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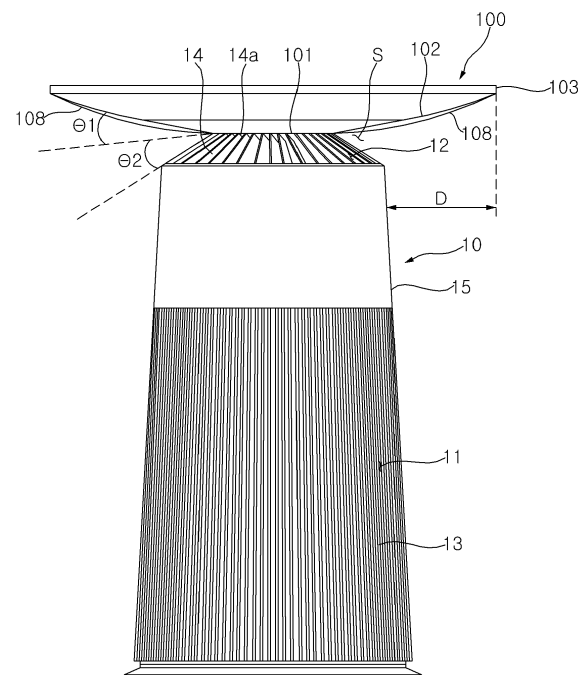
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(54) **AIR PURIFIER**

(57) The present disclosure relates to an air purifier. An air purifier according to an aspect of the present disclosure may include: a first body having an inlet and an outlet that is open upward; a fan disposed inside the first body and below the outlet; and a second body coupled to the first body and disposed above the outlet, wherein the second body includes: a lower body connected to the first body, and a lower wall extending toward an outside of the first body in a direction crossing an up-and-down direction above the outlet, so that air discharged from the outlet may be guided by the lower wall.

FIG. 2



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Description

1. Field of the invention

[0001] This disclosure relates to an air purifier, more particularly, to an air purifier on which things can be placed.

2. Description of the Related Art

[0002] An air purifier is a device that purifies introduced indoor air and supplies the purified air to the indoor.

[0003] An air purifier includes a fan that introduces indoor air into a case and a filter that filters foreign substances contained in the indoor air introduced by the fan.

[0004] Air purifiers are generally provided with an outlet at the top in order to supply purified air to a more remote location. Accordingly, the air purified inside the air purifier case is discharged upward by the fan and spread throughout the indoor space.

[0005] Known air purifiers are shown in KR 10-2139575 and KR 10-2021-0105856.

[0006] Recently, the demand for air purifiers having functions other than air purifying is increasing. For example, recently, the number of users who want to be able to place things in the space where the air purifier is placed is increasing.

[0007] However, in the conventional air purifier, since the purified air is discharged upward, it is difficult to utilize the upper part of the air purifier as a space where things can be placed.

[0008] In addition, in the conventional air purifier, since the purified air is discharged upward, the discharged air does not reach users and spreads to a location far from users. Here, when the position of the outlet is changed so that the purified air is supplied toward users, there is a problem in that the discharged air is re-introduced into the inlet.

SUMMARY OF THE INVENTION

[0009] It is an objective of the present disclosure to solve the above and other problems.

[0010] Another object of the present disclosure may be to provide an air purifier on which things can be placed.

[0011] Another object of the present disclosure may be to generate radial discharged airflow from an air purifier.

[0012] Another object of the present disclosure may be to prevent air discharged from an air purifier from being directly supplied to a user.

[0013] Another object of the present disclosure may be to guide a flow direction of air discharged through an outlet.

[0014] Another object of the present disclosure may be to minimize resistance of air discharged through an outlet.

[0015] Another object of the present disclosure may

be to prevent air discharged through an outlet from re-introducing into an inlet.

[0016] Another object of the present disclosure may be to prevent vortex flow in a region near an outlet.

[0017] The objectives of the present disclosure are achieved with an air purifier according to independent claim 1.

[0018] In accordance with an aspect of the present disclosure, an air purifier includes a first body having inlet and outlet which is opened upward.

[0019] The air purifier includes a fan that is disposed inside the first body and disposed below the outlet.

[0020] The air purifier includes a second body that is coupled to the first body and is disposed above the outlet.

[0021] The second body includes a lower body which is connected to the first body.

[0022] The second body includes a lower wall which is located above the outlet and extends toward outer side of the first body in a direction crossing an up-and-down direction, so that air discharged from the outlet may be guided in a flow direction by the lower wall.

[0023] The lower wall may be spaced upward from the outlet and extend upward toward an outside of the first body.

[0024] The lower wall may be inclined upward toward the outside of the first body.

[0025] An angle at which the lower wall is inclined with respect to a horizontal direction may increase toward an outer side of the first body.

[0026] An angle at which the lower wall is inclined with respect to the horizontal direction may be within a range of 30 degrees to 35 degrees.

[0027] The lower wall may include a first wall facing the outlet in the up-and-down direction.

[0028] The lower wall may include a second wall which extends from the first wall toward outside of the first body and located outside of the outlet in a radial direction.

[0029] The lower wall may extend curvedly toward outside of the first body.

[0030] A radius of curvature of the lower wall may decrease toward outside of the first body.

[0031] The air purifier may include a button which is configured to control operation of the fan and protrude toward lower side of the lower wall.

[0032] The lower wall may include an edge which is located outward than an outer circumferential wall of the first body.

[0033] The button may be located between the outer circumferential wall of the first body and the edge.

[0034] The air purifier may include a coupling device which is disposed inside the second body and connects the first body and the second body.

[0035] The air purifier may include a coupling device button which operates the coupling device and protrude toward lower side of the lower wall.

[0036] The second body may include a boundary portion which is located radially inside the outlet and spaced apart from the outer circumferential wall of the first body.

[0037] The coupling device button may be located between the circumferential wall of the first body and the boundary portion.

[0038] The air purifier may include an outlet grille which is located below the lower wall and inclined upward in a direction opposite to a direction in which the lower wall extends.

[0039] In accordance with an aspect of the present disclosure, an air purifier may include a first body having an inlet and an outlet which is located above the inlet; a fan which is disposed inside the first body and located below the outlet; and a second body disposed above the first body, wherein the second body may include a lower body which is connected to the first body, and extend in the up-and-down direction between the outlet and the fan; and an upper body which faces the outlet in the up-and-down direction, and extends toward outer side of the first body in a direction crossing the lower body, so that the flow direction may be guided by a shape of the second body.

[0040] The first body may include an outer wall spaced apart outward from the lower body.

[0041] The first body may include a discharge passage may be defined between the outer wall and the lower body in the up-and-down direction.

[0042] A width of the discharge passage may increase toward upper side.

[0043] The first body may include a housing spaced apart inward from the outer wall.

[0044] The first body may include a mount which is spaced apart inward from the outer wall and coupled to the second body.

[0045] The first body may include the discharge passage defined in a space between the outer wall and the housing, and a space between the outer wall and the mount.

[0046] The air purifier may include an outlet grille which is disposed to surround the lower body and protrudes to the upper body from the first body.

[0047] The air purifier may include a boundary portion defined between the outlet grille and the upper body.

[0048] The upper body may extend obliquely from an upper end of the lower body toward outer side of the first body.

[0049] In accordance with an aspect of the present disclosure, an air purifier may include: a first body having an outer wall which is defined an inlet along a circumferential surface and has a space therein, and an outlet opened upward; a fan disposed inside the first body; and a second body disposed above the first body, wherein the second body which extends in a direction crossing the up-and-down direction at upper side of the outlet, and has a lower wall whose an end is located outer side an outer wall of the first body, it is possible to prevent air flow along the lower wall from reintroducing into the inlet.

[0050] A distance between the lower wall and the outer wall of the first body may increase toward an end portion of the second body.

[0051] An inclination of the lower wall with respect to a horizontal direction may increase toward the end portion.

[0052] Details of other embodiments are included in the detailed description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0053] The above and other objects, features and advantages of the present disclosure will be more apparent from the following detailed description in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of an air purifier according to an embodiment of the present disclosure.

FIG. 2 is a front view of the air purifier according to the embodiment of the present disclosure.

FIG. 3 is a sectional view of the air purifier according to the embodiment of the present disclosure.

FIG. 4 is an exploded view of a part of the air purifier according to the embodiment of the present disclosure.

FIG. 5 is a view of another part of the air purifier according to the embodiment of the present disclosure.

FIG. 6 is a part of a sectional view of the air purifier according to the embodiment of the present disclosure.

FIG. 7 is a part of a sectional view of the air purifier according to the embodiment of the present disclosure.

FIG. 8 is a view of a part of the air purifier according to another embodiment of the present disclosure.

FIG. 9 is a view of the part of the air purifier according to another embodiment of the present disclosure.

FIG. 10 is a part of a sectional view of the part of the air purifier according to another embodiment of the present disclosure.

FIG. 11 is a part of sectional view of a part of the air purifier according to another embodiment of the present disclosure.

FIG. 12 is a diagram of explaining an effect of the air purifier according to the embodiment of the present disclosure.

DETAILED DESCRIPTION

[0054] Description will now be given in detail according to exemplary embodiments disclosed herein, with reference to the accompanying drawings. For the sake of brief description with reference to the drawings, the same or equivalent components are provided with the same or similar reference numerals, and description thereof will not be repeated.

[0055] In the following description, a suffix such as "module" and "unit" may be used to refer to elements or components. Use of such a suffix herein is merely intended to facilitate description of the specification, and the

suffix itself is not intended to give any special meaning or function.

[0056] In the present disclosure, that which is well known to one of ordinary skill in the relevant art has generally been omitted for the sake of brevity. The accompanying drawings are used to help easily understand the technical idea of the present disclosure and it should be understood that the idea of the present disclosure is not limited by the accompanying drawings. The idea of the present disclosure should be construed to extend to any alterations, equivalents, and substitutes besides the accompanying drawings.

[0057] It will be understood that although the terms "first", "second", etc. may be used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another.

[0058] It will be understood that when a component is referred to as being "connected to" or "coupled to" another component, it may be directly connected to or coupled to another component, or intervening components may be present. On the other hand, when a component is referred to as being "directly connected to" or "directly coupled to" another component, there are no intervening components present.

[0059] As used herein, a singular representation is intended to include a plural representation unless the context clearly indicates otherwise.

[0060] Hereinafter, an air purifier 1 will be described with reference to FIG. 1.

[0061] FIG. 1. is a perspective view showing an overall appearance of an air purifier 1.

[0062] The air purifier 1 may include a first body. The first body 10 may have a cylindrical shape. The first body 10 may have a space therein. The first body 10 may be disposed at a lower part of the air purifier 1.

[0063] The first body 10 includes an inlet 11. The inlet 11 may be defined along a circumferential surface of the first body 10. The inlet 11 communicates inside of the first body 10 with indoor space. Air from outside of the air purifier 1 may be introduced into the inside of the first body 10 through the inlet 11.

[0064] The first body 10 includes an outlet 12. The outlet 12 may be defined on an upper part of the first body 10. The outlet 12 may be opened upward. Air inside the first body 10 may be discharged upward through the outlet 12.

[0065] The air purifier 1 may include a second body 100. The second body 100 may include a space therein. The second body 100 may be disposed above the first body 10. The second body 100 may be coupled with the upper part of the first body 10. The second body 100 may face the outlet 12 in an up-and-down direction. A lower surface of the second body 100 may be spaced apart upward from the outlet 12.

[0066] The second body 100 may function as a table. An upper surface to the second body 100 may be a flat surface. Users may place things on the second body 100.

The second body 100 may cover upper side of the outlet 12.

[0067] Hereinafter, the air purifier 1 will be described with reference to FIG. 2.

5 **[0068]** FIG. 2. is a front view of the air purifier 1.

[0069] The air purifier 1 may include an inlet grille 13. The inlet grille 13 may be detachably coupled to the first body 10. The inlet grille 13 may extend along a circumference of the first body 10. The inlet 11 may be defined on the inlet grille 13.

10 **[0070]** The air purifier 1 may include an outlet grille 14. The outlet grille 14 may be detachably coupled to the first body 10. The outlet grille 14 may be disposed above the first body 10. The outlet 12 may be defined on the outlet grille 14.

15 **[0071]** The air purifier 1 may include an outer wall 15. The outer wall 15 may define an outer circumferential surface of the first body 10. The inlet grille 13 may be detachably coupled to the outer wall 15. The outlet grille 20 14 may be detachably coupled to the outer wall 15.

[0072] The second body 100 may include a boundary portion 101. The boundary portion 101 may be located above the outlet grille 14. The boundary portion 101 may extend in a circumferential direction along direction that the outlet 12 extends. The boundary portion 101 may refer to an area where the outlet grille 14 and the second body 100 are in contact.

25 **[0073]** The second body 100 may include a lower wall 102. The lower wall 102 may be spaced apart upward from the outlet grille 14. The lower wall 102 may extend obliquely upward from the boundary portion 101. The lower wall 102 may be defined in an annular shape along a direction that the outlet 12 extends. A discharge space S may be defined between the outlet 12 and the lower wall 102. The lower wall 102 may face the outlet 12 in the up-and-down direction, and the discharge space S may refer to a space defined between the lower wall 102 and the outlet 12.

30 **[0074]** The second body 100 may include an edge 103. The edge 103 may define an end portion of the lower wall 102. The edge 103 may extend along circumference of the second body 100.

35 **[0075]** The outlet grille 14 may include a grille top 14a. The grille top 14a may be spaced apart upward from the outer wall 15. The grille top 14a may extend circumferentially along a direction in which the outlet 12 extends. The grille top 14a may be in contact with the boundary portion 101. The grille top 14a may correspond to the boundary portion 101 in the up-and-down direction. A sealing member(not shown) may be disposed between the grille top 14a and the boundary portion 101.

40 **[0076]** The lower wall 102 may be inclined in a direction away from the outlet 12. The lower wall 102 may be inclined at a inclination angle $\theta 1$ with respect to a horizontal direction.

45 **[0077]** The outlet grille 14 may be inclined upward toward an inside of the air purifier 1 in a radial direction. The outlet grille 14 may be inclined upward toward central

portion of the first body 10. The outlet grille 14 may be inclined at an inclination angle θ_2 with respect to the horizontal direction.

[0078] The lower wall 102 and the outlet grille 14 may be inclined in an opposite direction. The lower wall 102 may be inclined toward an outer side of the air purifier 1 in the radial direction, and the outlet grille 14 may be inclined toward an inner side of the air purifier 1 in the radial direction. An inclination angle $\theta_1 + \theta_2$ may be defined between the lower wall 102 and the outlet grille 14.

[0079] The edge 103 may be located more outwards of the air purifier 1 than the first body 10. The edge 103 may be located more outwards of the air purifier than the outlet 11. A distance D may be defined between outer circumferential surface of the first body 10 and edge 103. The outlet 11 and the edge 103 may be spaced apart by predetermined distance D in the radial direction of the first body 10.

[0080] The air purifier may include a guide rib 108. Discharged air through the outlet 12 may flow to the edge 103 along the guide rib 108.

[0081] Hereinafter, the air purifier 1 will be described with reference to FIG. 3.

[0082] FIG. 3. is a section view of the air purifier 1 cut in a vertical direction.

[0083] The air purifier 1 may include a filter 16. The filter 16 may be disposed inside the first body 10. The filter may face the inlet grille 13. The filter 16 may filter out foreign substances contained in air introduced through the inlet 11. The filter 16 may have a cylindrical shape.

[0084] The air purifier 1 may include a fan 17. The fan 17 may be disposed inside the first body 10. The fan 17 may be disposed above the filter 16. The fan 17 may introduce outside air of the air purifier 1 through the inlet 11. The fan 17 may blow the introduced air upward.

[0085] The air purifier 1 may include a fan motor 17a. The fan motor 17a rotates the fan 17.

[0086] The air purifier 1 may include a housing 18. The housing 18 may be disposed to surround the fan motor 17a. The housing 18 may be disposed inside the first body 10. The housing 18 may be spaced apart radially inward of the outer wall 15. The housing 18 may be located above the fan 17.

[0087] The housing 18 may include a first housing wall 18a. The first housing wall 18a may extend in up-and-down direction. The first housing wall 18a may be located above the fan 17. A first discharge passage 12a may be defined between the first housing wall 18a and the outer wall 15.

[0088] The housing 18 may include a second housing wall 18b. The second housing wall 18b may extend in the up-and-down direction. The second housing wall 18b may be spaced apart radially inward from the outer wall 15. The second housing wall 18b may extend upward from the first housing wall 18a. A second discharge passage 12b may be defined between the second housing wall 18b and the outer wall 15. The second housing wall

18b may be inclined in the up-and-down direction. The second housing wall 18b may be inclined toward the second body 100. The second housing wall 18b may be inclined radially inward of the first body 10. The second housing wall 18b may be inclined in a direction away from the outer wall 15.

[0089] The first discharge passage 12a may have a width G1 in a horizontal direction. The second discharge passage 12b may have a width G2 in the horizontal direction. The width G2 of the second discharge passage 12b may increase upward, i.e., in air flow downstream direction. The width G1 of the first discharge passage 12a may be smaller than the maximum width G2 of the second discharge passage 12b.

[0090] The air purifier 1 may comprise a diffuser 18c. the diffuser 18c may be disposed between the outer wall 15 and the housing 18. The diffuser may extend in the up-and-down direction. The diffusers 18c may be arranged in a plurality to spaced apart from each other in a circumferential direction of the first body 10. The diffuser 18c may be disposed above the fan 17. The diffuser 18c may guide a flow direction of air blown by the fan 17 upward. The diffuser 18c may guide air blown by the fan 17 toward the discharge passages 12a, 12b.

[0091] The air purifier 1 may include a mount 19. The mount 19 may be disposed inside the first body 10. The mount may be coupled to an upper part of the housing 18. The second body 100 may be coupled to the mount 19. The second body 100 may be detachably coupled to upper side of the mount 19. The second body 100 may be inserted into the mount 19, and fixed to the mount 19.

[0092] The second body 100 may include a lower body 110. The lower body 110 may define a lower part of the second body 100. The lower body 110 may have a cylindrical shape. The lower body 110 may extend in the up-and-down direction. The lower body 110 may be coupled to the mount 19. A diameter of the lower body 110 may be smaller than a diameter of the outer wall 15. The lower body 110 may be inserted toward inside the first body 10 and coupled to the first body 10.

[0093] The second body 100 may include an upper body 120. The upper body 120 may be disposed above the lower body 110. The upper body may be integral with the lower body 110. The upper body 120 may extend radially outward of the air purifier 1. A diameter of the upper body 120 may be larger than a diameter of the lower body 110. The upper body 120 may be located above the outlet 12. The boundary portion 101 may be defined between the lower body 110 and the upper body 120.

[0094] The second body 100 may include a top cover 130. The top cover 120 may be disposed above the upper body 120. The top cover 130 may have a flat upper surface.

[0095] Air introduced into the first body 10 through the inlet grille 13 may be blown upward by the fan 17 after passing through the filter 16. Air blown upward may pass through the discharge passages 12a, 12b, and flow to the

discharge space S through the outlet 12. Air discharged to the discharge space S may flow toward outside of the air purifier 1 along the lower wall 12. Here, the housing wall 18a, 18b and the diffuser 13c may guide air blown by the fan 17 upward. In addition, the inclined outlet grille 14 and the lower wall 102 may guide the flow direction of air discharged from the outlet 12.

[0096] Hereinafter, the air purifier 1 will be described with reference to FIG. 4.

[0097] FIG. 4. is a exploded view of the second body 100.

[0098] The second body 100 may include the lower body 110. The lower body 110 may have a cylindrical shape extending in the up-and-down direction. The lower body 110 may be coupled to the first body 10.

[0099] The second body may include the upper body 120. The upper body 120 may have an annular shape. A space may be defined inside the upper body 120. A diameter of the upper body 120 may be greater than a diameter of the lower body 110. The upper body 120 may extend radially outward from the lower body 110. The lower body 100 and the upper body 120 may be integral.

[0100] The upper body 120 may include a plate 121. The plate may have an annular shape. A lower wall 102 may be disposed below the plate 121. The lower wall 102 may refer to a lower part of the plate 121.

[0101] The upper body 120 may include a step portion 122. The step portion 122 may be bent downward from the plate 121. The step portion 122 may be bent toward the lower body 110.

[0102] The upper body 120 may include an accommodation space 123. The accommodation space 123 may be defined inside the plate 121. The accommodation space 123 may be defined above the lower body 110. The accommodation space 123 may be defined inside the step portion 122.

[0103] The second body 100 may include the top cover 130. The top cover 130 may have a disk shape. The top cover 120 may be coupled to upper side of the upper body 120. An upper surface of the top cover 130 may be a flat surface.

[0104] The second body 100 may include a coupling device 140. The coupling device 140 may be disposed on the upper body 120. The coupling device 140 may be disposed movably within the accommodate space 123. The coupling device 140 may be disposed between the lower body 110 and the top cover 130. The coupling device 140 may be moved inside the upper body 120, and the second body 120 may be detached from the mount 19. The coupling device 140 may be a hook or a lever. A portion of the coupling device 140 may protrude downward from the lower wall 102(see FIG. 3) and be operable.

[0105] The second body 100 may include a light guide 150. The light guide 150 may be disposed on the upper body 120. The light guide 150 may be disposed with the accommodate space 123. The light guide 150 may diffuse light transmitted from a substrate 160 to the lower

wall 102(see FIG. 3).

[0106] The second body 100 may include the substrate 160. The substrate 160 may have a disk shape. The substrate 160 may receive power from external power source. The substrate may include a plurality of light sources (not shown). The plurality of light sources (not shown) may be spaced apart from each other in the circumferential direction of the substrate 160. A plurality of light sources (not shown) may face the light guide 150 in the up-and-down direction. The light guide 150 may diffuse light transmitted from the plurality of light sources (not shown) toward the lower wall 102(see FIG. 3). The substrate 160 may be disposed between the light guide 150 and the top cover 130. The substrate 160 may be disposed with the accommodate space 123 of the upper body 120.

[0107] The second body 100 may include a button assembly 170. The button assembly 170 may be disposed on the upper body 120. The button assembly 170 may be disposed on the plate 121. A portion of the button assembly 170 may protrude downward from the lower wall 102(see FIG.3). The button assembly 170 may be electrically connected to the fan 17 (see FIG.3). A user can manipulate the button assembly 170 to adjust driving state of the fan 17 (see FIG. 3).

[0108] The second body 120 may include a wireless charging device 180. The wireless charging device may be disposed on the upper body 120. The wireless charging device may supply power to electronic devices.

[0109] The second body 120 may include a top plate 190. The top plate 190 may be disposed between the top cover 130 and the upper body 120. The top plate 190 may have a disk shape. The top plate 190 may include a wireless charging portion 191 electrically connected to the button assembly 170. The wireless charging portion 191 may be exposed on upper side of the top cover 130. The top plate 190 may include a display 192 electrically connected to the button assembly 170. The display 192 may be exposed on the upper side of the top cover 130. A user can charge an electric device by placing the electric device on the wireless charging portion exposed on the upper side of the top cover 130. The user may check operating status of the air purifier 1 through the display 192 exposed on the upper side of the top cover 130.

[0110] Hereinafter, the air purifier 1 will be described with reference to FIG. 5.

[0111] FIG. 1. is a bottom view of the upper body 120.

[0112] The lower body 110 may include an outer circumferential surface 111. The outer circumferential surface 111 may have a cylindrical shape.

[0113] The upper body may include the lower wall 102. The lower wall 102 may extend radially outward from the outer circumferential surface 111 of the lower body 110. The lower wall 102 may have an annular shape. An outer diameter of the lower wall 102 may be greater than a diameter of the outer circumferential surface 111.

[0114] The edge 103 may be located at an end of the lower wall 102. The edge 103 may have an annular

shape. The lower wall 102 may be located between the outer circumferential surface 111 and the edge 103. A diameter of the edge 103 may be greater than the diameter of the outer circumferential surface 111.

[0115] The second body 100 may include a coupling device button 141. The coupling device button 141 may be connected to the coupling device 140. The coupling device button may be exposed on lower side of the lower wall 102. A user may separate the second body 100 from the first body 10 by pressing the coupling device button 141. The coupling device button 141 may be recessed toward upper side of the lower wall 102. The coupling device button may be located outside of the lower body 110 in a radial direction.

[0116] The second body 100 may include a lamp 151. The lamp 151 may receive light from the light guide 150. The lamp may be exposed on lower side of the lower wall 102. The lamp 151 may radiate light transmitted from the light guide 150 to the lower side of the lower wall 102. The lamp may have an annular shape. The lamp may be located outside of the lower body 110 in the radial direction. A distance between the lamp 151 and the lower body 110 may be greater than a distance between the coupling device button 141 and the lower body 110.

[0117] The second body 100 may include a first button 171. The second body 100 may include a second button 172. The second body 100 may include a third button 173. The first to third buttons 171, 172, 173 may be connected to the button assembly 170. The first to third buttons 171, 172, 173 may be exposed on lower side of the lower wall 102. The first to third buttons 171, 172, 173 may each have a different shape from one another. Some of the first to third buttons 171, 172, 173 may protrude downward from the lower wall 102. Some of the first to third buttons 171, 172, 173 may be recessed toward upper side of the lower wall 102. A user may manipulate the first to third buttons exposed on lower side of the lower wall 102 to adjust operation of the air purifier 1 including the fan 17. The buttons 171, 172, 173 may be located outside of the lower body 110 in the radial direction. A distance between the buttons 171, 172, 173 and the lower body 110 may be greater than a distance between the buttons 171, 172, 173 and the coupling device button 141. A distance between the buttons 171, 172, 173 and the edge 103 may be smaller than a distance between the buttons 171, 172, 173 and the lower body 110.

[0118] Hereinafter, the air purifier 1 will be described with reference to FIG. 6.

[0119] FIG. 6. is a sectional view of the second body 100 cut in the vertical direction.

[0120] The lower body 110 may be located central portion of the second body 100. The second body 100 may have a symmetrical shape based on the lower body 110.

[0121] The coupling device 140 may be located inside the outer circumferential surface 111 of the lower body 110. A portion of the coupling device 140 may protrude outward from the outer circumferential surface 111.

[0122] The coupling device button 141 may be located outside of the outer circumferential surface 111 in the radial direction. The coupling device button 141 may be exposed on lower side of the lower wall 102.

[0123] The lamp 151 may be located outward relative to the outer circumferential surface 111 in the radial direction. The lamp may be located toward outside of the second body 100 than the coupling device button 141.

[0124] The first button 171 may protrude downward from the lower wall 102. The first button 171 may be convex to lower side of a lower surface of the lower wall 102. The first button 171 may be located between the coupling device button 141 and the edge 103. The first button 171 may induce the Coanda effect in air flowing along the lower wall 102. The air flowing along the lower wall 102 may be guided toward the edge 103 by the first button 171.

[0125] After air discharged through the outlet 12(see FIG.3) flows upward along the outer circumferential surface 111, the air may be guided by the lower wall 102. Air flowing along the lower wall 102 may be guided toward the edge 103 by the coupling device button 141 and the buttons 171, 172, 173.

[0126] Hereinafter, the air purifier 1 will be described with reference to FIG. 7.

[0127] FIG. 7. is a part of a section view of the air purifier 1 cut in the vertical direction.

[0128] The housing may be spaced apart inward from the outer wall 15. The discharge passages 12a, 12b toward the outlet 12 may be defined between the outer wall 15 and the housing 18. A width of the discharge passages 12a, 12b may increase upward. The width G1 of the first discharge passage 12a may be smaller than the width G2 of the second discharge passage 12b.

[0129] The mount may include a mount outer wall 19a. The mount outer wall 19a may be spaced apart inward from the outer wall 15. The second discharge passage 12b may be defined between the mount outer wall 19a and the outer wall 15. A space into which the lower body 110 is inserted may be defined inside the mount outer wall 19a. The second body 100 may be inserted into and fixed to an inner space of the mount outer wall 19a. The mount outer wall 19a and the outer circumferential surface 111 of the lower body 110 may define a continuous surface. The mount outer wall 19a may be disposed above the housing 18.

[0130] Air blown by the fan 17(see FIG. 3) may flow upward between the outer wall 15 and the housing 18. Here, the widths of the discharge passage 12a, 12b may increase upward. The air flowing upward toward the outlet 12 may flow upward along the housing 18 and the mount outer wall 19a. The air discharged into the discharge space S may flow toward the outer circumferential surface 111 of the lower body 110 along the outlet grille 14. The air flowing along the outlet grille 14 may be guided upward by the outer circumferential surface 111. The air discharged into the discharge space S may flow along the lower wall 102 from the boundary portion 101. The

air flowing along the lower wall 102 may flow upward by inclination of the lower wall 102. Here, through shapes of the coupling device button 141 and the buttons 171 defined on the lower wall 102, vortex may be suppressed, and the straightness of the air flow may be improved.

[0131] The edge 103 may be located outward than the outer wall 15 of the first body 10. A distance D may be defined between the edge 103 and the outer wall 15. The outlet 11 (see FIG. 1) may be defined along circumference of the outer wall 15. Accordingly, since the edge 103 is located outward than the outer wall 15, it is possible to prevent air flowing along the lower wall 102 from re-introducing into the inlet 11.

[0132] The inclination angle $\theta 1$ at which the lower wall is inclined with respect to the horizontal direction may be 30 degrees to 35 degrees.

[0133] The angle at which the lower wall 102 is inclined with respect to the horizontal direction may increase toward outside of the second body 100. One angle $\theta 3$ at which the lower wall 102 is inclined at the boundary portion 101 may be smaller than another angle $\theta 4$ at which the lower wall 102 is inclined at the edge 103. The angle at which the lower wall is inclined with respect to the horizontal direction may increase from the boundary portion 101 toward the edge 103.

[0134] The lower wall 102 may include a first lower wall 102a facing the outlet 12 in the up-and-down direction, and a second lower wall 102b extending from the first lower wall 102a toward outside of the second body 100. The discharge space S may be defined between the first lower wall 102 and the outlet grille 14. The second lower wall 102b may be located outward than the outer wall 15 of the first body 10.

[0135] A lower surface of the lower wall 102 may be curved. A lower surface of the first lower wall 102a may be extended curvedly upward. A lower surface of the second lower wall 102b may extend curvedly upward.

[0136] A radius of curvature of the lower surface of the lower wall 102 may decrease toward outside of the second body 100. The lower surface of the lower wall 102 may be curved upward toward the outside of the second body 100. A radius of curvature R1 of the first lower wall 102a may be greater than a radius of curvature R2 of the second lower wall 102b.

[0137] Hereinafter, a second body 1000 according to another embodiment of present disclosure will be described with reference to FIG. 8 to 11.

[0138] FIG. 8. is a perspective view of the second body 1000. FIG. 9. is a bottom view of the second body 1000. FIG. 10. is a sectional view of the second body 1000 cut in the vertical direction. FIG. 11. is a part of a sectional view of the air purifier 1 to which the second body 1000 is mounted.

[0139] The first body 10 (see FIG. 1) may be detachably coupled to either the second body 100 described with reference to FIGS. 1 to 7 or the second body 1000 described with reference to FIGS. 8 to 11 optionally. The second body 100 described with reference to FIGS. 1 to

7 may be detachably coupled to the mount 19. The second body 1000 described with reference to FIGS. 8 to 11 may be detachably couple to the mount 19 in the same manner. That is, the second body 100, 1000 according to the one and another embodiments are compatible with the first body 10.

[0140] The description of the second body 100 described with reference to FIGS. 1 to 7 may be equally applied to the second body 1000 described with reference to FIGS. 8 to 11.

[0141] The second body 1000 may include the lower body 1100. The lower body 1100 may be coupled to the first body 10 (see FIG. 1). The lower body 1100 may have a cylindrical shape. The lower body 1100 may have structure corresponding to structure of the lower body 110 of FIGS. 1 to 7.

[0142] The second body 1000 may include an upper body 1200. The upper body 1200 may be disposed above the upper body 1100. A length L1 of the upper body 1200 in a first direction may be greater than a length L2 of the upper body 1200 in a second direction. A horizontal section of the upper body 1200 may have an elliptical shape. That is, unlike the upper body 120 of the first embodiment having a circular section, the upper body 1200 of the second embodiment may have an elliptical shape. An area of the horizontal section of the upper body 1200 of the second embodiment may be greater than an area of the horizontal section of the upper body 120 of the first embodiment.

[0143] The description of the upper body 120 described with reference to FIGS. 1 to 7 may be equally applied to the upper body 1200 of the second embodiment except for difference in shape described above.

[0144] The second body 1000 may include a top cover 1300. The top cover 1300 may be disposed above the upper body 1200. A length L1 of the top cover 1300 in a first direction may be greater than a length L2 of the top cover 1300 in a second direction. A horizontal section of the top cover 1300 may have an elliptical shape. That is, unlike the top cover 130 of the first embodiment having a circular section, the top cover 1300 of the second embodiment may have an elliptical shape. An area of the horizontal section of the top cover 1300 of the second embodiment may be greater than an area of the horizontal section of the top cover 130 of the first embodiment.

[0145] The description of the top cover 130 described with reference to FIGS. 1 to 7 may be equally applied to the top cover 1300 of the second embodiment except for difference in shape described above.

[0146] Hereinafter, the second body 1000 according to another embodiment of present disclosure will be described with reference to FIG. 9.

[0147] The second body 1000 may include a lower body 1100 having a cylindrical shape. The lower body 1100 may include an outer circumferential surface 1100 having a cylindrical shape.

[0148] The second body 1000 may include a lower wall 1002 inclined. The second body 1000 may include an

edge 1003.

[0149] The second body may include a coupling device button 1410. The coupling device button 1410 may be exposed on lower side of the lower wall 1002.

[0150] The second body 1000 may include a lamp 1510. The lamp 1510 may be exposed on lower side of the lower wall 1002.

[0151] The second body may include buttons 1710, 1720, 1730. The buttons 1710, 1720, 1730 may be located closer to the edge 1003 than the outer circumferential surface 1110. A distance between the buttons 1710, 1720, 1730 and the outer circumferential surface 1110 may be greater than a distance between the buttons 1710, 1720, 1730 and the edge 1003. The buttons 1710, 1720, 1730 may be located farther from the lower body 1100 than the coupling device button 1410. A distance between the buttons 1710, 1720, 1730 and the lower body 1100 may be greater than a distance between the buttons 1710, 1720, 1730 and the coupling device button 1410.

[0152] The coupling device button 1410 and the buttons 1710, 1720, 1730 may be located on a long axis of the upper body 1200. The horizontal section of the upper body 1200 may be an elliptical shape, and the coupling device button 1410 and the buttons 1710, 1720, 1730 may be arranged along the long axis of the upper body 1200.

[0153] Hereinafter, the second body 1000 according to another embodiment of present disclosure will be described with reference to FIG. 10 and 11.

[0154] The second body 1000 may include a coupling device 1400, the coupling device button 1410, the lamp 1510, a button assembly 1700, and the buttons 1710. Descriptions of the elements 140, 141, 151, 170 and 171 described with reference to FIGS. 1 to 7 may be equally applied to the elements 1400, 1410, 1510, 1700 and 1710 described above.

[0155] The coupling device button 1710, the lamp 1510, and the button 1710 may be arranged along a direction in which the lower wall 1002 extends. The coupling device button 1410, the lamp 1510, and the button 1710 may be exposed on lower side of the lower wall 1002.

[0156] The coupling device button 1410, the lamp 1510, and the button 1710 may be sequentially arranged on the lower wall 1002 extending from the outer circumferential surface 1110 of the lower body 1100 to the edge 1003 of the lower body 1100.

[0157] After air blown by the fan 17(see FIG. 3) is discharged into the discharge space S through the discharge passage 12a, 12b, the air may flow obliquely upward along the lower wall 1002. The description of the flowing direction of air blown by the fan 17 described with reference to FIGS. 1 to 7 may be equally applied.

[0158] The edge 1003 of the second body 1000 may be located outward than the outer wall 15 of the first body 10. A distance D2 may be defined between the edge 1003 and the outer wall 15. A distance D2 between the

edge 1003 and the outer wall 15 in the second embodiment may be greater a distance D(see FIG. 7) between the edge 103 and the outer wall 15 in the first embodiment. The distance in which air discharge into the discharge space S flows along the lower wall 1002 of the second embodiment may be greater than that of the first embodiment.

[0159] The lower wall 1002 may be inclined upward toward outside of the air purifier 1. The inclination angle of the lower wall 1002 may decrease toward outside of the air purifier 1. For example, an inclination angle θ_3 between the lower body 1100 and the coupling device button 1410 may be greater than an inclination angle θ_4 between the button 1710 and the coupling device button 1410. Accordingly, the generation of vortex due to the relatively longer length of the lower wall 1002 compared to the first embodiment may be suppressed.

[0160] Hereinafter, effect of the air purifier 1 will be described with reference to FIG. 12.

[0161] FIG. 12(a). is a diagram showing a direction of air flow discharged from the air purifier 1. FIG. 12(b). is a diagram for explaining a case where the air purifier 1 is installed near a bed Bd. FIG. 12(c). is a diagram for explaining a case where the air purifier 1 is installed near a sofa Sf.

[0162] A height H1 of the air purifier 1 may be defined in the up-and-down direction. The height H1 from a lower end to an upper end of the air purifier 1 may be within a range of 50cm to 60cm.

[0163] The outlet 12(see FIG.1) of the air purifier 1 may be spaced apart upward by a predetermined distance H2 from ground. The distance H2 spaced apart from the ground may be within a range of 35cm to 45cm.

[0164] A maximum rising height H3 of air discharged from the air purifier 1 may be within a range of 115cm to 125cm.

[0165] An inclination angle A may refer to an angle at which air discharged from the air purifier 1 is discharged upward with respect to the horizontal direction. The inclination angle A may be within a range of 30 degrees to 35 degrees.

[0166] The lower wall 102; 1002 of the second body 100; 1000 may extend upward obliquely. An inclination angle of the lower wall 102; 1002 may be within a range of 30 degrees to 35 degrees(see FIG. 7 and 11). Since the lower wall 102; 1002 is inclined, air discharged from the air purifier 1 has an upward inclination angle A. Since the air discharged from the air purifier 1 has an upward inclination angle A, clean air can be supplied toward the user's vicinity without being directly delivered to the user. Accordingly, since the airflow of clean air is not directly delivered to the user but supplied to the user's vicinity, the user may feel more comfortable than when the airflow is directly delivered to the user.

[0167] The height at which the user's head touches the bed Bd may be spaced apart from the ground by a predetermined distance HB. An average of the height HB at which the user's head touches the bed Bd may be about

53.7 cm.

[0168] The height at which the user sits on the sofa Sf may be spaced apart from the ground by a predetermined distance HS1. An average of the heights HS1 at which the user sits on the sofa Sf may be about 40.9 cm.

[0169] The height at which the armrests are located at the sofa Sf may be spaced apart from the ground by a predetermined distance HS2. An average of the height HS2 at which the armrests are located at the sofa Sf may be about 55.3 cm.

[0170] Accordingly, if the air purifier 1 of the present disclosure having a height of the discharge port 12 from the ground is within a predetermined range near the bed Bd or the sofa Sf, since the discharged air has a predetermined inclination angle A, it is possible to prevent the flow of the discharged air from being directly deliver to the user.

[0171] According to at least one of the embodiments of the present disclosure, as a second body has a flat upper surface above the first body on which an outlet is defined, things may be placed on upper side of the second body.

[0172] According to at least one of the embodiments of the present disclosure, as a lower wall of the second body is inclined upward, the direction of air flow may be radially formed.

[0173] According to at least one of the embodiments of the present disclosure, as adjusting an inclination angle of the lower wall, it is possible to prevent air discharged from the air purifier from being directly delivered to users.

[0174] According to at least one of the embodiments of the present disclosure, structures of a discharge passage and a circumferential surface of the second body may guide the flow direction of air from the outlet.

[0175] According to at least one of the embodiments of the present disclosure, as an end portion of the second body is located outward than an outer wall of the first body, it is possible to minimize air a phenomenon in which flowing along the second body is reintroduced into the inlet of the first body.

[0176] According to at least one of the embodiments of the present disclosure, it is possible to minimize vortex in the vicinity of the outlet by the structures of the discharge passage and the outlet grille.

[0177] The effects of the present disclosure are not limited to the effects described above, and other effects not mentioned will be clearly understood by those skilled in the art from the claims.

[0178] Although the preferred embodiments of the present disclosure have been shown and described above, the present disclosure is not limited to the specific embodiments described above, and variously modified implementations are possible by those skilled in the art to which the present disclosure pertains without departing from the gist of the present disclosure claimed in the claims, and these modifications should not be individually understood from the technical idea or perspective of the

present disclosure.

[0179] The scope of the present disclosure is not limited to the above-described embodiments, which may be implemented in various forms. Therefore, if the modified embodiment includes the elements of the claims of the present disclosure, it should be regarded as belonging to the scope of the present disclosure.

[0180] Certain embodiments or other embodiments of the disclosure described above are not mutually exclusive or distinct from each other. Any or all elements of the embodiments of the disclosure described above may be combined with another or combined with each other in configuration or function.

[0181] For example, a configuration "A" described in one embodiment of the disclosure and the drawings and a configuration "B" described in another embodiment of the disclosure and the drawings may be combined with each other. Namely, although the combination between the configurations is not directly described, the combination is possible except in the case where it is described that the combination is impossible.

Claims

1. An air purifier comprising:

a first body (10) having an inlet (11) and an outlet (12) that is open upward;
a fan (17) disposed inside the first body and below the outlet; and
a second body (100, 1000) coupled to the first body (10) and disposed above the outlet (12), wherein the second body (100, 1000) comprises:

a lower body (110, 1100) connected to the first body (10); and
a lower wall (102, 1002) located above the outlet (12) and extending toward an outside of the first body (10) in a direction crossing an up-and-down direction.

2. The air purifier of claim 1, wherein the lower wall (102, 1002) is spaced apart upward from the outlet (12) and extending upward toward the outside of the first body (10).

3. The air purifier of claim 1 or 2, wherein the lower wall (102, 1002) is inclined upward toward the outside of the first body (10), and wherein an angle ($\theta 1$) at which the lower wall (102, 1002) is inclined with respect to a horizontal direction increases toward the outside of the first body (10).

4. The air purifier of any one of claims 1 to 3, wherein the lower wall (102, 1002) is inclined upward toward the outside of the first body (10), and

wherein an angle at which the lower wall (102, 1002) is inclined with respect to a horizontal direction is within a range of 30 degrees to 35 degrees.

5. The air purifier of any one of claims 1 to 4, wherein the lower wall (102) comprises:
 - a first wall (102a) facing the outlet (12) in the up-and-down direction; and
 - a second wall (102b) extending toward the outside of the first body (10) from the first wall (102a) and located an outside of the outlet (12) in a radial direction.
6. The air purifier of any one of claims 1 to 5, wherein the lower wall (102) extends curvedly toward the outside of the first body (10), and wherein a radius of curvature of the lower wall (102) decreases toward the outside of the first body (10).
7. The air purifier of any one of claims 1 to 6, further comprising:
 - a coupling device disposed inside the second body (100) and connecting the first body (10) and the second body (100); and
 - a coupling device button configured to operate the coupling device and protruding toward a lower side of the lower wall (102).
8. The air purifier of claim 7, wherein the second body (100) comprises a boundary portion (101) located inward than the outlet (12) in a radial direction and spaced apart from the outer wall (15) of the first body (10), and wherein the coupling device button is located between the outer wall (15) of the first body (10) and the boundary portion (101).
9. The air purifier of and one of claims 1 to 8, further comprising an outlet grille (14) disposed below the lower wall (102) and inclined upward in a direction opposite to a direction in which the lower wall (102) extends.
10. An air purifier of any one of claims 1 to 9 wherein the second body further comprises:
 - an upper body (120) facing the outlet (12) in the up-and-down direction and extending toward an outside of the first body (10) in a direction crossing the lower body (110).
11. The air purifier of any one of claims 8 to 10, wherein the first body comprises:
 - a discharge passage (12a, 12b) located between the outer wall (15) and the lower body (110) and defined in the up-and-down direction.

12. The air purifier of claim 11, wherein a width of the discharge passage (12a, 12b) increases upward.

13. The air purifier of claim 12, wherein the first body (10) further comprises:

- a housing (18) spaced apart inward from the outer wall (15);
- a mount (19) spaced apart inward from the outer wall (15) and coupled to the second body (100); and
- a discharge passage (12a, 12b) being defined in a space between the outer wall (15) and the housing (18) and in a space between the outer wall (15) and the mount (19).

14. The air purifier of claim 12 or 13, further comprising:

- an outlet grille (14) disposed to surround the lower body (110) and protruding toward the upper body (120) from the first body (10); and
- a boundary portion (101) defined between the outlet grille (14) and the upper body (120).

15. The air purifier of claim 12, 13, or 14, wherein the upper body (120) extends obliquely upward toward the outside of the first body (10) from an upper end of the lower body (110).

FIG. 1

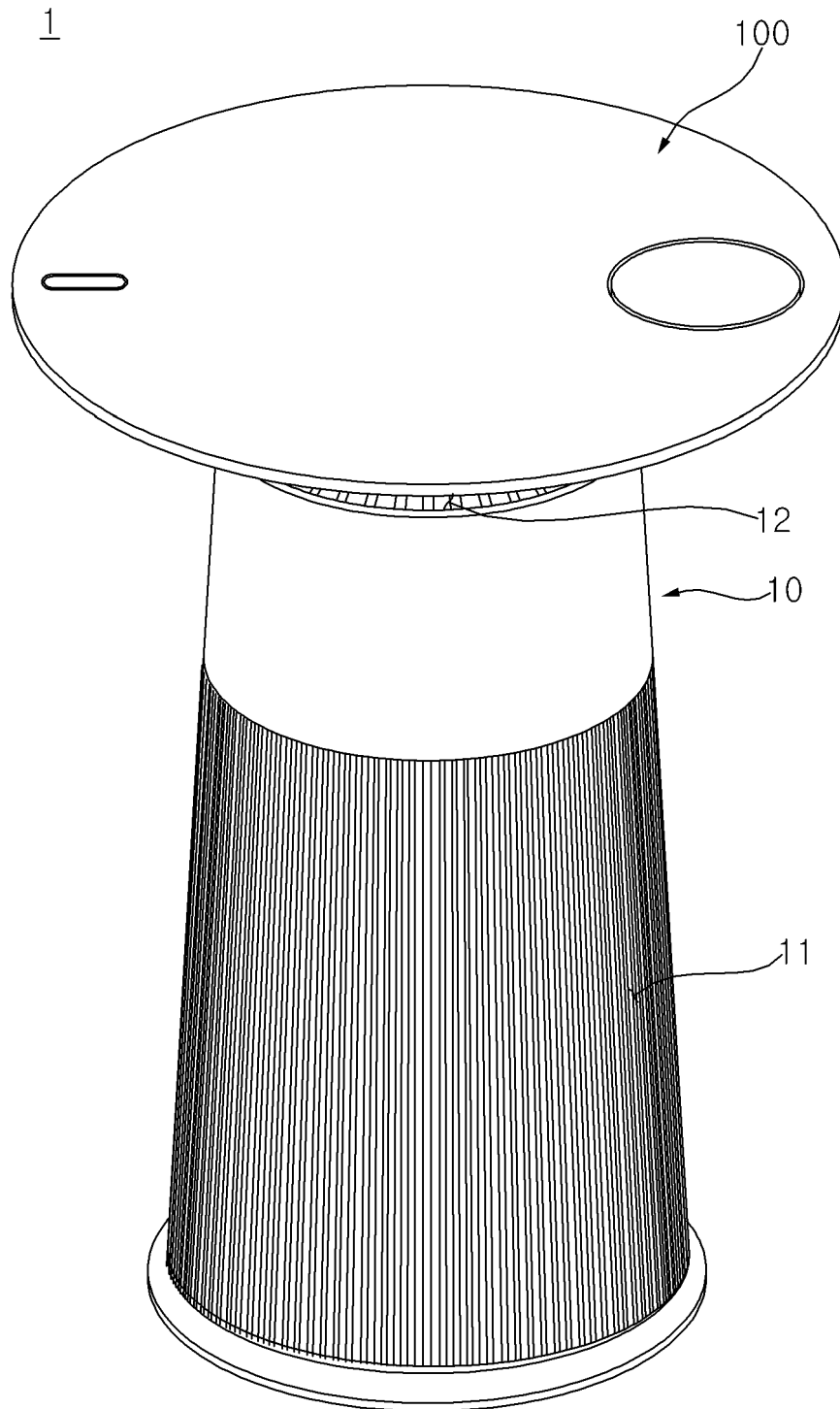


FIG. 2

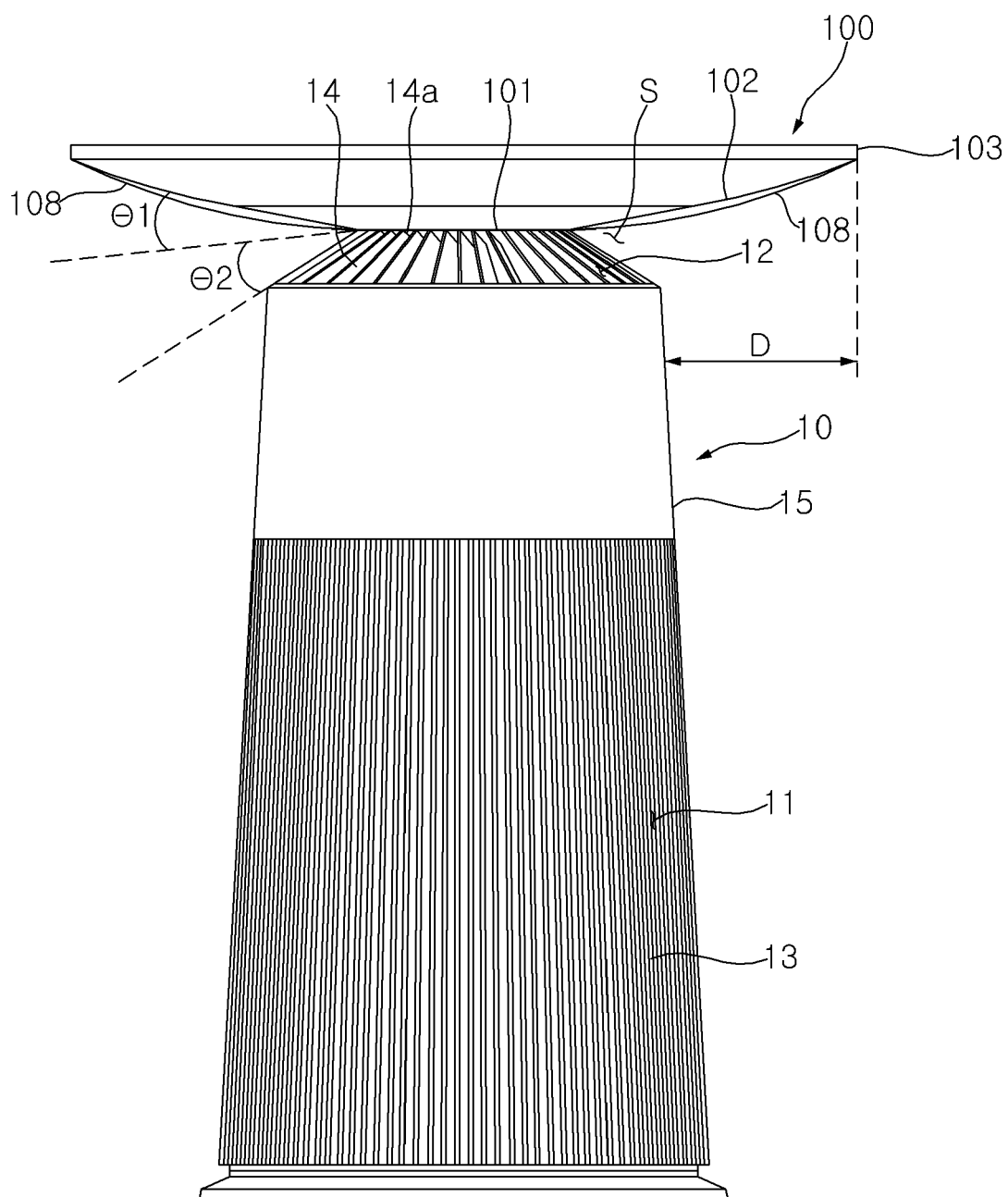


FIG. 3

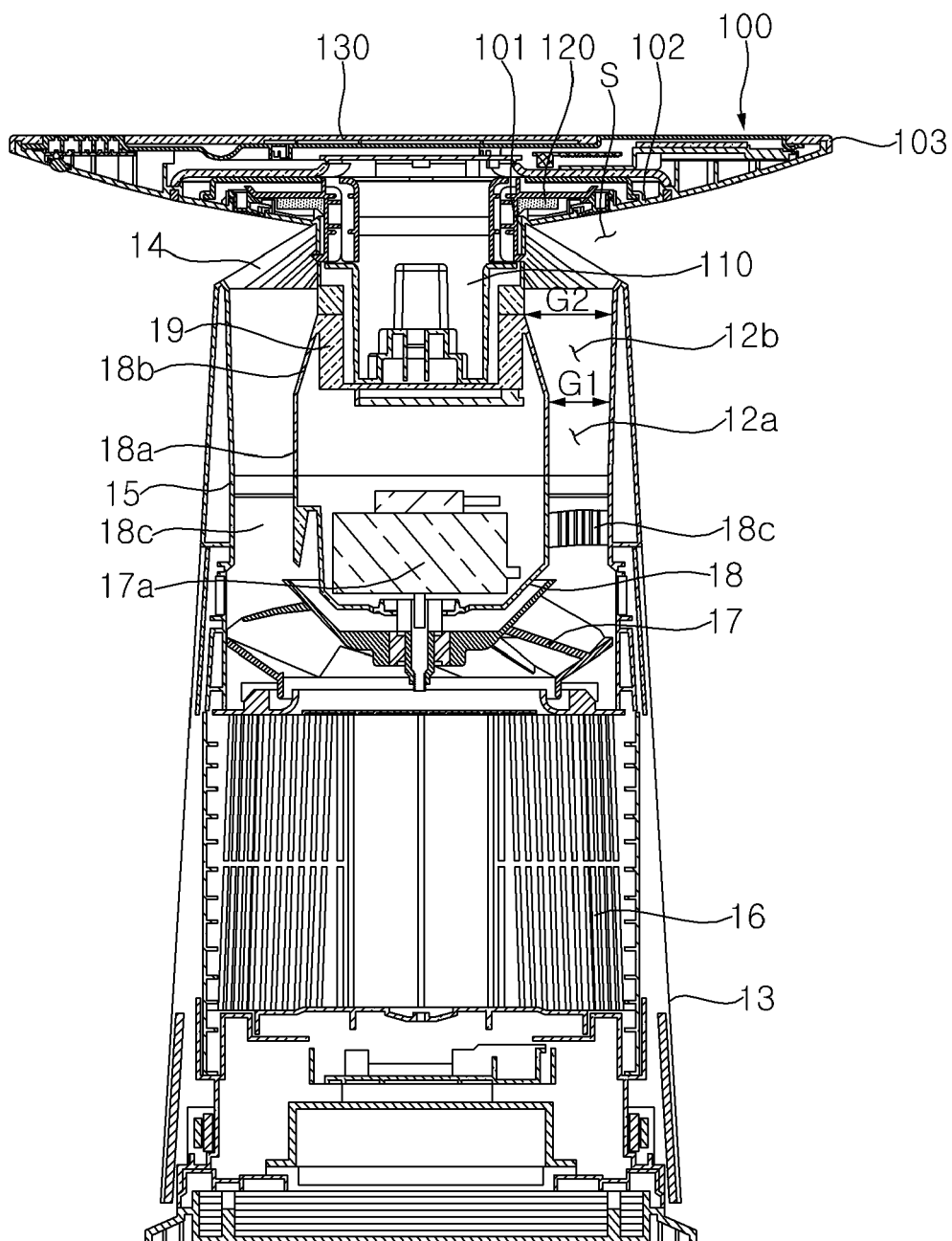


FIG. 4

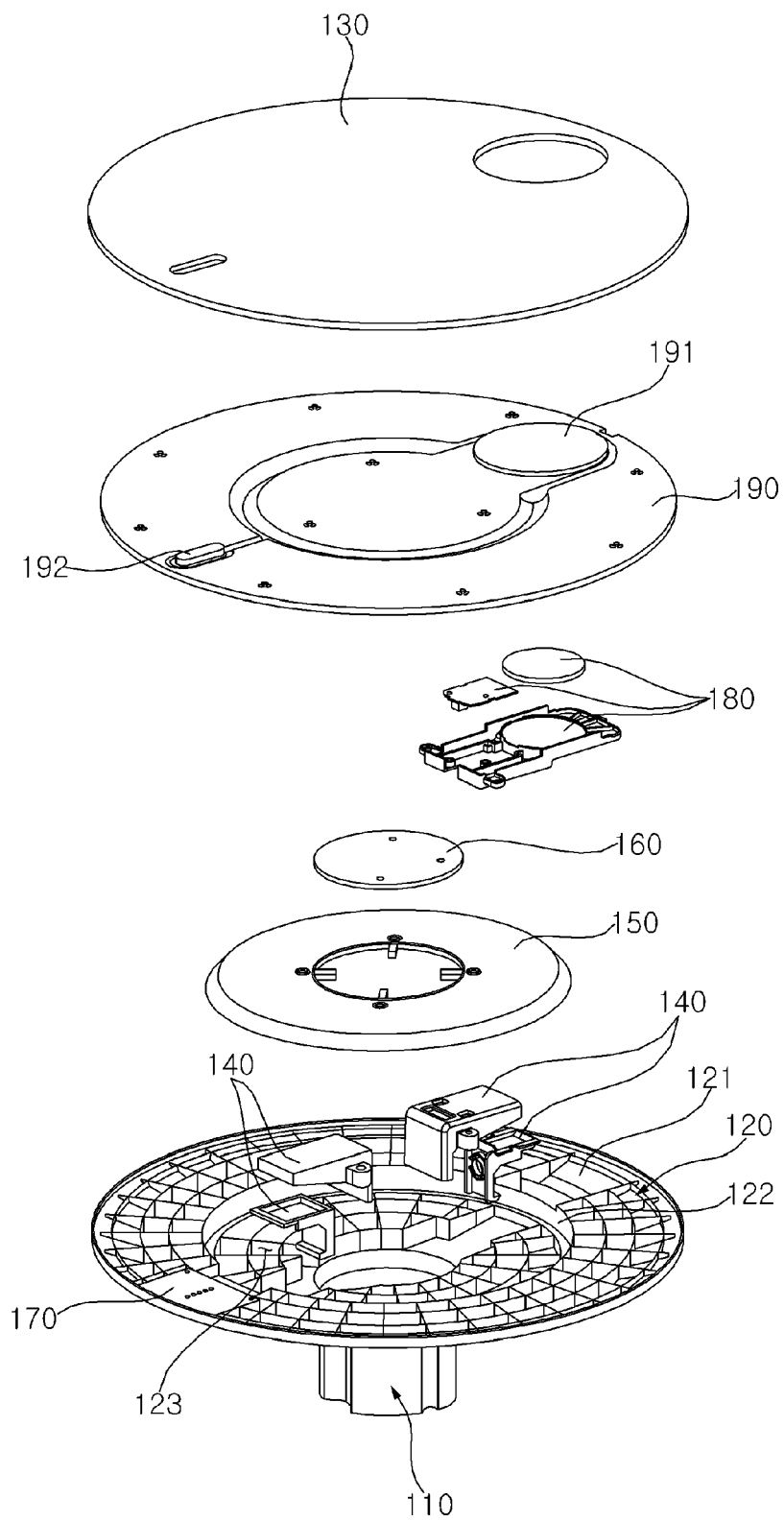


FIG. 5

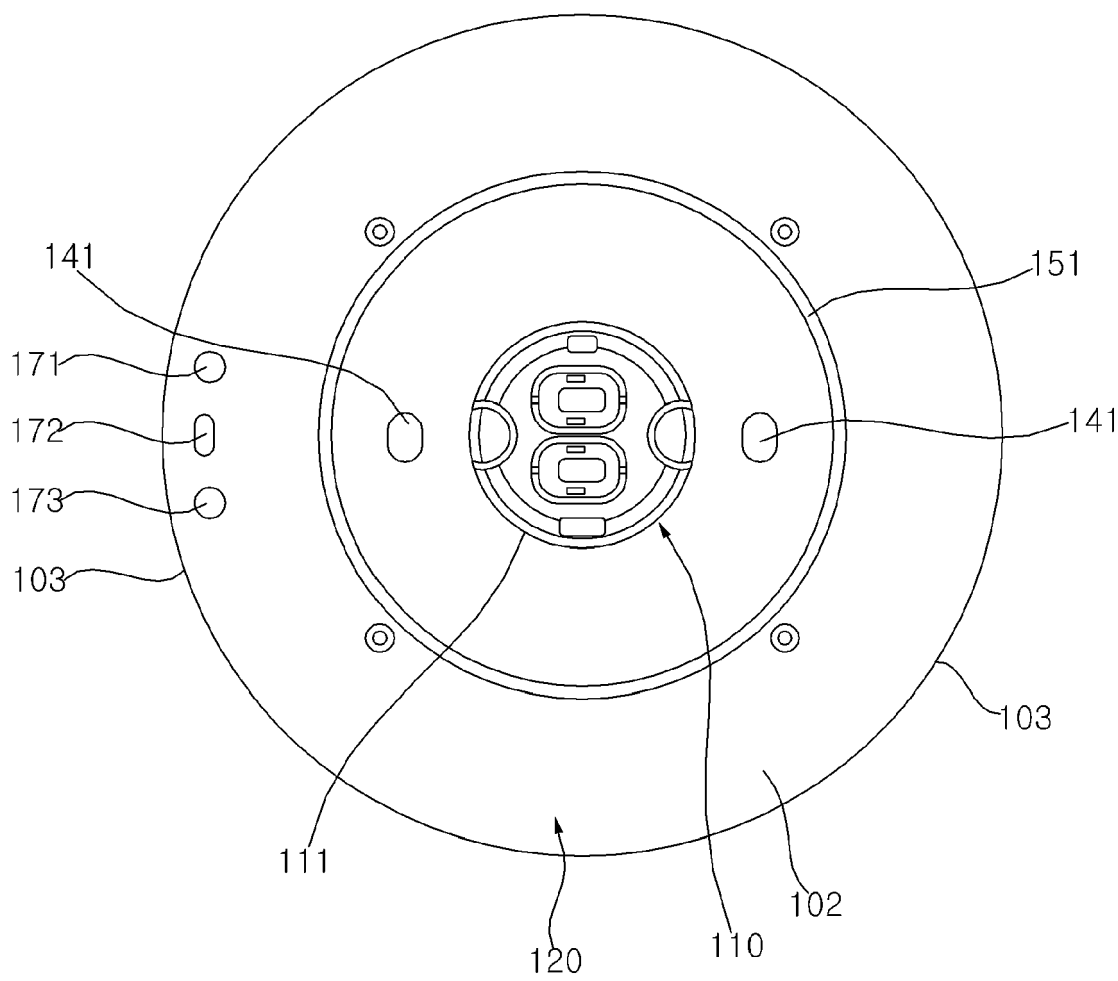


FIG. 6

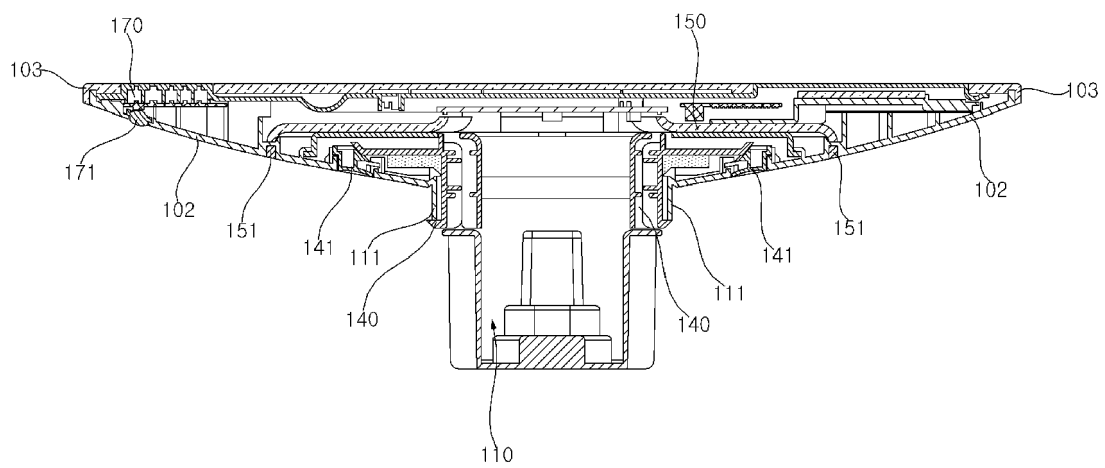


FIG. 7

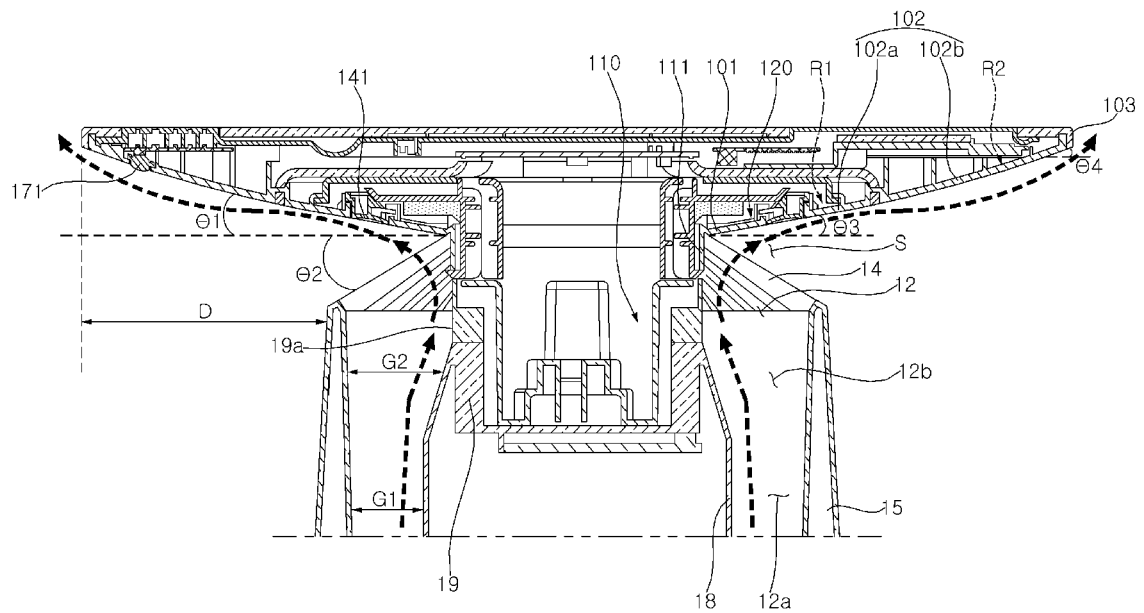


FIG. 8

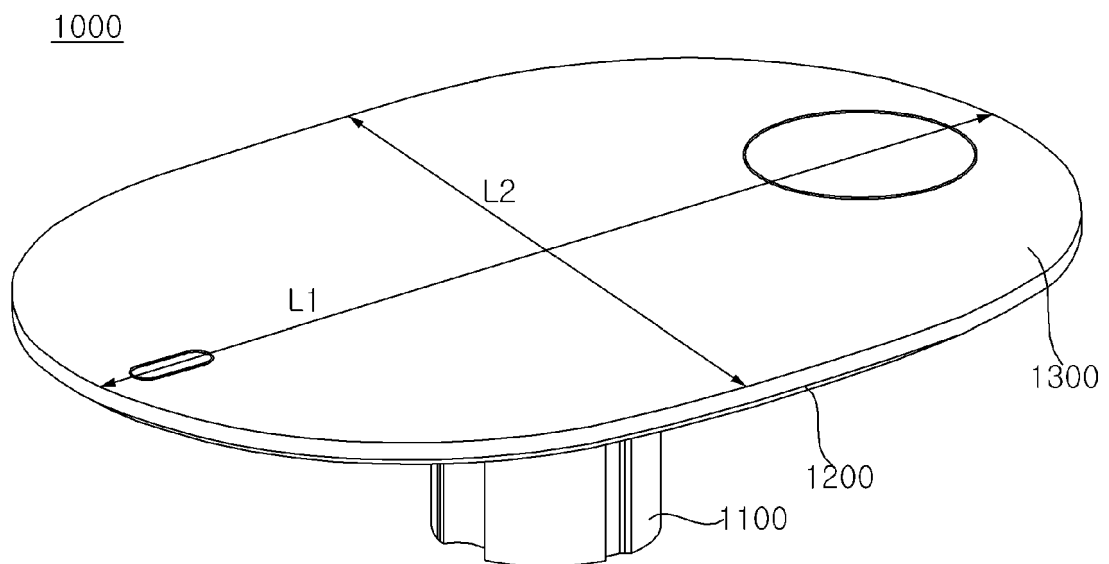


FIG. 9

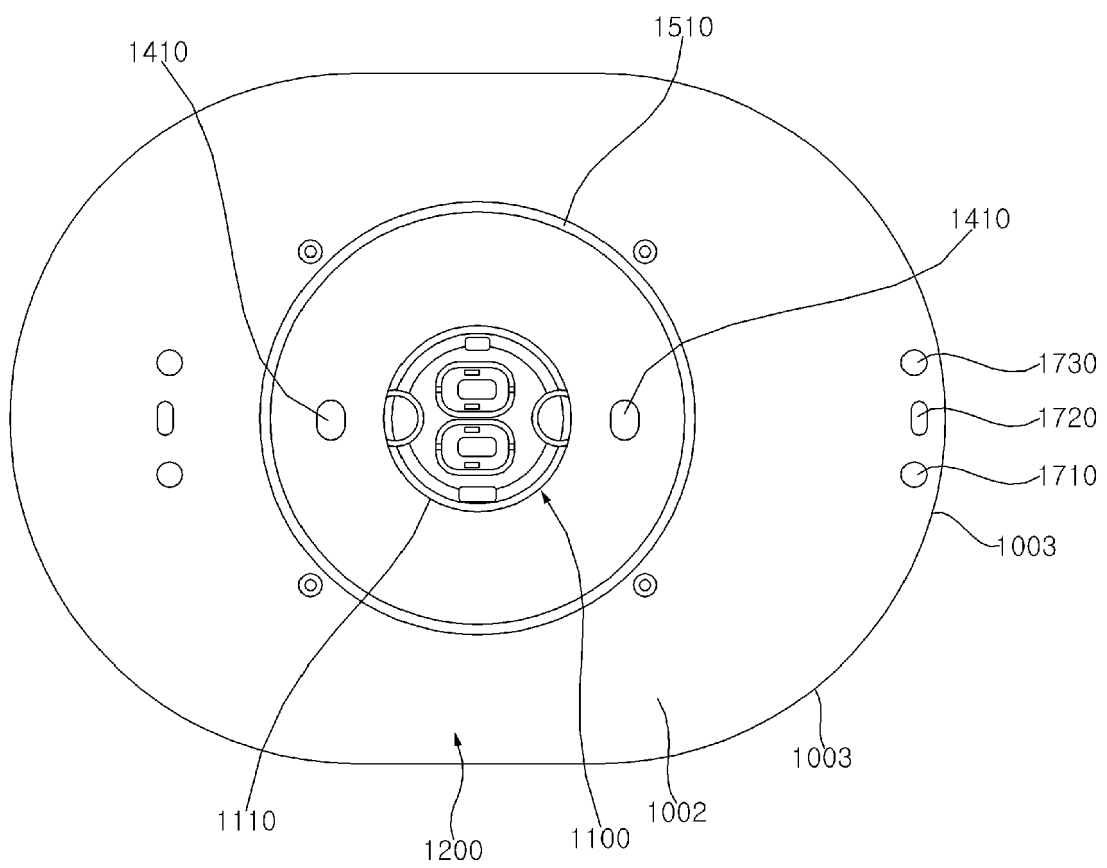


FIG. 10

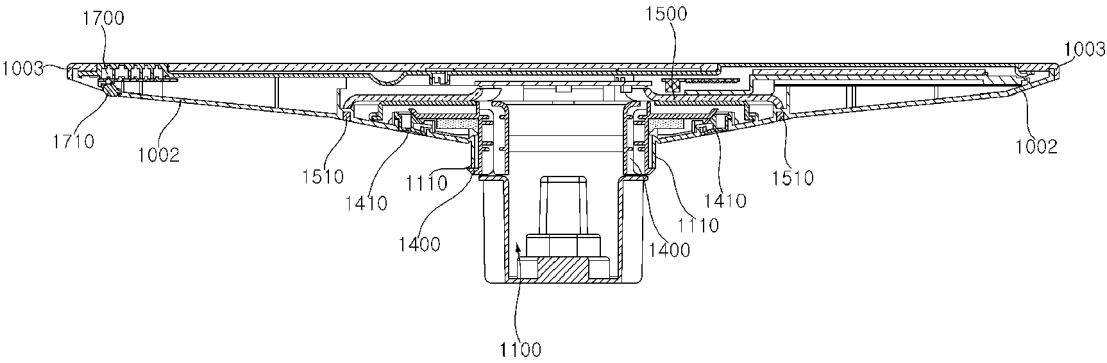


FIG. 11

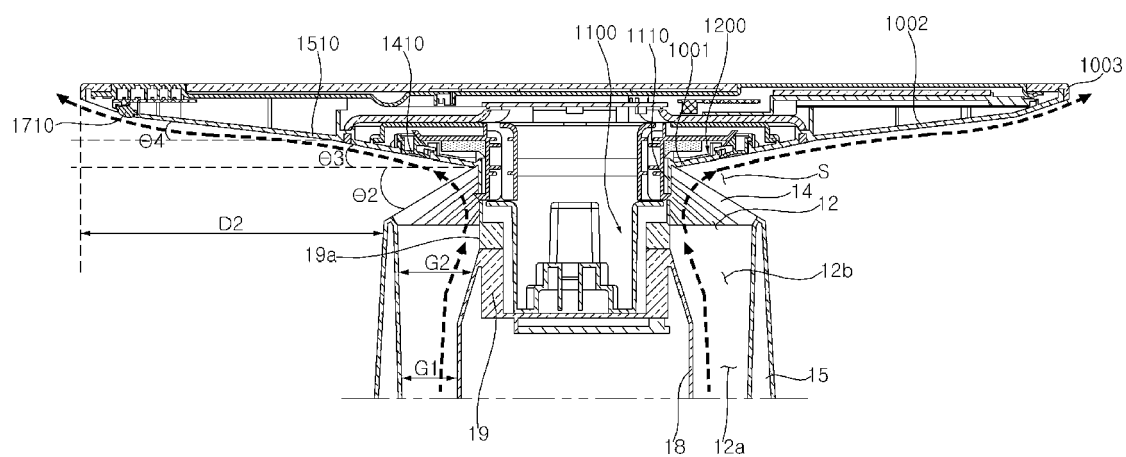
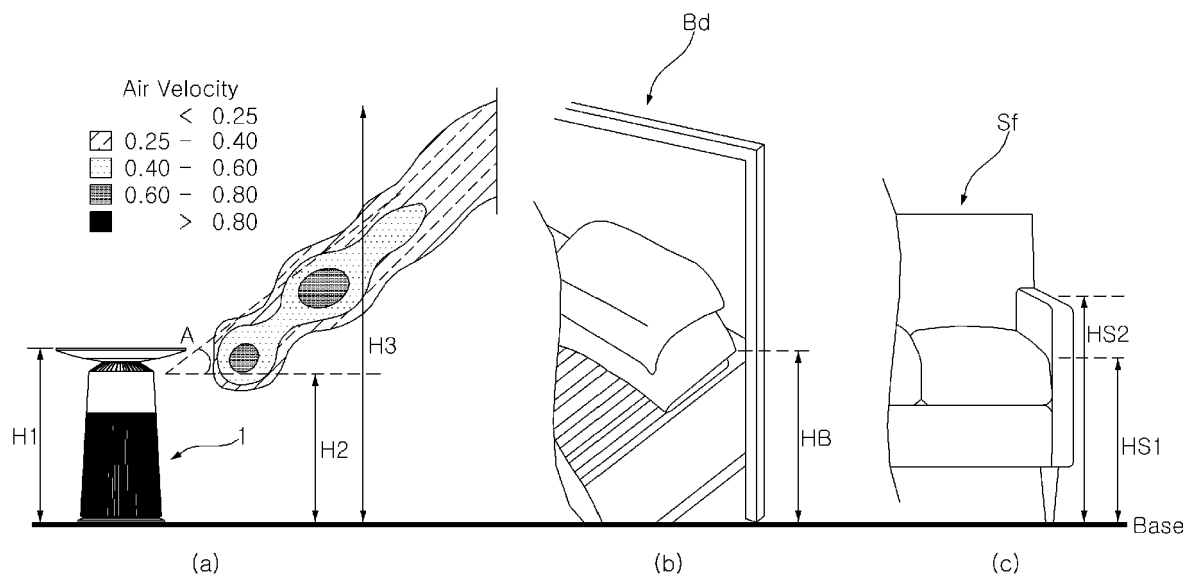


FIG. 12





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