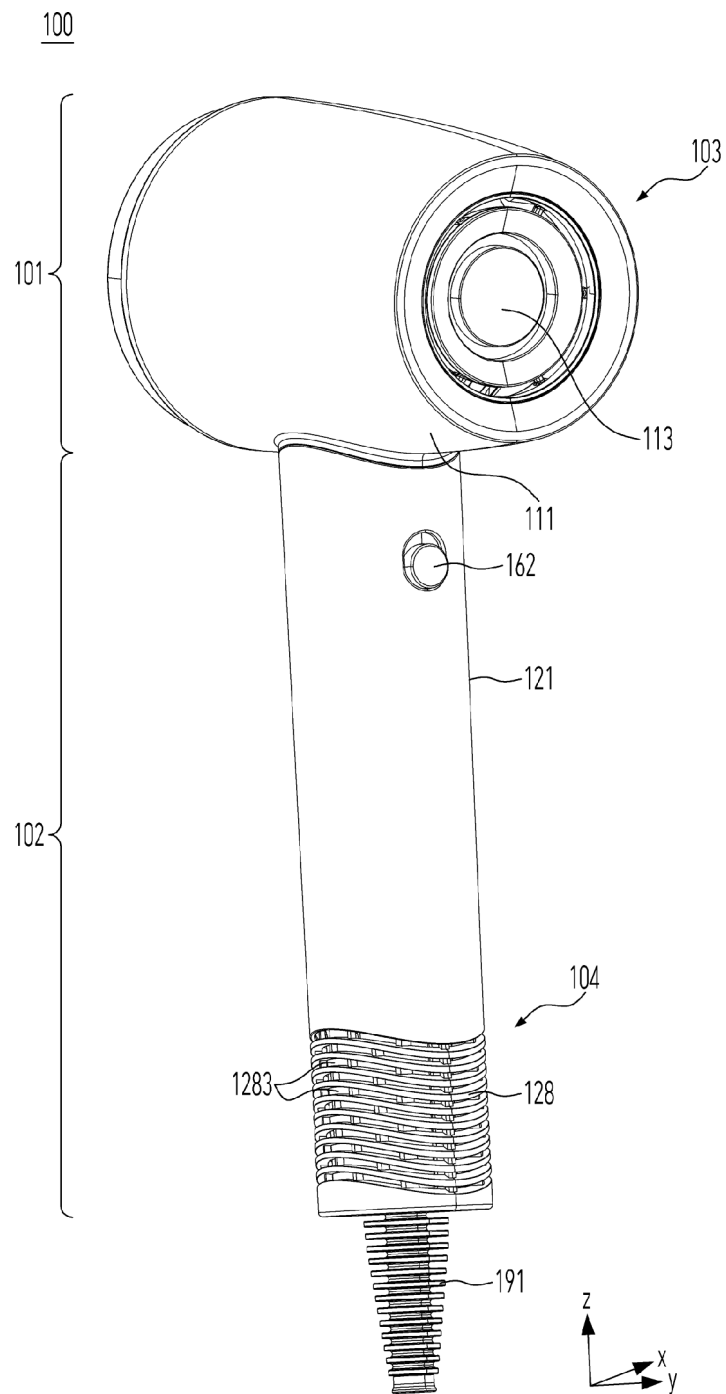
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Fig. 1



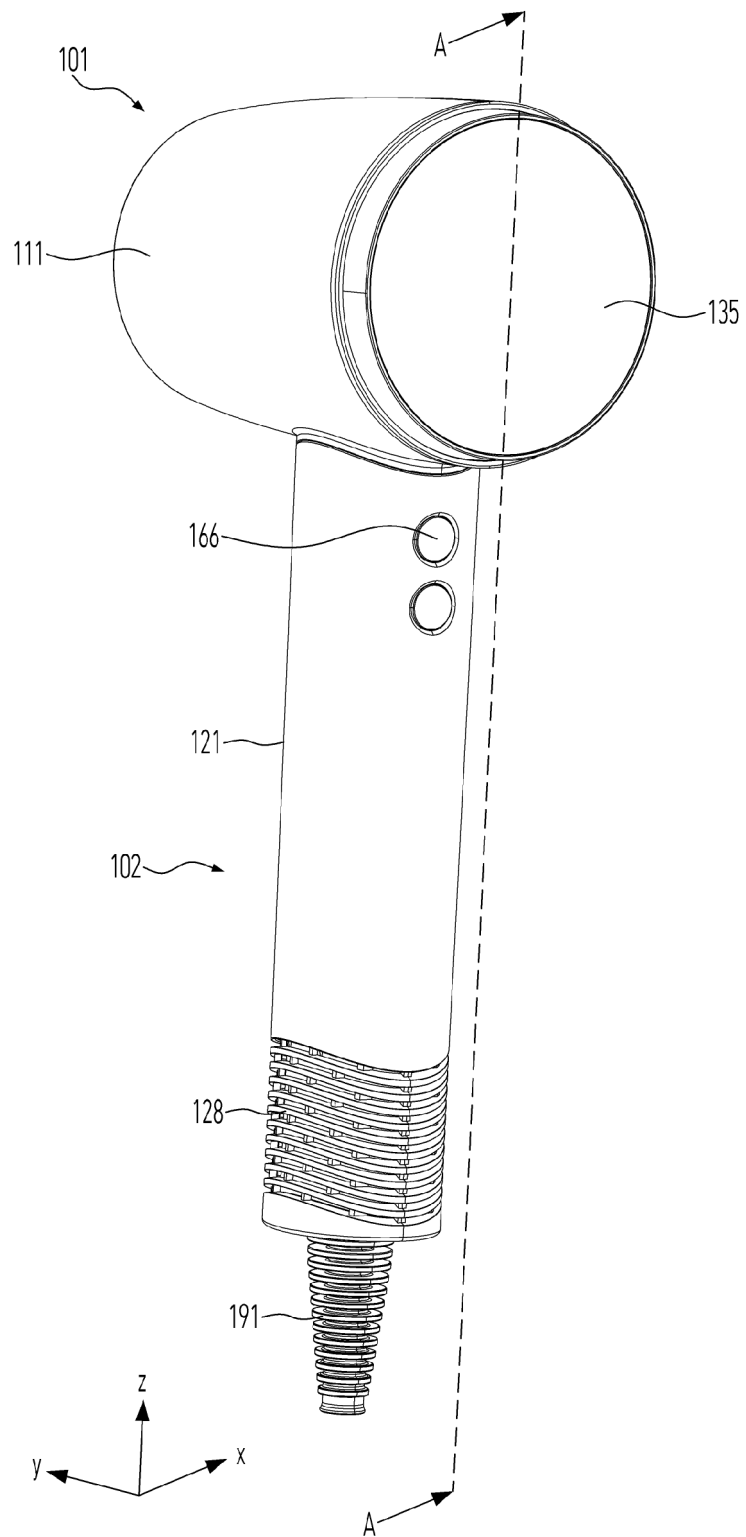


Fig. 2

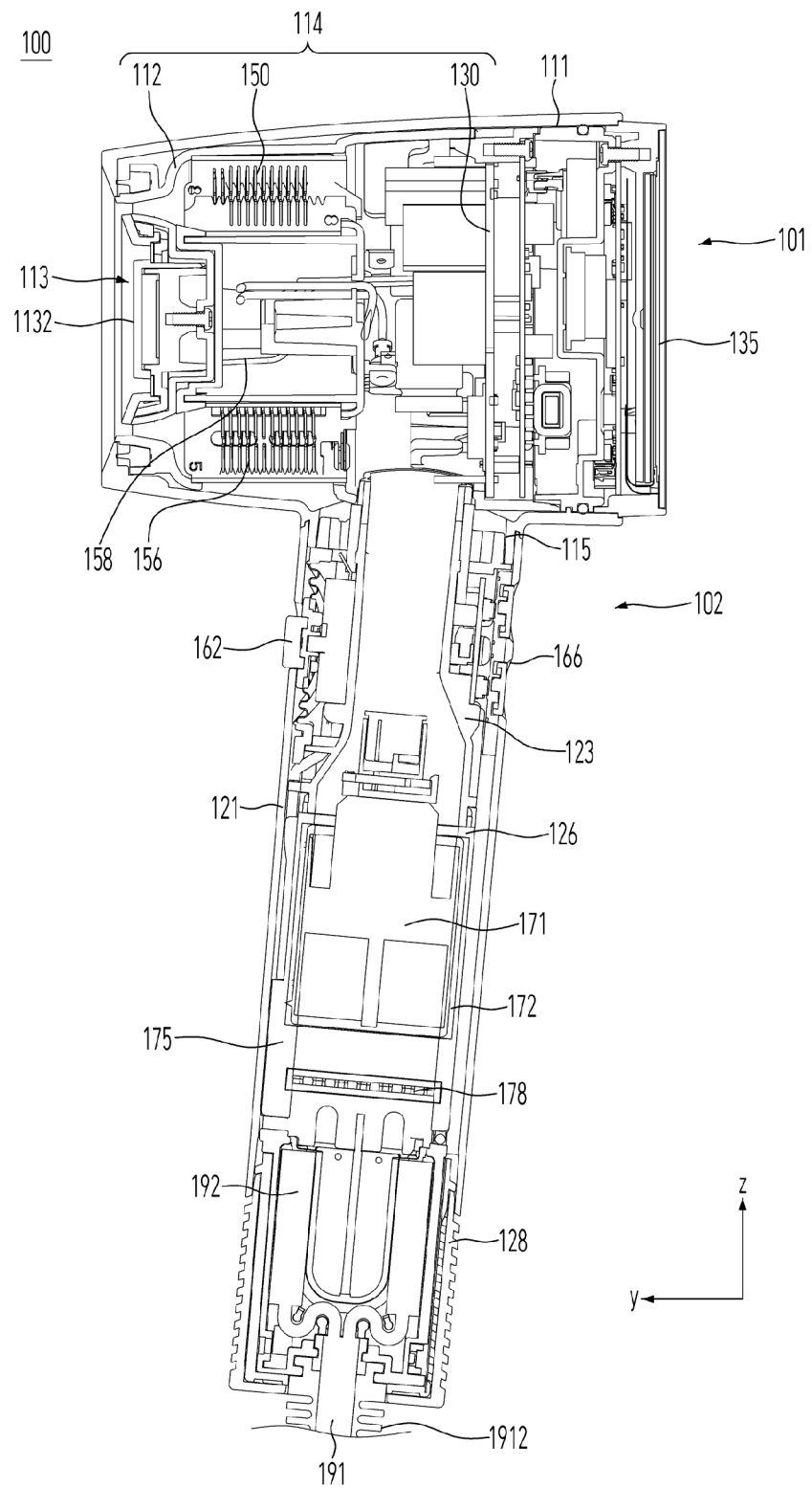


Fig. 3

Fig. 4

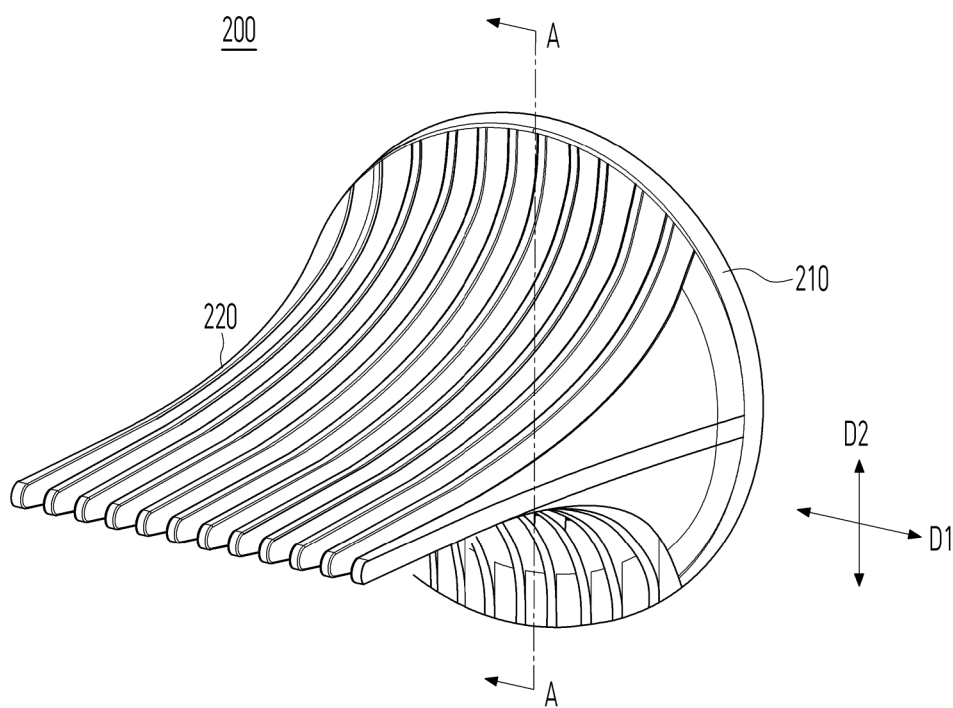


Fig. 5

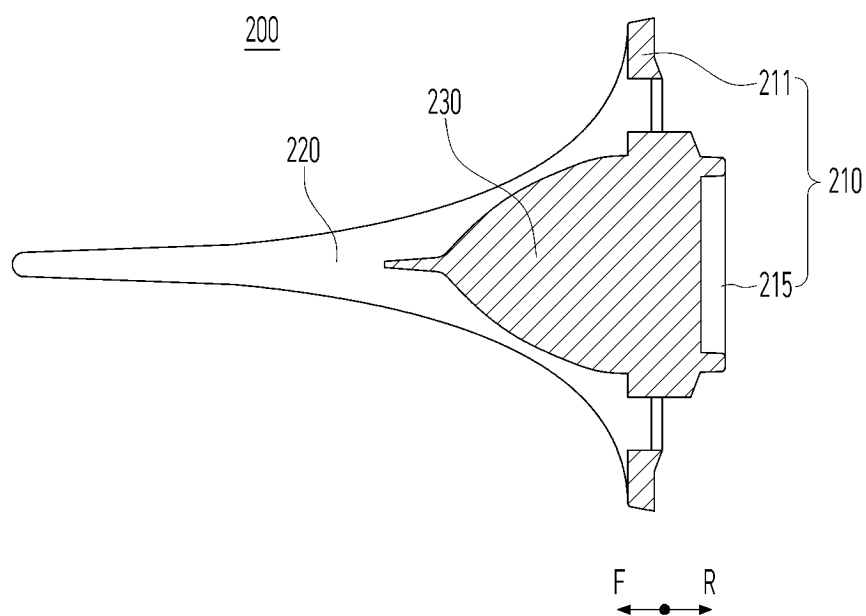


Fig. 6

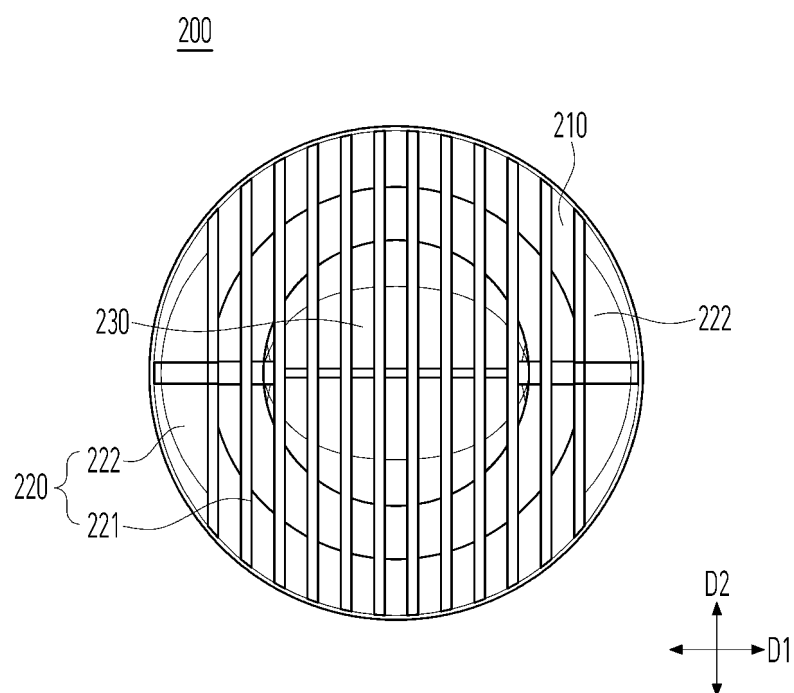


Fig. 7

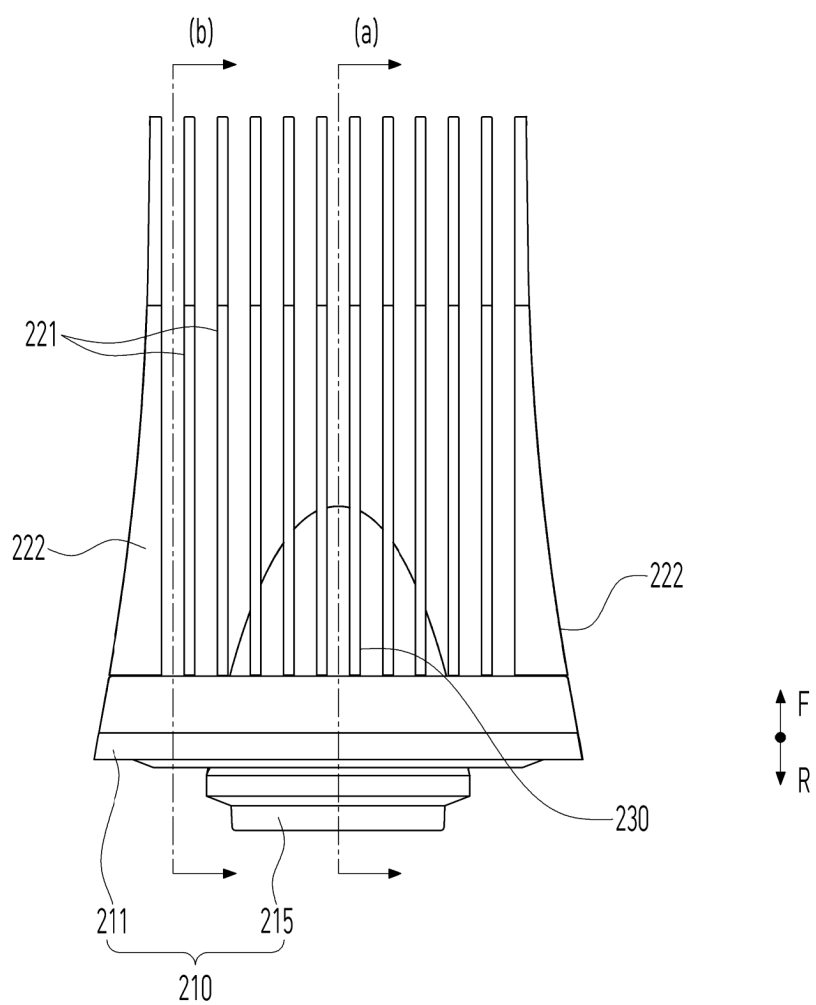
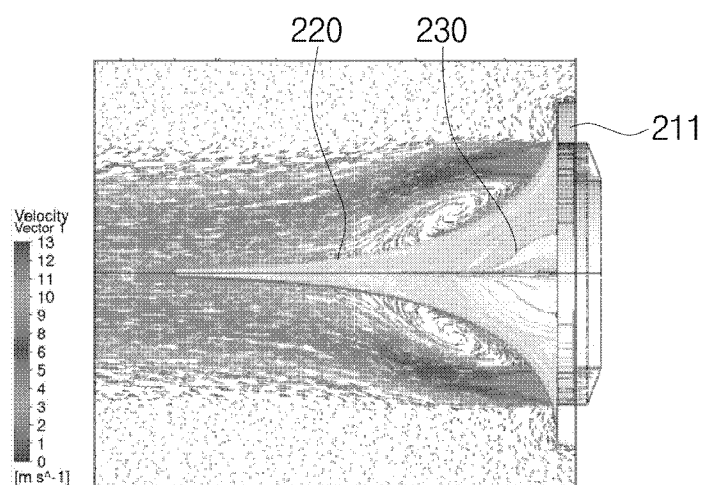
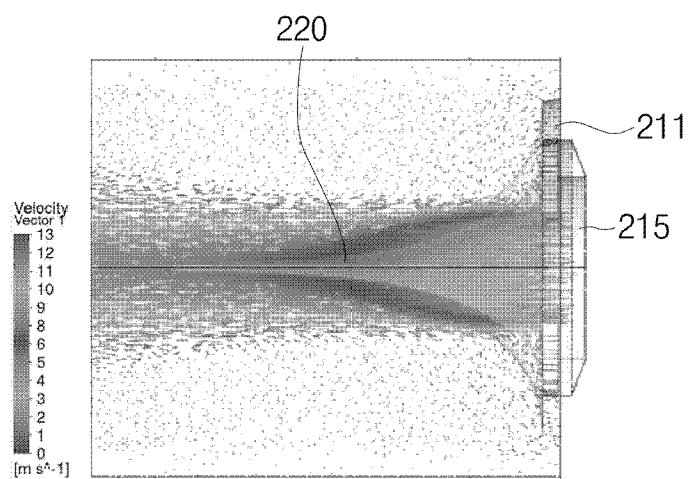


Fig. 8



(a)



(b)

Fig. 9

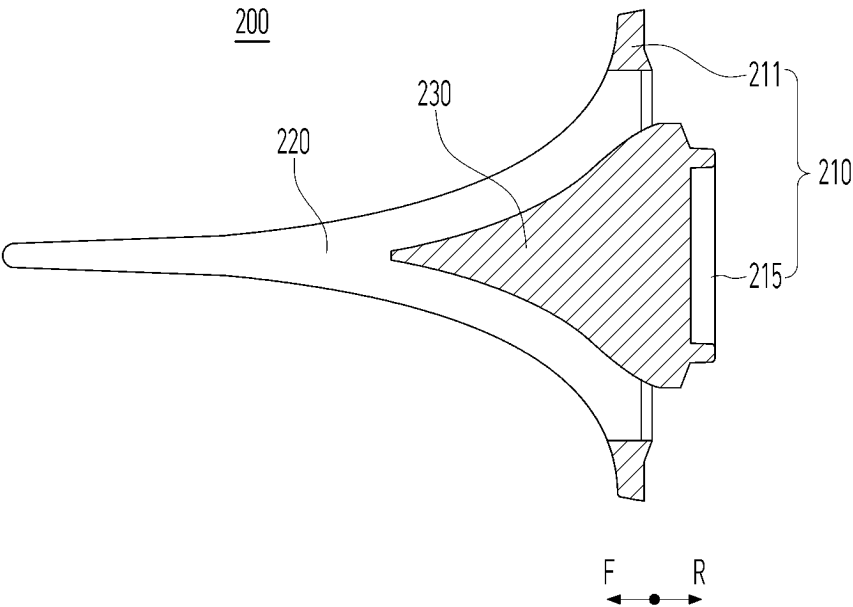
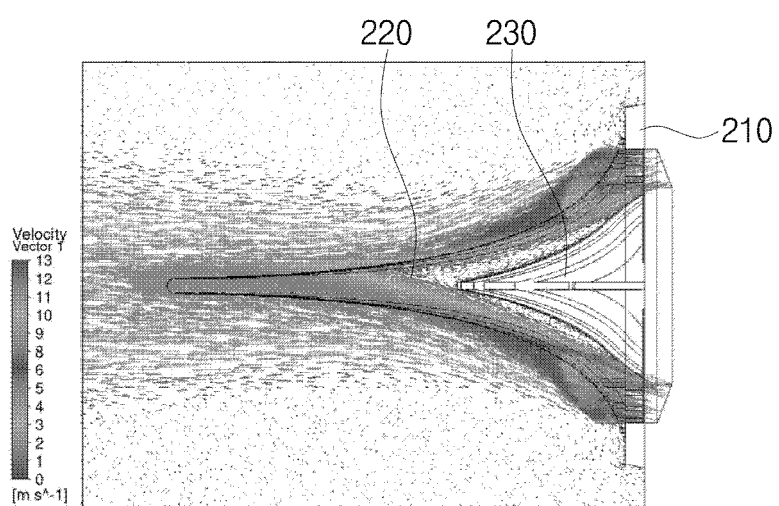
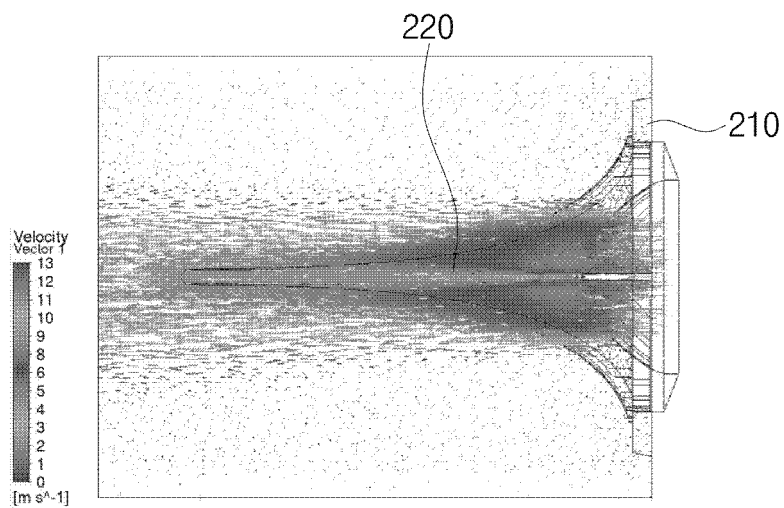


Fig. 10



(a)



(b)

Fig. 11

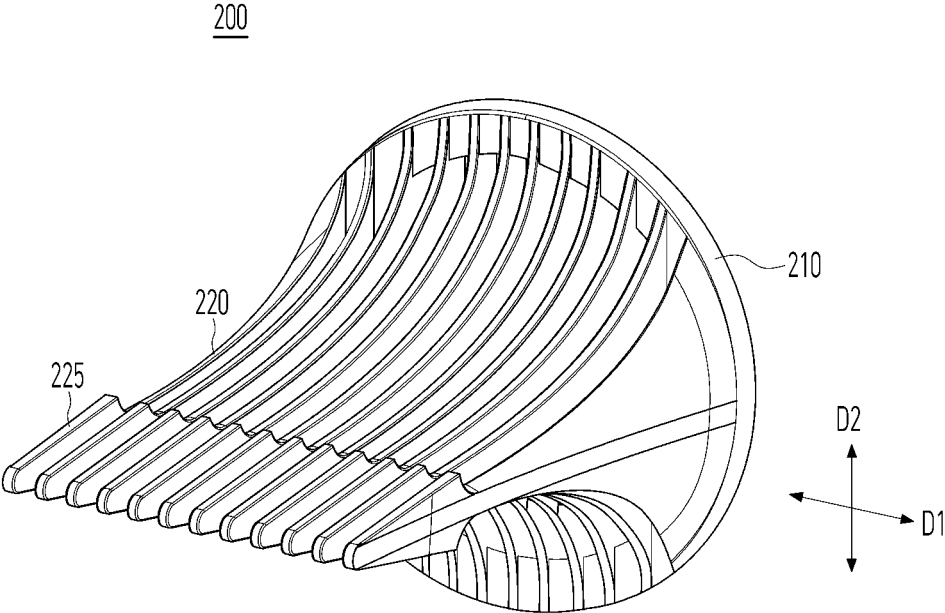


Fig. 12

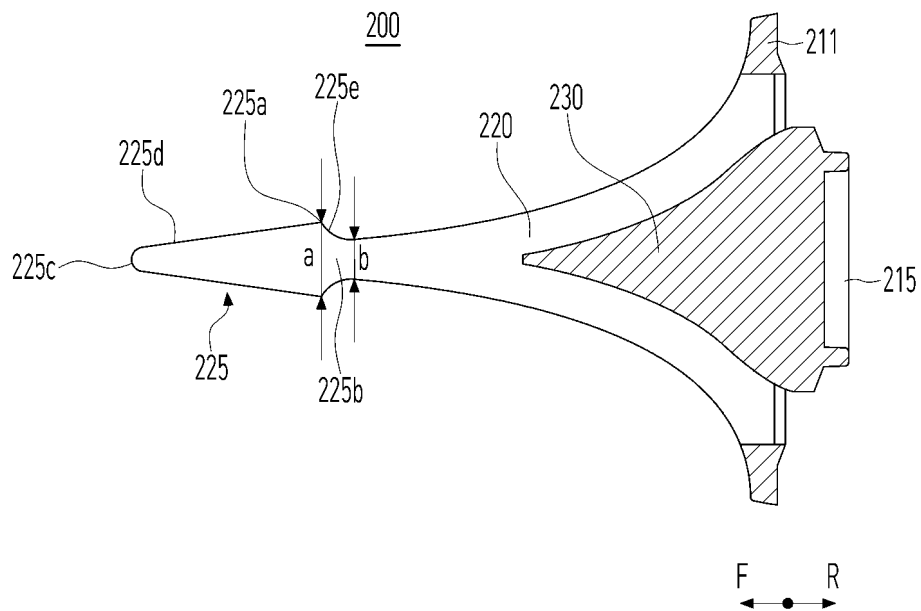
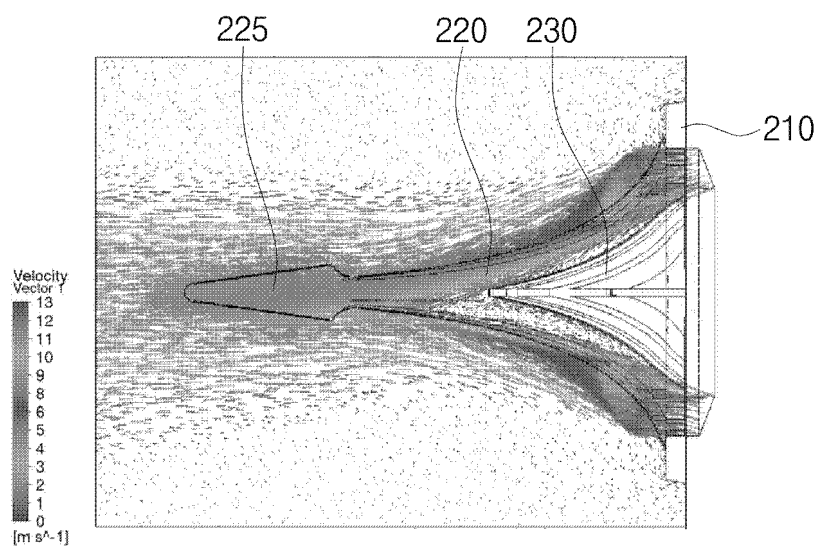
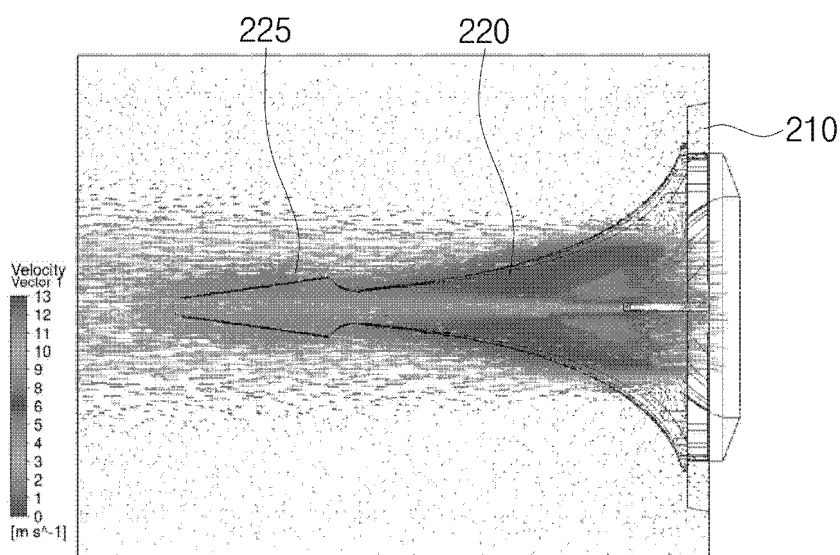


Fig. 13



(a)



(b)

Fig. 14

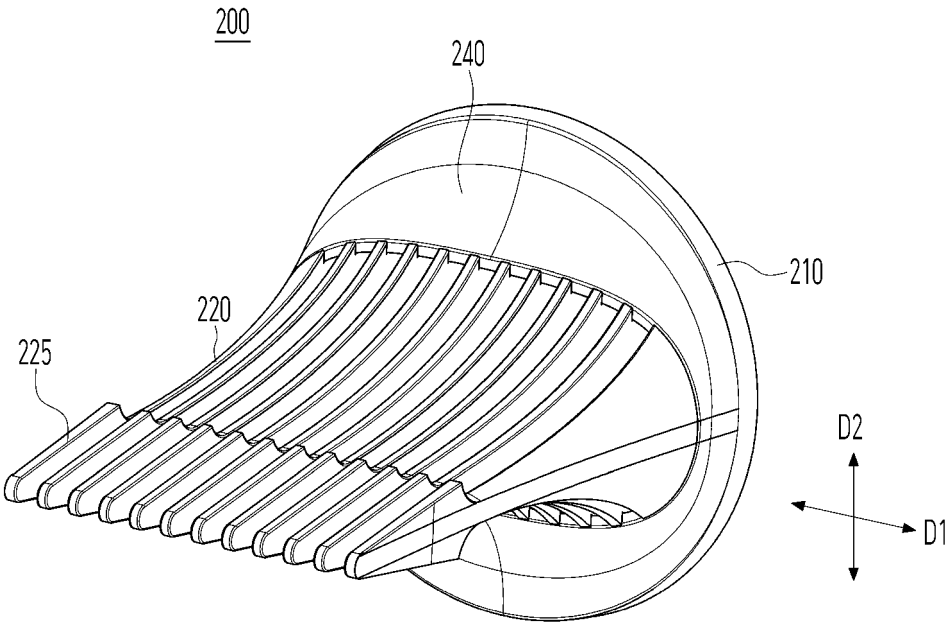


Fig. 15

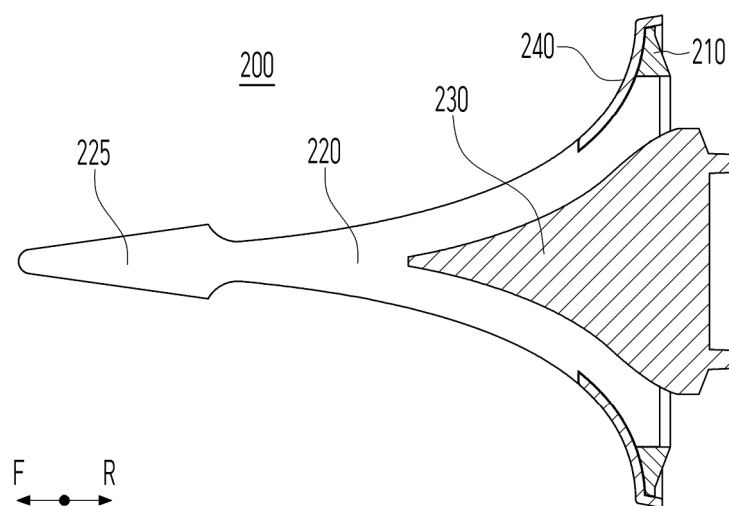
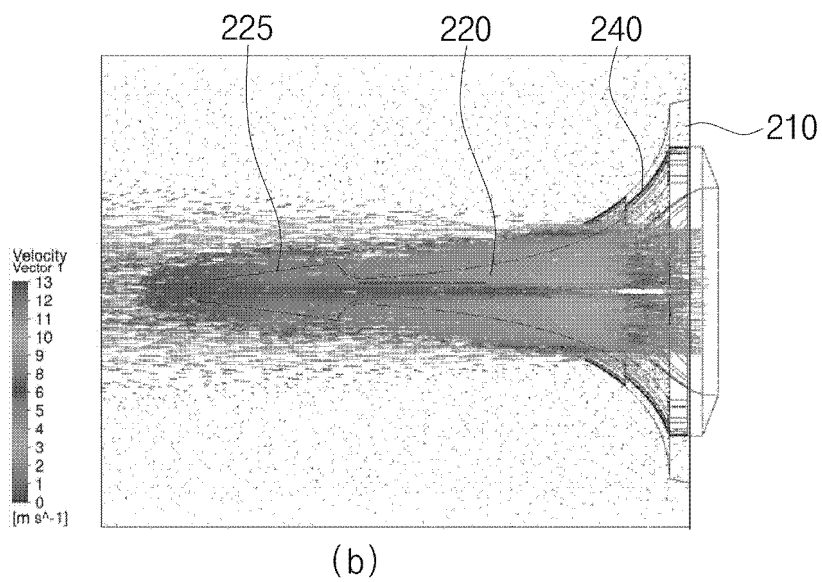
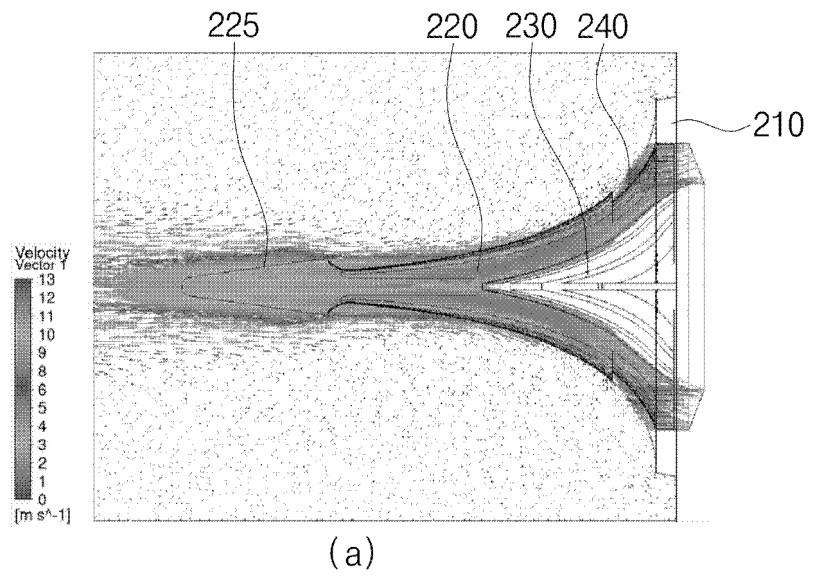


Fig. 16



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2025/002324

A. CLASSIFICATION OF SUBJECT MATTER**A45D 20/12**(2006.01)i; **A45D 20/48**(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)

A45D 20/12(2006.01); A45D 2/00(2006.01); A45D 20/00(2006.01); A45D 20/10(2006.01); A45D 20/50(2006.01);
F21Y 115/10(2016.01)

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

Korean utility models and applications for utility models: IPC as above

Japanese utility models and applications for utility models: IPC as above

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

eKOMPASS (KIPO internal) & keywords: 헤어 (hair), 드라이어 (dryer), 플레이트 (plate), 에어 (air), 노즐 (nozzle)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	CN 211154233 U (DYSON TECHNOLOGY LIMITED) 04 August 2020 (2020-08-04) See paragraphs [0056]-[0069]; and figures 1-16.	1,8-9,12-13
Y		2-7,10-11
Y	CN 215737373 U (GUANGDONG HUANENGDA ELECTRICAL APPLIANCES CO., LTD.) 08 February 2022 (2022-02-08) See paragraph [0022]; and figure 1.	2
Y	KR 10-2437330 B1 (CHOI, Jun Ho) 26 August 2022 (2022-08-26) See paragraph [0045]; and figure 3.	3-7,10
Y	KR 10-2016-0020558 A (DYSON TECHNOLOGY LIMITED) 23 February 2016 (2016-02-23) See paragraph [0209]; and figure 13.	6-7
Y	CN 2742829 Y (CHIDA INDUSTRY CO., LTD.) 30 November 2005 (2005-11-30) See paragraph [0046]; and figures 1-2.	11

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

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“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

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“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

02 June 2025

Date of mailing of the international search report

02 June 2025

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon Building 4, 189 Cheongsaro, Seo-gu, Daejeon 35208
Facsimile No. **+82-42-481-8578**

Authorized officer

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2025/002324

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