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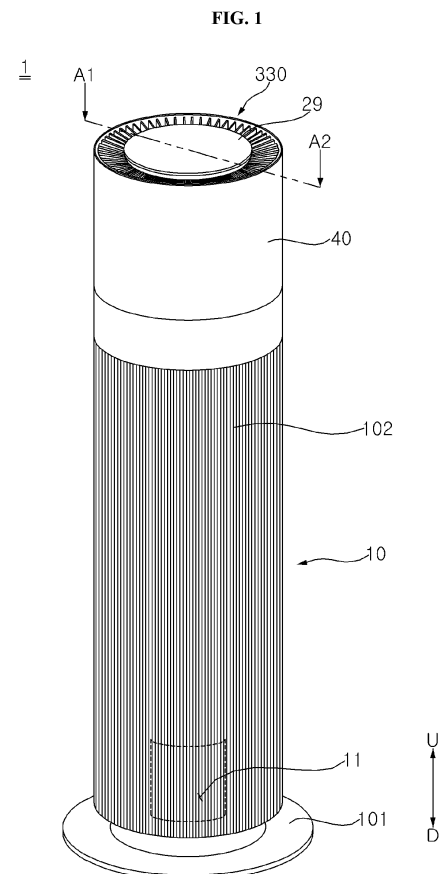
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(54) **HUMIDIFIER**

(57) The present disclosure relates to a humidifier. A humidifier of the present disclosure includes: a humidification unit for generating mist; a flow path body disposed above the humidification unit, that has a discharge flow path having an annular cross-section through which mist released from the humidification unit flows; and a plurality of guide vanes disposed on the discharge flow path, slanted from the vertical, wherein the plurality of guide vanes may be spaced apart from each other along the periphery of the discharge flow path.



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## Description

### BACKGROUND

#### Field

[0001] The present disclosure relates to a humidifier.

#### Related Art

[0002] A humidifier is an appliance that releases humidified air containing large amounts of moisture by vaporizing water. The humidifier is able to create humidified air by vaporizing water by natural evaporation, evaporation by heating, ultrasonic vibration, etc.

[0003] The "upward-discharge type, large-capacity humidifier" disclosed in Korean Laid-Open Patent No. 2022-0066454 includes: a water container disposed on a lower side, for storing water; a main body attached to an upper side of the water container, for generating mist by drawing in water from the water container; and a discharge member for guiding the mist generated from the main body upward, wherein the water container is configured to be attachable to and detachable from a lower part of the main body.

[0004] The above conventional humidifier was problematic in that, since the water container is disposed on a lower side of the main body that generates mist, the user has to remove the main body and discharge member disposed on an upper side of the water container, in order to fill the water container with water. As such, if a device with a heavy load or various parts are disposed on an upper side of the water container, this can cause the user the inconvenience of having to put in time and effort to remove them when they want to fill the humidifier with water.

[0005] Moreover, condensate water may form on parts through which mist flows, because of the characteristics of humidifiers. When the user removes parts from the humidifier to fill the water container with water, the condensate water may drip from the removed parts onto the floor of an indoor space, leading to contamination and exposing the user to the risk of slipping on the floor wet with the condensate water.

[0006] The "humidifier" disclosed in Korean Patent Registration includes: a main body that generates mist; a water reservoir detachably disposed on a lower part of the main body; and a water container with a filling opening formed at a lower side to supply water to the water reservoir.

[0007] The above conventional humidifier discloses a structure in which the filling opening disposed on a lower part of the water container is inserted into the water reservoir. The water reservoir stores a certain amount of water, and the user has to remove the water container from the main body in order to fill the water container with water. In this case, the condensate water collected at a lower part of the water container or the water stored in

the water reservoir may come out along with the water container, which may lead to contamination of the indoor space.

[0008] Moreover, the user may have to fill the water container frequently due to the small capacity of the water container.

[0009] Another problem is that the narrow opening in the water container through which water is poured makes it difficult for the user to clean the inside of the water container.

[Prior Art Documents]

[Patent Document]

[0010]

Korean Laid-Open Patent Publication No. 10-2022-0066454 A (filed on May 24, 2022)

Korean Patent Registration Publication No. 10-2334756 B1 (filed on December 7, 2021)

### SUMMARY

[0011] The present disclosure is directed to providing a humidifier capable of keeping an indoor space pleasant and clean.

[0012] Another aspect of the present disclosure is to provide a humidifier that offers better convenience in use.

[0013] Yet another aspect of the present disclosure is to provide a humidifier that offers higher safety in use.

[0014] A further aspect of the present disclosure is to provide a humidifier that reduces discomfort in use.

[0015] A further aspect of the present disclosure is to provide a humidifier that increases humidification time.

[0016] A further aspect of the present disclosure is to provide a humidifier that increases the amount of humidification.

[0017] A further aspect of the present disclosure is to provide a humidifier that is easy to clean.

[0018] A further aspect of the present disclosure is to provide a humidifier that has better sanitary performance.

[0019] A further aspect of the present disclosure is to provide a humidifier that makes less vibration and noise.

[0020] A further aspect of the present disclosure is to provide a humidifier that offers better durability.

[0021] A further aspect of the present disclosure is to provide a humidifier that delivers humidified air uniformly throughout an indoor space.

[0022] A further aspect of the present disclosure is to provide a humidifier that offers higher structural stability.

[0023] A further aspect of the present disclosure is to provide a humidifier in which less residual water is retained.

[0024] The aspects of the present disclosure are not limited to the foregoing, and other aspects not mentioned herein will be able to be clearly understood by those skilled in the art from the following description.

**[0025]** To accomplish the foregoing aspects, an exemplary embodiment of the present disclosure provides a humidifier including: a tank for storing water; a humidification unit for generating mist from water supplied from the tank; a tank holder disposed above the humidification unit, that covers the outer periphery of the tank so as to form a space where the tank is inserted; and a shell disposed above the humidification unit and spaced outward from the tank holder, wherein a discharge flow path may be formed between the tank holder and the shell, through which the mist generated from the humidification unit may flow.

**[0026]** The tank holder may be open at the top. The tank may be inserted into or taken out through the open top.

**[0027]** The tank may have an arc-shaped tank handle rotatably attached to an upper part of a peripheral wall of the tank. The tank may have a handle rest protruding from the peripheral wall of the tank. The tank handle may be placed on the handle rest when rotated and laid down.

**[0028]** The outer periphery of the tank may be in close proximity to an inner side of the tank holder.

**[0029]** The tank holder may have a holder opening formed through the bottom of the tank holder.

**[0030]** The humidifier may include a sub guide disposed below the tank holder, for guiding the mist generated from the humidification unit.

**[0031]** The sub guide may have a sub intake hole through which the mist generated from the humidification unit is admitted.

**[0032]** A lower surface of the tank holder may be spaced upward from the sub guide to thereby form a sub flow path through which the mist admitted through the sub intake hole flows.

**[0033]** The sub guide may be slanted upward and laterally outward from the sub intake hole, so that the mist admitted through the sub intake hole moves upward.

**[0034]** The tank holder may include a holder rib that extends outward from a peripheral wall of the tank holder, along the periphery of the tank holder. The holder rib may guide the mist flowing from the sub guide.

**[0035]** The holder rib may extend longer toward the sub intake hole.

**[0036]** The sub guide may have a sub opening through which the feeder or the intake unit may penetrate.

**[0037]** The tank holder may have a holder opening that penetrates the bottom of the tank holder. The outer periphery of the holder opening may be positioned horizontally outward from the outer periphery of the sub opening.

**[0038]** The sub guide may include an opening peripheral wall that protrudes upward along the outer periphery of the sub opening.

**[0039]** An upper end of the opening peripheral wall may be horizontal.

**[0040]** The tank holder may have a holder support extending downward from the lower surface of the tank holder, for supporting the tank holder.

**[0041]** The sub guide may have a support rest re-

cessed downward so that the holder support is placed thereon.

**[0042]** The tank may include a feed guide disposed on the outer periphery of the feeder so as to correspond to the opening peripheral wall. The feed guide may guide the insertion of the feeder into the sub opening.

**[0043]** A loop-shaped outlet may be formed between the tank holder and the shell, through which the mist generated from the humidification unit may be discharged.

**[0044]** The shell may include an inner shell spaced outward from the tank holder. The shell may include an outer shell spaced outward from the inner shell. The discharge flow path may be formed between the tank holder and the inner shell.

**[0045]** The humidification unit may include a blower fan for forcing air to flow upward. The air forced to flow by the blower fan may flow to a space between the inner shell and the outer shell.

**[0046]** To accomplish the foregoing aspects, an exemplary embodiment of the present disclosure provides a humidifier including: a tank having a feeder for supplying stored water; a humidification unit having an intake unit coupled to the feeder to be supplied with water, for generating mist by using the supplied water; a tank holder disposed above the humidification unit, that covers the outer periphery of the tank so as to form a space where the tank is inserted; and a shell disposed above the humidification unit and spaced outward from the tank holder, wherein the tank holder may have a holder opening through which the feeder or the intake unit penetrates, so that the feeder and the intake unit are coupled together.

**[0047]** Specific details of other embodiments are included in the detailed description and the drawings.

**[0048]** According to at least one of the embodiments of the present disclosure, condensate water forming on the outer periphery of the tank may collect in the tank holder when the tank is removed, which prevents the condensate water from dripping into the indoor space, thereby keeping the indoor space pleasant.

**[0049]** According to at least one of the embodiments of the present disclosure, the user is able to fill the tank with water after taking out the tank from the tank holder, thereby improving the user's convenience.

**[0050]** According to at least one of the embodiments of the present disclosure, the user is able to fill the tank with water directly through the open top in the tank, thereby improving the user's convenience.

**[0051]** According to at least one of the embodiments of the present disclosure, the user is able to separate the tank from the tank holder by holding the tank handle, thereby improving the user's convenience.

**[0052]** According to at least one of the embodiments of the present disclosure, the feed guide disposed around the feeder in the tank enables the user to facilitate the coupling of the feeder and the intake unit, thereby improving the user's convenience.

**[0053]** According to at least one of the embodiments

of the present disclosure, the user is able to remove the tank and the tank holder together from the humidification unit when separating the tank from the humidification unit, which may help keep the condensate water forming on the outer periphery of the tank from coming out into the indoor space, thereby keeping the indoor space pleasant and improving the user's convenience.

**[0054]** According to at least one of the embodiments of the present disclosure, the tank located in close proximity to an inner side of the tank holder may help reduce the amount of condensate water generated on the outer periphery and therefore there will be less condensate water dripping into the indoor space when the tank is removed, thereby keeping the indoor space pleasant and improving the user's convenience.

**[0055]** According to at least one of the embodiments of the present disclosure, the sub guide disposed below the tank holder allows the mist generated from the humidification unit to be distributed uniformly throughout the discharge flow path, and may help reduce discomfort in use.

**[0056]** According to at least one of the embodiments of the present disclosure, the sub flow path formed between the lower surface of the tank holder and the sub guide allows the mist released from the outlet formed on one side of the humidification unit to be distributed uniformly throughout the discharge flow path, and may help reduce discomfort in use.

**[0057]** According to at least one of the embodiments of the present disclosure, the holder rib formed on the tank holder allows the mist generated from the humidification unit to be distributed uniformly throughout the discharge flow path, and may help reduce discomfort in use.

**[0058]** According to at least one of the embodiments of the present disclosure, the loop-shaped outlet allows the mist generated from the humidification unit to be discharged uniformly throughout the indoor space, and may help reduce discomfort in use.

**[0059]** According to at least one of the embodiments of the present disclosure, the holder opening formed at the bottom of the tank holder helps prevent the condensate water generated on the outer periphery of the tank from being retained in the tank holder.

**[0060]** According to at least one of the embodiments of the present disclosure, since the outer periphery of the holder opening is positioned horizontally outward from the outer periphery of the sub opening, the condensate water released from the holder opening does not enter the sub opening but is drained to the sub intake hole, thereby preventing the condensate water from being retained in the humidification unit.

**[0061]** According to at least one of the embodiments of the present disclosure, since the sub guide is slanted upward and laterally outward from the sub intake hole, the condensate water released from the holder opening is drained to the sub intake hole along the slant surface of the sub guide, thereby preventing residual water from being retained in the humidifier.

**[0062]** The effects of the present disclosure are not limited to the foregoing, and other effects not mentioned herein will be able to be clearly understood by those skilled in the art from the following description.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0063]**

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

FIG. 2 is an exploded assembly diagram of a humidifier according to an embodiment of the present disclosure.

FIG. 3 is a perspective view of a tank according to an embodiment of the present disclosure.

FIG. 4 is a cutaway cross-sectional view taken along the line B1-B2 in FIG. 3.

FIG. 5 is a perspective view of a tank holder according to an embodiment of the present disclosure.

FIG. 6 is a cutaway cross-sectional view taken along the line C1-C2 in FIG. 5.

FIG. 7 is a bottom perspective view of a tank holder according to an embodiment of the present disclosure.

FIG. 8 is a cutaway cross-sectional view taken along the line A1-A2 in FIG. 1.

FIG. 9 is a sectional elevational view of a sub guide according to an embodiment of the present disclosure.

FIG. 10 is a sectional perspective view of a sub guide according to an embodiment of the present disclosure.

FIG. 11 is a plane view according to an embodiment of the present disclosure.

FIG. 12 is an enlarged view of S 1 in FIG. 8

FIG. 13 is a cutaway cross-sectional view taken along the line D1-D2 in FIG. 12.

FIG. 14 is a cutaway cross-sectional view taken along the line E1-E2 in FIG. 12.

FIG. 15 is an enlarged view of S2 in FIG. 12.

## DESCRIPTION OF EXEMPLARY EMBODIMENTS

**[0064]** Hereinafter, the embodiments disclosed in the present specification will be described in detail with reference to the accompanying drawings. The same or similar elements will be assigned the same reference numerals irrespective of the reference numerals, and redundant descriptions thereof will be omitted.

**[0065]** The suffixes "module", "unit", "part", and "portion" used to describe constituent elements in the following description are used together or interchangeably to facilitate the description, but the suffixes themselves do not have distinguishable meanings or functions.

**[0066]** In describing the embodiments disclosed in the present specification, a detailed description of a related known technology will be omitted when it is deemed that

it may unnecessarily obscure the subject matter of the present disclosure. Also, it should be understood that the appended drawings are intended only to help understand the embodiments disclosed in the present specification and do not limit the technical idea disclosed in the present disclosure; rather, it should be understood that all changes, equivalents, and substitutions included in the technical scope and spirit of the present disclosure are included.

**[0067]** Terms such as 'first', 'second', etc., may be used to describe various components, but the components are not to be construed as being limited to the terms. The terms are used only to distinguish one component from another component.

**[0068]** It is to be understood that when one element is referred to as being "connected to" or "coupled to" another element, it may be connected directly to or coupled directly to another element or be connected to or coupled to another element, having the other element intervening therebetween. On the other hand, it is to be understood that when one element is referred to as being "connected directly to" or "coupled directly to" another element, it may be connected to or coupled to another element without the other element intervening therebetween.

**[0069]** The singular expressions may include plural expressions unless the context clearly dictates otherwise.

**[0070]** A humidifier 1 will be described with reference to FIG. 1.

**[0071]** The humidifier 1 includes a humidification unit 10 that generates mist from water. The humidification unit 10 may be supplied with water from a water reservoir storing water. The water reservoir may be a tank 20 (see FIG. 2).

**[0072]** The humidification unit 10 may discharge air containing mist. The mist may include an aerosol of water droplets and steam. Hereinafter, the term "mist" is defined as including an aerosol of water droplets and steam. The humidification unit 10 may generate mist by natural evaporation, evaporation by heating, ultrasonic vibration. For example, the humidification unit 10 may be an ultrasonic vibration-type with a diaphragm 272 (see FIG. 8).

**[0073]** Mist may be sprayed through an outlet 290 (FIG. 8) of the humidification unit.

**[0074]** The humidifier 1 may have an inlet 11 for drawing in air. The inlet 11 may be formed on a peripheral wall of the humidification unit. For example, the inlet 11 may be formed through a lower part of a peripheral wall of the humidification unit 10.

**[0075]** The humidifier 1 may include a louver 102 along a periphery of the humidification unit 10. A plurality of louvers 102 may be disposed along the outer periphery of the humidification unit 10. The louver 102 may cover the inlet 11. The louver 102 may prevent foreign matter from getting into the inlet 11. The louver 102 may prevent the user's body from being caught in the inlet 11.

**[0076]** The humidifier 1 may include a base 101 that supports the humidifier 1. The base 101 may distribute the load of the humidification unit 10 throughout its bot-

tom. The base 101 may protrude horizontally outward from the humidification unit 10. The outer periphery of the base 101 may be positioned horizontally outward from the outer periphery of the humidification unit 10. The base 101 may have a larger cross-sectional area than the humidification unit 10. For example, the base 101 may have larger cross-sectional diameter than the humidification unit 10.

**[0077]** Thus, the base is able to prevent overturning or tilting of the humidifier.

**[0078]** The humidifier 1 includes a shell 40 for guiding mist. Mist generated by the humidification unit 10 may be guided by the shell 40. The shell 40 is disposed above the humidification unit 10. The shell 40 may internally have a space in which mist moves. For example, the shell 40 may have the shape of a cylinder with an internal space.

**[0079]** The humidifier 1 may include a discharge grille 330 disposed on the outlet 320. The outlet 320 may be formed at the top of the humidifier 1.

**[0080]** The discharge grille 330 may guide at least one of air and mist expelled through the outlet 320. The discharge grille 330 may determine the direction in which a fluid to be expelled is expelled.

**[0081]** The discharge grille 330 may correspond in shape to the outlet 320. For example, the outlet 320 may have an annular shape, and the discharge grille 330 may have an annular shape corresponding to the shape of the outlet 320.

**[0082]** The discharge grille 330 may be fastened to an upper end of the shell 40. An outer peripheral edge of the discharge grille 330 may correspond to the inner periphery of the upper end of the shell 40.

**[0083]** A tank cap 29 may be attached to or detached from the discharge grille 330. The tank cap 29 may be fastened to an inner peripheral edge of the discharge grille 330, or may be removed from the inner peripheral edge of the discharge grille 330. An outer peripheral edge of the tank cap may correspond to the inner peripheral edge of the discharge grille 330. For example, the discharge grille 330 may be annular, the tank cap 29 may be circular, and the tank cap 29 may be attached to or detached from the inner peripheral edge of the discharge grille 330.

**[0084]** Referring to FIGS. 2 and 8, the humidifier 1 will be described.

**[0085]** The shell 40 may include an inner shell 41 spaced outward from the tank holder 30. The outer periphery of the inner shell 41 may be longer than the outer periphery of the tank holder 30. The outer periphery of the inner shell 41 may be positioned horizontally outward from the outer periphery of the tank holder 30. The inner shell 41 may cover the outer periphery of the tank holder 30. An inner side of the inner shell 41 may face the outer periphery of the tank holder 30.

**[0086]** The inner shell 41, together with the tank holder 30, may form a discharge flow path 310. The discharge flow path 310 may be formed between the inner shell 41

and the tank holder 30. Mist generated from the humidification unit 10 may move along the discharge flow path 310. The mist generated from the humidification unit 10 may move along the outer periphery of the tank holder 30. The mist generated from the humidification unit 10 may move along an inner side of the inner shell 41. For example, the mist generated from the humidification unit 10 may move upward through the discharge flow path 310 and reach the outlet 320.

**[0087]** An upper end of the inner shell 41 and an upper end of the tank holder 30 may form the outlet 320. A discharge grille 330 may be disposed on the outlet 320. The mist generated from the humidification unit 10 may be delivered to an indoor space through the outlet 320.

**[0088]** The inner shell 41 may include an upper inner shell 41b and a lower inner shell 41a. The upper inner shell 41b may be fastened to an upper end of the lower inner shell 41a. The upper inner shell 41b may be fastened to the upper end of the lower inner shell 41a by being turned in a first direction, and may be removed from it by being turned in a second direction. The second direction may be the reverse of the first direction. For example, the first direction may be clockwise, and the second direction may be counterclockwise.

**[0089]** The shell 40 may include an outer shell 42 spaced outward from the inner shell 41. The outer periphery of the outer shell 42 may be longer than the outer periphery of the inner shell 41. The outer periphery of the outer shell 42 may be positioned horizontally outward from the outer periphery of the inner shell 41. An inner side of the outer shell 42 may face the outer periphery of the inner shell 41.

**[0090]** The outer shell 42, together with the inner shell 41, may form an air purification flow path 117. Air forced to flow by a blower fan 112 to be described later may move through the air purification flow path 117.

**[0091]** The outer shell 42 may include an upper outer shell 42b and a lower outer shell 42a. The upper outer shell 42b may be fastened to an upper end of the lower outer shell 42a. The upper outer shell 42b may be fastened to the upper end of the lower outer shell 42a by being turned in a first direction, and may be removed by being turned in a second direction. The second direction may be the reverse of the first direction. For example, the first direction may be clockwise, and the second direction may be counterclockwise.

**[0092]** The lower outer shell 42a may be made transparent. The lower inner shell 41a may be made transparent. The user can visually see mist moving through the transparent lower outer shell 42a and lower inner shell 41a.

**[0093]** The humidifier 1 includes a tank 20 for storing water. The tank 20 may extend vertically. The tank 20 may have an internal space where water is stored.

**[0094]** The tank 20 may be disposed above the humidification unit 10. The tank 20 may be placed in the tank holder 30. The tank holder 30 may cover the outer periphery of the tank 20. The tank 20 may be vertically in-

serted into or taken out from a tank holder 30 with an open top. For example, the user may pull the tank 20 upward and take it out from the tank holder 30, and may push and insert the tank 20 downward into the open top of the tank holder 30.

**[0095]** The tank 20 may be open at the top. For example, the internal space of the tank 20 where water is stored may be cylindrical, and the top of the tank 20 may be open.

**[0096]** Thus, the user may feed water immediately to the open top of the tank, without removing the tank from the tank holder.

**[0097]** The humidifier 1 may include a tank cap 29 that covers the open top of the tank 20. The tank cap 29 may be disposed above the tank 20. The tank cap 29 may be tightened around an upper end of the tank 20.

**[0098]** This keeps foreign matter from getting into the tank.

**[0099]** Moreover, the water stored in the tank can be prevented from being contaminated.

**[0100]** This also helps keep the water stored in the tank from flowing out of the open top.

**[0101]** The humidifier 1 includes a tank holder 30 in which the tank 20 is inserted. The tank holder 30 is disposed above the humidification unit 10. The tank holder 30 may be disposed inside the shell 40. The tank holder 30 may be spaced inward from an inner surface of the shell 40. For example, the outer periphery of the tank holder 30 may be positioned horizontally inward from the outer periphery of the shell 40. The radius of the tank holder 30 may be smaller than the radius of the shell 40.

**[0102]** The shell 40 may cover the outer periphery of the tank holder 30. For example, the inner shell 41 may cover the outer periphery of the tank holder 30.

**[0103]** The tank holder 30 may be open at the top, and the tank 20 may be inserted or taken out through the open top of the tank holder 30.

**[0104]** The tank holder 30 may cover the outer periphery of the tank 20. The tank holder 30 may fix the tank 20. For example, the tank holder 30 may keep the tank 20 from moving laterally.

**[0105]** With the tank holder 30 covering the tank 20, the amount of condensate forming on the outer periphery of the tank 20 may be reduced.

**[0106]** This helps prevent water from falling from the tank in the process of attaching or detaching the tank.

**[0107]** Moreover, this can keep the humidifier in a pleasant and clean environment.

**[0108]** In addition, the user's convenience and safety can be enhanced.

**[0109]** When the tank 20 is inserted into the tank holder 30, the outer periphery of the tank 20 may be brought closer to an inner side of the tank holder 30. The outer periphery of the tank 20 may be a tank peripheral wall 21. As the outer periphery of the tank 20 is in close proximity to the inner side of the tank holder 30, the distance between the outer periphery of the tank 20 and the inner side of the tank holder 30 may be minimized.

[0110] Thus, the amount of condensation forming on the outer periphery of the tank can be reduced.

[0111] Moreover, the lateral play in the tank can be minimized.

[0112] In addition, vibration and noise generated during operation of the humidifier can be reduced.

[0113] Furthermore, this helps reduce condensation on the outer periphery of the tank.

[0114] Referring to FIG. 3, the tank 20 will be described.

[0115] The tank 20 may include a tank peripheral wall 21 forming the outer periphery. The tank peripheral wall 21 may form an internal space where water is stored. The tank peripheral wall 21 may extend vertically. For example, the tank peripheral wall 21 may have a cylindrical shape that extends vertically.

[0116] The tank 20 may include a rotatable tank handle 27. The tank handle 27 may be attached to an upper part of the tank peripheral wall 21. The tank handle 27 may be disposed inward or outward from the tank peripheral wall 21. The rotation axis RS of the tank handle 27 may penetrate the center of a transverse cross-section of the tank peripheral wall 21. For example, the tank handle 27 may be rotatably attached to an upper part of the tank peripheral wall 21, and the rotation axis RS of the tank handle 27 may penetrate the center of a transverse cross-section of the tank peripheral wall 21.

[0117] The tank handle 27 may be arc-shaped. The shape of the tank handle 27 may correspond to a portion of the periphery of the tank peripheral wall 21. The radius of the tank handle 27 may correspond to the radius of the tank peripheral wall 21. The radius of the tank handle 27 may be larger or smaller than the radius of the tank peripheral wall 21.

[0118] The tank handle 27 may rotate and stick up from the tank 20. The tank handle 27 may be rotated and housed on the inside of the tank peripheral wall 21. When the tank handle 27 is housed in the tank 20, the tank handle 27 may be attached firmly to the tank peripheral wall 21. For example, the arc-shaped tank handle 27 whose radius corresponds to the radius of the tank peripheral wall 21, when housed in the tank 20, may form a portion of the tank peripheral wall 21.

[0119] The user may take the tank 20 out from the tank holder 30 by pulling the tank handle 27, or may insert the tank 20 into the tank holder 30 by holding the tank handle 27.

[0120] The tank 20 may have a handle rest 28 protruding from the tank peripheral wall 21. For example, the handle rest 28 may protrude from the tank peripheral wall 21 and extend along the periphery of the tank peripheral wall 21.

[0121] The tank handle 27 may be placed on the handle rest 28 when rotated and laid down. As the tank handle 27 is placed on the handle rest 28, the tank handle 27 may be housed in the tank 20.

[0122] Referring to FIG. 4, the tank 20 will be described.

[0123] The tank handle 27 may be attached to the tank peripheral wall 21. The tank handle 27 may have a protrusion (not indicated by a reference numeral) corresponding to the rotation axis. The protrusion formed on the tank handle 27 may penetrate the tank peripheral wall 21. The arc-shaped tank handle 27 may have a protrusion at either end, and may be rotated with respect to the protrusion serving as the rotation axis.

[0124] The tank peripheral wall 21 may increase in radius toward the top. The tank peripheral wall 21 may include a first peripheral wall 21a where water is stored and a second peripheral wall 21b where the tank handle is housed. The second peripheral wall 21b may be connected to an upper end of the first peripheral wall 21a. A lower end of the second peripheral wall 21b may be connected to the first peripheral wall 21a. The radius of the upper end of the first peripheral wall 21a and the radius of the lower end of the second peripheral wall 21b may be different. For example, the radius of the lower end of the second peripheral wall 21b may be larger than the radius of the upper end of the first peripheral wall 21a.

[0125] The handle rest 28 may be formed where the first peripheral wall 21a and the second peripheral wall 21b are connected. The handle rest 28 may connect the first peripheral wall 21a and the second peripheral wall 21b. The handle rest 28 may extend laterally. The laterally-extending handle rest 28 may connect the upper end of the first peripheral wall 21a and the lower end of the second peripheral wall 21b. For example, the handle rest 28 may extend laterally outward from the upper end of the first peripheral wall 21a, and the lower end of the second peripheral wall 21b may be connected to one extended end of the handle rest 28. In other words, one end of the handle rest 28 may be connected to the upper end of the first peripheral wall 21a, and the other end of the handle rest 28 may be connected to the lower end of the second peripheral wall 21b.

[0126] When the tank handle 27 is rotated and housed in the tank 20, the tank handle 27 may be placed on the handle rest 28.

[0127] The tank 20 may include a tank base 22 that forms the bottom of the tank. The tank base 22 may form an internal space where water is stored. The tank base 22, together with the tank peripheral wall 21, may form a space where water is stored. The tank base 22 may support the load of the water stored in the tank 20.

[0128] The tank 20 may include a feeder 25 for supplying the water stored in the tank 20 to the humidification unit 10. The feeder 25 may be installed on the tank base 22. The feeder 25 may allow the water stored in the tank 20 to flow out.

[0129] The humidification unit 10 may include an intake unit 210 corresponding to the feeder 25. The feeder 25 may be coupled to the intake unit 210. Once the tank 20 is separated from the tank holder 30, then the feeder 25 may be separated from the intake unit 210. The feeder 25 may include a feed opening 252 attached to the intake unit 210. The feed opening 252 may allow the water

stored in the tank to flow to the intake unit 210.

**[0130]** The tank 20 may include a feed guide 26 disposed on the outer periphery of the feeder 25. The feed guide 26 may correspond to an opening peripheral wall 53 to be described later. For example, the outer periphery of the feed guide 26 may correspond to the inner periphery of the opening peripheral wall 53.

**[0131]** The feed guide 26 may guide the insertion of the feeder 25 into a sub opening 52 to be described later. The feed guide 26 may guide the coupling of the feeder 25 and the intake unit 210.

**[0132]** Therefore, the play in the tank can be minimized.

**[0133]** Moreover, poor contact between the feeder and the intake unit may be minimized, thereby improving the user's convenience.

**[0134]** The tank 20 may include a protruding surface 24 which protrudes downward from a portion of the bottom of the tank 20 where the feeder 25 is positioned. Thus, the play in the tank 20 may be minimized as the protruding surface 24 is inserted into a holder opening 33. Also, the protruding surface 24 may guide the tank 20 to a position where it is coupled to the tank holder 30.

**[0135]** The outer periphery of the protruding surface 24 may correspond to the outer periphery of the feed guide 26.

**[0136]** The tank 20 may include a protruding guide 23 which is slanted and connects the bottom of the tank 20 and the protruding surface 24. The protruding guide 23 may connect a portion of the bottom of the tank 20 forming the protruding surface 24 and the rest. The protruding guide 23 may be slanted upward and horizontally outward.

**[0137]** The protruding guide 23 may guide the insertion of the tank 20 into the tank holder 30. The protruding guide 23 may be inserted into the holder opening 33 to be described later when the tank 20 is inserted into the tank holder 30. The periphery of an inner peripheral edge of the protruding guide 23 may correspond to the outer periphery of the protruding surface 24.

**[0138]** The periphery of an outer peripheral edge of the protruding guide 23 may correspond to the periphery of an outer peripheral edge of the holder opening 33.

**[0139]** Referring to FIG. 5, the tank holder 30 will be described.

**[0140]** The tank holder 30 may include a holder peripheral wall 31 that forms a space where the tank 20 is inserted. The holder peripheral wall 31 may be the outer periphery of the tank holder 30. The holder peripheral wall 31 may correspond to the tank peripheral wall 21. The peripheral length of the tank peripheral wall 21 may be smaller than the peripheral length of the holder peripheral wall 31. The outer periphery of the tank peripheral wall 21 may correspond to the inner periphery of the holder peripheral wall 31 or be smaller than the inner periphery of the holder peripheral wall 31.

**[0141]** The holder peripheral wall 31 may fix the tank peripheral wall 21. The holder peripheral wall 31 may

support the tank peripheral wall 21. The holder peripheral wall 31 may keep the tank peripheral wall 21 from shifting laterally. The holder peripheral wall 31 and the tank peripheral wall 21 may be close to each other. The distance between the holder peripheral wall 31 and the tank peripheral wall 21 may be minimized.

**[0142]** The tank holder 30 may include a holder rib 35 protruding outward from the holder peripheral wall 31. The holder rib 35 may extend along the periphery of the holder peripheral wall 31. The holder rib 35 may be formed in a circular or elliptical shape. The length the holder rib 35 protrudes may change along the periphery of the tank holder 30. For example, the holder rib 35 may protrude horizontally outward from the underside of the holder peripheral wall 31, and may extend along the periphery of the holder peripheral wall 31.

**[0143]** The outer periphery of the holder rib 35 may be larger than the outer periphery of the holder peripheral wall 31. The outer periphery of the holder rib 35 may be smaller than the inner periphery of the shell 40. For example, the outer periphery of the holder rib 35 may be smaller than the inner periphery of the inner shell 41.

**[0144]** The holder rib 35 may be spaced inward from an inner side of the shell 40. A gap may be created between the holder rib 35 and the inner side of the shell 40. The gap between the holder rib 35 and the inner side of the shell 40 may change along the periphery of the holder rib 35.

**[0145]** The holder rib 35 may be positioned on the underside of the peripheral wall of the tank holder 30.

**[0146]** The holder rib 35 may have a flat top surface.

**[0147]** The tank holder 30 may have a holder support 34 for supporting the tank holder 30. The holder support 34 may extend downward from a lower surface of the tank holder 30. The holder support 34 may be positioned below the tank holder 30.

**[0148]** Referring to FIGS. 6 and 7, the tank holder 30 will be described.

**[0149]** The tank holder 30 may include a holder base 32 where the tank 20 is seated. The holder base 32 may form the bottom of the tank holder 30. The holder rib 35 may be positioned on a virtual plane extending from the holder base 32. For example, the vertical position of the holder rib 35 may correspond to the vertical position of the holder base 32.

**[0150]** The holder base 32 may correspond to the tank base 22. The holder base 32 may come into contact with the tank base 22.

**[0151]** The tank holder 30 may have a holder opening 33 through which residual water in the tank holder 30 is drained. When the tank 20 is taken out from the tank holder 30, condensate water generated in a space between the tank 20 and the tank holder 30 may move to the holder base 32 along the holder peripheral wall 31. The condensate water collected in the holder base 32 may be released down from the tank holder 30 through the holder opening 33.

**[0152]** The holder opening 33 may be formed through

the bottom of the tank holder 30.

**[0153]** This prevents water from being retained in the tank holder.

**[0154]** Moreover, the user can avoid the trouble of having to drain residual water out of the tank holder.

**[0155]** In addition, the inside of the humidifier can be kept in a clean condition.

**[0156]** The feeder 25 of the tank may be inserted into the holder opening 33. The intake unit 210 corresponding to the feeder 25 may penetrate through the holder opening 33. For example, if the tank 20 is inserted into the tank holder 40, the feeder 25 may penetrate through the holder opening 33 and protrude downward from the tank base 22. The protruding feeder 25 may be coupled to the intake unit 210 positioned below the tank holder 30. As the feeder 25 and the intake unit 210 are coupled together, the water stored in the tank 20 may be supplied to the humidification unit 10.

**[0157]** The holder support 34 may support the tank holder 30 in which the tank 20 is inserted. The holder support 34 may support the load of the tank holder 30, the load of the tank 20, and the load of the water stored in the tank 20.

**[0158]** A plurality of holder supports 34 may be provided. The plurality of holder supports 34 may be disposed on a lower surface of the holder base 32. For example, four holder supports 34 may be disposed radially on the lower surface of the holder base 32.

**[0159]** A lower end of the holder support 34 may be horizontal. The lower end of the holder support 34 may form a flat surface. For example, the holder support 34 may be cylindrical whose lower end surface has the shape of a flat circle.

**[0160]** The lower ends of the plurality of holder supports 34 may be positioned on a virtual horizontal plane H1.

**[0161]** Thus, the holder supports can stably support the tank.

**[0162]** Moreover, the tank can be kept horizontal.

**[0163]** In addition, the holder supports can prevent the water stored in the tank from overflowing as the tank is tilted or overturned.

**[0164]** Referring to FIG. 8, the humidifier 1 will be described.

**[0165]** The humidifier 1 may have an inlet 11 for drawing in air. Air admitted through the inlet 11 may pass through an intake flow path 110 and move upward along the inside of the humidification unit 10.

**[0166]** The humidifier 1 may include a filter for purifying air. The filter may face the inlet 11. The filter may be disposed in the humidification unit 10. The filter may be disposed between the inlet 11 and the intake flow path 110 and purify the air admitted through the inlet 11.

**[0167]** Thus, the air purification performance of the humidifier can be improved.

**[0168]** The humidification unit 10 may include a blower fan 112 that forms an airstream from the inlet 11 to the outlet 320. The blower fan 112 may be positioned above

the intake flow path 110. The blower fan 112 may cause air to move upward.

**[0169]** The humidification unit 10 may include a blower motor 113 for rotating the blower fan 112.

**[0170]** The humidification unit 10 may include an air guide 114 for guiding air that has passed through the blower fan 112. The air guide 114 may be spaced outward from the blower motor 113.

**[0171]** A plurality of air guides 114 may be provided. The plurality of air guides 114 may be disposed radially from the axis of the blower fan 112. The air guide 114 may be positioned on a blower flow path 115. The air guide 114 may linearize the movement of air blown from the blower fan 112. For example, the air guide 114 may guide the air blown from the blower fan 112 to move upward.

**[0172]** The air that has passed through the blower fan 112 may move along the blower flow path 115. The blower flow path 115 may extend vertically along the inner periphery of the humidification unit 10. For example, the humidification unit 10 may have a cylindrical outward appearance, and a cross-section of the blower flow path 115 may be annular along the inner periphery of the humidification unit 10.

**[0173]** The air that has passed through the blower flow path 115 may move upward and reach a space between the tank holder 30 and the shell 40. The air that has passed through the blower flow path 115 may be released along with mist. The air that has passed through the blower flow path 115 may be released separately from mist. Part of the air that has passed through the blower flow path 115 may be released along with mist, and the rest may be released separately from mist.

**[0174]** When part of the air that has passed through the blower flow path 115 may be released along with mist, it may enter a humidification reservoir 270 through a bypass 280. Part of the air moving upward through the blower flow path 115 may enter the bypass 280, and the rest may move to the air purification flow path 117.

**[0175]** The air admitted to the bypass 280 may move upward along with mist and then flow to the discharge flow path 310 and be discharged.

**[0176]** The discharge flow path 310 may be formed between the tank holder 30 and the shell 40. The discharge flow path 310 may be formed between the tank holder 30 and the inner shell 41. Thus, air and mist may move along the outer periphery of the tank holder 30.

**[0177]** When the air that has passed through the blower flow path 115 is released separately from mist, it may be discharged through the air purification flow path 117. The air purification flow path 117 may be formed between the inner shell 41 and the outer shell 42.

**[0178]** A blower grille 116 may be disposed between the air purification flow path 117 and the blower flow path 115. The blower grille 116 may prevent foreign matter from getting into the blower flow path 115.

**[0179]** The humidifier 1 may have an outlet 320 through which mist generated from the humidification unit 10 is

discharged. Mist and air that have passed through the discharge flow path 310 may be discharged upward through the outlet 320. Air that has passed through the air purification flow path 117 may be discharged upward through the outlet 320. The discharge flow path 310 and the air purification flow path 117 may be joined together at the outlet 320.

**[0180]** The outlet 320 may be formed between the upper end of the tank holder 30 and the upper end of the shell 40. The outlet 320 may be formed between the tank cap 29 and the upper end of the shell 40.

**[0181]** The outlet 320 may have the shape of a loop. The outlet 320 may be formed between the tank holder 30 and the shell 40. For example, the center axis of the tank holder 30 may correspond in position to the center axis of the shell 40, and the outlet 320 may be formed in the shape of a loop between the tank holder 30 and the shell 40.

**[0182]** The discharge grille 330 may determine the direction in which air and/or mist are discharged through the outlet 320. The shape of the discharge grille 330 may correspond to the shape of the outlet 320. For example, the outlet 320 may have an annular shape, and the discharge grille 330 also may have an annular shape corresponding to the shape of the outlet 320.

**[0183]** The water stored in the tank 20 may enter the humidification unit 10 through a feeder 25.

**[0184]** The humidification unit 10 may include an intake unit 210 for receiving water from the tank 20. The intake unit 210 may correspond to the feeder 25. The humidification unit 10 may receive the water stored in the tank 20 through the intake unit 210.

**[0185]** The humidification unit 10 may include a sub reservoir 220 for storing the water supplied from the tank 20. The intake unit 210 may connect the tank 20 and the sub reservoir 220. The water stored in the sub reservoir 220 may flow out through a hole (not indicated by a reference numeral) formed through the bottom of the sub reservoir 220. The water that has flown out from the hole in the sub reservoir 220 may move to a heating reservoir 240. For example, the heating reservoir 240 may be positioned below the sub reservoir 220, so that water falling from the hole in the sub reservoir 220 may be stored in the heating reservoir 240.

**[0186]** The humidification unit 10 may include a heating reservoir 240 for sterilizing stored water. The heating reservoir 240 may heat stored water. The heating reservoir 240 may be fitted with a heater 242. The heater 242 may be disposed on the bottom of the heating reservoir 240, and may sterilize the water stored in the heating reservoir 240 by heating.

**[0187]** Therefore, mist can be supplied to an indoor space by using sterilized water.

**[0188]** Moreover, the sanitary performance of the humidifier can be improved.

**[0189]** The humidification unit 10 may include a floating valve 232 for regulating the outflow of water from the sub reservoir 220. The floating valve 232 may float. For ex-

ample, the floating valve 232 may float on the surface of water stored in the heating reservoir 240 or in a valve guide 230 to be described later.

**[0190]** The vertical position of the floating valve 232 may be changed depending on the level of water stored in the heating reservoir 240. When the level of water stored in the heating reservoir 240 rises, the floating valve 232 may rise with it. When the level of water stored in the heating reservoir 240 drops, the floating valve 232 may descend.

**[0191]** The floating valve 232 may open or close the hole in the sub reservoir 220. When the floating valve 232 opens the hole in the sub reservoir 220, the water stored in the sub reservoir 220 may flow out to the heating reservoir 240. When the floating valve 232 closes the hole in the sub reservoir 220, the water stored in the sub reservoir 220 may not flow out.

**[0192]** The floating valve 232 may include a protrusion (not indicated by a reference numeral) to be inserted into the hole in the sub reservoir 220. The protrusion may protrude upward from the top of the floating valve 232. When the protrusion of the floating valve 232 is inserted into the hole of the sub reservoir 220, the hole in the sub reservoir 220 may be closed. When the protrusion of the floating valve 232 is taken out from the hole of the sub reservoir 220, the hole in the sub reservoir 220 may be opened.

**[0193]** The humidification unit 10 may include a valve guide 230 for guiding the movement of the floating valve 232. The valve guide 230 may have an internal space where the floating valve 232 moves. The internal space may extend vertically. The floating valve 232 may ascend or descend along the inner space of the vertically-extending valve guide 230. The bottom of the valve guide 230 may be penetrated. A through-hole in the valve guide 230 may communicate with the heating reservoir 240. When the water stored in the heating reservoir 240 rises to a given level, part of the water stored in the heating reservoir 240 may flow into the valve guide 230 through the through-hole. The water admitted into the valve guide 230 may cause the floating valve 232 to rise. When the water admitted into the valve guide 230 rises to a given level, the floating valve 232 may ascend and close the hole in the sub reservoir 220. When the water admitted into the valve guide 230 drops to a given level, the floating valve 232 may descend and open the hole in the sub reservoir 220.

**[0194]** The humidification unit 10 may include a connecting duct 250 that connects the heating reservoir 240 and the humidification reservoir 270. The water stored in the heating reservoir 240 may move to the humidification reservoir 270 through the connecting duct 250. Thus, the humidifier is able to humidify an indoor space by using sterilized water.

**[0195]** The humidification unit 10 may include a valve 251 (see FIG. 13) for opening or closing the connecting duct 250. For example, the humidification unit 10 may include a solenoid valve 251 for opening or closing the

connecting duct 250 by an electrical signal.

**[0196]** The connecting duct 250 may be slanted downward, from the heating reservoir 240 toward the humidification reservoir 270. With the connecting duct 250 which is slanted downward, downstream from its upstream position, the water stored in the heating reservoir 240 may move to the humidification reservoir 270. By means of the connecting duct 250, the water surface in the heating reservoir 240 and the water surface in the humidification reservoir 270 may correspond in position to each other.

**[0197]** Water heated by the heating reservoir 240 may decrease in temperature as it moves through the connecting duct 250. Air blown by the blower fan 112 may exchange heat with the heated water moving through the connecting duct 250. The heated water moving through the connecting duct 250 may drop in temperature due to the air blown by the blower fan 112. The temperature of the water admitted to the humidification reservoir 270 may be lower than the temperature of the water stored in the heating reservoir 240. When the heated water enters the humidification reservoir 270, it may cause a failure of the diaphragm 272. Thus, the temperature of the water heated in the heating reservoir 240 may be lowered before the water enters the humidification reservoir 270, thereby improving the life span of the diaphragm 272.

**[0198]** Therefore, the durability of the humidifier can be improved.

**[0199]** Moreover, a malfunction of the humidifier can be prevented.

**[0200]** The humidification unit 10 may include a steam pipe 260 for allowing the heating reservoir 240 and the humidification reservoir 270 to communicate with each other. The steam pipe 260 may be positioned above the heating reservoir 240. The steam pipe 260 may be positioned above the humidification reservoir 270. Steam generated from the heating reservoir 240 may pass through the steam pipe 260 and move to the humidification reservoir 270. The steam that has passed through the steam pipe 260 and moved to the humidification reservoir 270 may be condensed and stored in the humidification reservoir 270, or may be released directly from the humidification unit 10 as it is.

**[0201]** The humidification unit 10 may include a humidification reservoir 270 for generating mist. The water stored in the humidification reservoir 270 may turn into mist. The humidification unit 10 may include a diaphragm 272 disposed on the humidification reservoir 270. The diaphragm 272 may create mist by vibrating the water stored in the humidification reservoir 270. The diaphragm 272 may be disposed at the bottom of the humidification reservoir 270. A plurality of diaphragms 272 may be disposed at the bottom of the humidification reservoir 270.

**[0202]** The mist generated from the humidification reservoir 270 may be released from the humidification unit 10 through the outlet 290. The outlet 290 may be positioned above the humidification unit 10. The mist generated from the humidification reservoir 270 may pass

through the outlet 290 and move to the discharge flow path 310.

**[0203]** The outlet 290 may extend vertically. The outlet 290 may be at least partially positioned inside the humidification reservoir 270. The outlet 290 may communicate with the sub intake hole 51 of the sub guide 50. The outlet 290 may be open at the side and joined to the steam pipe 260. The steam generated from the heating reservoir 240 may pass through the steam pipe 260 and enter through the open side of the outlet 290 and combine with the mist generated from the humidification reservoir 270.

**[0204]** The bypass 280 may be coupled to one side of the humidification reservoir 270. The bypass 280 may guide the air flowing in the blower flow path 115 to the humidification reservoir 270. The air admitted to the humidification reservoir 270 by the bypass 280 may be released to the outlet 290 along with the mist generated from the humidification reservoir 270. The air admitted through the bypass 280 may be released to the outlet 290 along with the mist generated from the humidification reservoir 270 and/or the steam admitted from the heating reservoir 240 to the humidification reservoir 270 through the steam pipe 260.

**[0205]** An ultraviolet illuminator 274 may be disposed on an inner side of the humidification reservoir 270. The ultraviolet illuminator 274 may sterilize the water stored in the humidification reservoir 270 by illuminating it with ultraviolet light. Thus, the sterilization performance of the humidifier can be improved.

**[0206]** The humidifier 1 may include a sub guide 50 for guiding the steam released from the humidification unit 10. The sub guide 50 may guide the mist and/or air released from the outlet 290 to the discharge flow path 310.

**[0207]** The sub guide 50 may be disposed above the humidification reservoir 270. The sub guide 50 may be connected to the outlet 290. The sub guide 50 may be disposed below the tank holder 30. The sub guide 50 may be spaced downward from the tank holder 30. The mist released from the outlet 290 may move to a space between the sub guide 50 and the tank holder 30.

**[0208]** The sub guide 50 may be connected to the shell 40. The sub guide 50 may be connected to the peripheral wall of the shell 40. For example, the sub guide 50 may be connected to the inside of the peripheral wall of the inner shell 41, and the mist released from the outlet 290 may be guided to the inner side of the shell 40 by the sub guide 50.

**[0209]** The mist that has passed through the sub guide 50 may move along the discharge flow path 310 formed between the shell 40 and the tank holder 30. The shell 40 and/or the tank holder 30 may guide the movement of ascending mist.

**[0210]** The mist that has passed through the discharge flow path 310 may be emitted through the outlet 320 positioned at an upper end of the discharge flow path 310.

**[0211]** Referring to FIG. 9, the sub guide 50 will be described.

**[0212]** The sub guide 50 may be connected to the shell

40. The sub guide 50 may be a portion of the shell 40. For example, the sub guide 50 may form a lower part of the shell 40.

**[0213]** The sub guide 50 may be connected to the inner shell 41. The inner shell 41 may be the lower inner shell 41a. For example, the sub guide 50 may form a lower part of the lower inner shell 41a.

**[0214]** The sub guide 50 may include a sub peripheral wall 55 connected to the shell 40. The sub peripheral wall 55 may protrude upward from an outer peripheral edge of the sub guide 50. The sub peripheral wall 55 may correspond to the outer periphery of the shell 40. The sub peripheral wall 55 may be connected to a lower end of the outer periphery of the inner shell 41. The inner shell 41 may be the lower inner shell 41a.

**[0215]** The sub guide 50 may have a sub intake hole 51 through which mist generated from the humidification unit 10 is admitted. The sub intake hole opening 51 may correspond to the outlet 290 through which the mist from the humidification unit 10 is released. The sub intake hole 51 may be connected to the outlet 290 through which the mist from the humidification unit 10 is ejected. The sub intake hole 51 may be inserted into the outlet 290 of the humidification unit 10. Contrariwise, the outlet 290 of the humidification unit 10 may be inserted into the sub intake hole 51.

**[0216]** The sub intake hole 51 may be formed at the bottom of the sub guide 50. The sub intake hole 51 may penetrate the sub guide 50. The sub intake hole 51 may be a pass-through opening that is formed through the sub guide 50. The sub intake hole 51 may extend vertically. For example, the sub intake hole 51 may be a pass-through opening that is formed through the sub guide 50 and extends vertically, and the sub intake hole 51 may be inserted into the outlet 290 of the humidification unit 10. The sub intake hole 51 may have the shape of a cylinder that extends downward from the sub guide 50.

**[0217]** The sub intake hole 51 may be formed at the bottom of the sub guide 50, and be spaced laterally from the center of the bottom thereof. The sub intake hole 51 may be formed on one side of the sub guide 50. The one side may correspond to the position of the humidification reservoir 270 by which the humidification unit 10 generates mist. Owing to the sub intake hole 51 formed on one side of the sub guide 50, the mist released from the outlet 320 may be sprayed off to one side of the outlet 320 corresponding to the one side.

**[0218]** The sub guide 50 may be slanted to guide upward the mist admitted through the sub intake hole 51. The sub guide 50 may extend at a slant laterally upward from the sub intake hole 51. The sub intake hole 51 may be positioned below the sub guide 50, and the sub guide 50 may extend at a slant downward toward the sub intake hole 51. When the sub intake hole 51 is formed on one side of the sub guide 50, the sub guide 50 may be slanted more steeply on one side than on the other side.

**[0219]** Thus, the mist admitted from the sub intake hole may be distributed into the shell.

**[0220]** Moreover, the condensate present on the sub guide may move to the sub intake hole along the slant surface.

**[0221]** The sub guide 50 may have a support rest 54 where the holder support 34 is placed. The support rest 54 may be recessed at the sub guide 50. The support rest 54 may be recessed downward from the bottom of the sub guide 50. The support rest 54 may be formed by concaving the bottom of the sub guide 50. For example, the support rest 54 may be formed by making a deep recess down a portion of the bottom of the sub guide 50. The support rest 54 may be positioned lower than the bottom of the sub guide 50.

**[0222]** The support rest 54 may correspond to the holder support 34. The holder support 34 may be inserted into the support rest 54. As the holder support 34 is inserted into the support rest 54, the play in the holder support 34 may be decreased. For example, as the holder support 34 is inserted into the support rest 54, the support rest 54 may prevent the holder support 34 from shifting laterally. As the support rest 54 fixes the holder support 34, swaying of the tank holder 30 and the tank 20 may be reduced.

**[0223]** Therefore, noise and vibration generated from the humidifier can be reduced.

**[0224]** The support rest 54 may be horizontal. The support rest 54 may have a flat surface corresponding to a lower end of the horizontal holder support 34.

**[0225]** Lower surface of a plurality of support rests 54 may be positioned on a virtual horizontal plane H3. The vertical positions of the lower surfaces of the plurality of support rests 54 may correspond to each other.

**[0226]** The plurality of support rests 54 may be recessed to different depths, downward from the bottom of the sub guide 50. For example, the sub guide 50 may be slanted upward and laterally outward from the sub intake hole 51, and the depth of the plurality of support rests 54 formed at the sub guide 50 may become smaller toward the sub intake hole 51. The depth of the support rests 54 may be the vertical length from the bottom of the sub guide 50 to the support rests 54.

**[0227]** Therefore, the support rests can stably support the holder supports and provide higher structural stability.

**[0228]** Moreover, the tank can be kept horizontal.

**[0229]** In addition, overturning or tilting of the tank can be minimized.

**[0230]** The sub guide 50 may have a sub opening 52 through which the feeder 25 and/or the intake unit 210 penetrate. For example, the intake unit 210 may be positioned below the sub opening 52, and the feeder 25 of the tank 20 may penetrate through the sub opening 52 and be coupled to the intake unit 210. Alternatively, the feeder 25 of the tank 20 may penetrate through the sub opening 52 and be coupled to the upwardly-protruding intake unit 210. Alternatively, the feeder 25 of the tank 20 and the intake unit 210 of the humidification unit 10 may penetrate the sub opening 52 may individually penetrate through the sub opening 52 and be coupled to-

gether at the sub opening 52.

**[0231]** The sub opening 52 may be a hole that penetrates the sub guide 50. The sub opening 52 may be a pass-through opening formed through the bottom of the sub guide 50.

**[0232]** The sub opening 52 may be slanted from the horizontal. For example, the bottom of the sub guide 50 may be slanted upward and laterally outward from the sub intake hole 51, and the sub opening 52 may be formed in the slanted bottom of the sub guide 50.

**[0233]** The sub opening may correspond to the holder opening 33. The lateral position of the sub opening 52 may correspond to the lateral position of the holder opening 33. For example, the sub opening 52 may face the holder opening 33. For example, the holder opening 33 may be positioned above the holder opening 33.

**[0234]** The center axis of the sub opening 52 may correspond to the center axis of the holder opening 33.

**[0235]** The sub guide 50 may include an opening peripheral wall 53 that protrudes upward along the outer periphery of the sub opening 52. The opening peripheral wall 53 may be raised from the bottom of the sub guide 50, along the periphery of the sub opening 52.

**[0236]** Thus, residual water drained through the holder opening may be kept from entering the sub opening.

**[0237]** The vertical height of the opening peripheral wall 53 may change along the periphery of the sub opening 52. An upper end of the opening peripheral wall 53 may be horizontal. The upper end of the opening peripheral wall 53 may be positioned on a virtual horizontal plane H2. The opening peripheral wall 53 may become taller toward the sub intake hole 51.

**[0238]** The opening peripheral wall 53 may support the tank 20. The upper end of the opening peripheral wall 53 may come into contact with the protruding surface 24 of the tank 20. The intake unit 10 of the humidification unit 10 or the feeder 25 of the tank 20 may be inserted into the opening peripheral wall 53.

**[0239]** Thus, the opening peripheral wall may be supported such that the tank is kept horizontal.

**[0240]** The sub opening 52 may be a hole enclosed by the opening peripheral wall 53. That is, the sub opening 52 may be formed by the opening peripheral wall 53.

**[0241]** The opening peripheral wall 53 may guide mist admitted through the sub intake hole 51.

**[0242]** Referring to FIG. 10, the sub guide 50 will be described.

**[0243]** The shape of the support rest 54 may correspond to the shape of the lower end of the holder support 34. The shape of the support rest 54 may correspond to the shape of an outer peripheral edge of the lower end of the holder support 34. The shape of the support rest 54 may correspond to the shape of a transverse cross-section of the holder support 34. For example, the holder support 34 may have a cylindrical shape that extends vertically, the support rest 54 may have a shape corresponding to the annular shape of the lower end of the holder support 34 or corresponding to the circular shape

of the outer peripheral edge of the lower end of the holder support 34.

**[0244]** Referring to FIG. 11, the sub guide 50 will be described.

**[0245]** A plurality of support rests 54 may be provided. The number of support rests 54 may correspond to the number of holder supports 34. For example, four support rests 54 may be formed so as to correspond to four holder supports 34.

**[0246]** The support rest 54 may correspond in position to the holder support 34. The plurality of support rests 54 may correspond in position to the plurality of holder supports 34. For example, four holder supports 34 and four support rests 54 may be disposed radially from the center axis of the tank holder 30.

**[0247]** The sub opening 52 may be formed at the center of the sub guide 50. For example, the vertical center axis of the sub opening 52 may correspond to the vertical center axis of the sub guide 50.

**[0248]** The sub opening 52 may be formed between the plurality of support rests 54. The plurality of support rests 54 may be disposed along the periphery of the sub opening 52, and may be spaced outward from the sub opening 52. For example, the sub opening 52 may be formed at the center of the sub guide 50, and four support rests 54 may be disposed along the periphery of the sub opening 52 and spaced outward from the sub opening 52.

**[0249]** The sub intake hole 51 may be formed on one side of the sub guide 50. The sub intake hole 51 may penetrate one side of the bottom of the sub guide 50. The sub intake hole 51 may be spaced outward from the sub opening 52. The sub intake hole 51 may be adjacent to the outer periphery of the sub guide 50. The distance the sub intake hole 51 is spaced from the sub opening 52 may be greater than the distance the support rest 54 is spaced from the sub opening 52.

**[0250]** Referring to FIG. 12, the humidifier 1 will be described.

**[0251]** The water stored in the tank 20 may enter the humidification unit 10 through the feeder 25. The humidification unit 10 may be supplied water from the tank 20 through the intake unit 210 corresponding to the feeder 25.

**[0252]** The water supplied through the intake unit 210 may be stored in the sub reservoir 220. The water stored in the sub reservoir 220 may move directly to the heating reservoir 240 or be temporarily stored in the sub reservoir 220. For example, when the floating valve 232 opens the hole in the sub reservoir 220, the water admitted to the sub reservoir 220 may move directly to the heating reservoir 240, whereas, when the floating valve 232 closes the hole in the sub reservoir 220, the water admitted to the sub reservoir 220 may be temporarily stored in the sub reservoir 220.

**[0253]** The water flowing out from the sub reservoir 220 may move to the heating reservoir 240 through the valve guide 230. The water stored in the heating reservoir 240 may be sterilized. The sterilization may be performed

using heating, ultraviolet light irradiation, etc. The present disclosure discloses a heating reservoir 240 which sterilizes the stored water by heating but is not limited to this, and other methods may be used to kill or sterilize micro-organisms in the stored water, and additional parts may be used for this purpose.

**[0254]** Sterilized water may move from the heating reservoir 240 to the humidification reservoir 270 through the connecting duct 250. The connecting duct 250 may be opened or closed by the valve 251. For example, the connecting duct 250 may be closed while the water stored in the heating reservoir 240 is being heated through the heater 242, and the connecting duct 250 may be opened when the heating or sterilization of the water stored in the heating reservoir 240 is completed. For example, the connecting duct 250 may be kept open or closed at all times.

**[0255]** Steam may be generated as the water stored in the heating reservoir 240 is heated. The steam may flow to the outlet 290 positioned above the humidification reservoir 270 through a steam pipe 260 connected to the heating reservoir 240 (F1).

**[0256]** The diaphragm 272 may vaporize or aerosolize the water admitted to the humidification reservoir 270 through the connecting duct 250. For example, the diaphragm 272 may convert the water admitted to the humidification reservoir 270 through the connecting duct 250 into vapor or aerosol. For example, the diaphragm 272 may form a vapor or an aerosol by vibrating the water stored in the humidification reservoir 270. The mist may flow upward and be released through the outlet 290 (F2).

**[0257]** Part of the air that has passed through the blower flow path 115 may enter the bypass 280. The air admitted to the bypass 280 may be guided to the humidification reservoir 270. The air admitted to the humidification reservoir 270 may be released through the outlet 290 positioned above the humidification reservoir 270 (F3). The air admitted to the humidification reservoir 270 may be released to the outlet 290, along with the mist generated from the humidification reservoir 270 (F2 and F3). Also, the air admitted to the humidification reservoir 270 may be released to the outlet 290, along with the steam admitted to the humidification reservoir 270 through the steam pipe 260 (F1 and F3). The air admitted through the bypass 280 may provide a driving force to allow the mist generated from the humidification reservoir 270 and the steam admitted to the humidification reservoir 270 to pass through the outlet 290 and flow upward.

**[0258]** As the air admitted to the humidification reservoir 270 is released through the outlet 290, a relative negative pressure may be formed at the outlet 290. Contrariwise, a relative positive pressure may be formed at the bypass 280 through which air is admitted to the humidification reservoir 270. The direction of airstream and mist flow may be determined by the pressure difference inside the humidification unit 10.

**[0259]** The mist, steam, and air (hereinafter, humidified air) released from the outlet 290 may flow through the

discharge flow path 310. The tank holder 30 may guide the humidified air released from the outlet 290. The humidified air may flow along the lower surface of the tank holder 30. The humidified air may flow along the sub guide 50 disposed below the tank holder 30. The sub guide 50 may guide the humidified air. The humidified air may flow between the sub guide 50 and the lower surface of the tank holder 30 (F4). The humidified air may be distributed uniformly below the tank holder 30 by means of the sub guide 50. The slanted sub guide 50 may guide the humidified air upward.

**[0260]** The humidified air that has passed through the sub guide 50 may reach the discharge flow path 310. The humidified air may flow along the outer periphery of the tank holder 30.

**[0261]** Referring to FIG. 13, the humidifier 1 will be described.

**[0262]** FIG. 13 is a cutaway cross-sectional view taken along the line D1-D2 in FIG. 12.

**[0263]** FIG. 13 illustrates the relationship between the blower flow path 115 and the bypass 280, in the humidification unit 10.

**[0264]** The blower flow path 115 may be formed inside the humidification unit 10. The blower flow path 115 may be formed along the inner periphery of the humidification unit 10. The blower flow path 115 may be formed in the shape of a loop corresponding to the shape of the inner periphery of the humidification unit 10. For example, the outward appearance of the humidification unit 10 may be cylindrical, and the blower flow path 115 may be formed along the inner periphery of the humidification unit 10.

**[0265]** The bypass 280 may be positioned on the blower flow path 115. The bypass 280 may form a humidification reservoir inlet flow path 282 through which air enters the humidification reservoir 270. Part of the air flowing through the blower flow path 115 may enter the humidification reservoir 270 through the bypass 280, and the rest of the air flowing through the blower flow path 115 may flow through the blower flow path 115 as it is.

**[0266]** The air admitted to the humidification reservoir 270 through the bypass 280 may pass through the humidification reservoir 270 and be released through the outlet 290 of the humidification unit 10. The humidified air released through the outlet 290 may pass through the discharge flow path 310 and be discharged to the indoor space.

**[0267]** The blower flow path 115 may be connected to the air purification flow path 117. A downstream side of the blower flow path 115 may be connected to the air purification flow path 117. An upstream side of the air purification flow path 117 may be connected to the blower flow path 115. The outlet 320 may be positioned downstream of the air purification flow path 117. The air that is not admitted to the bypass 280 and flows through the air purification flow path 115 as it is may reach the air purification flow path 117. The air that has passed through the air purification flow path 117 may be discharged to the indoor space through the outlet 320.

**[0268]** The blower flow path 115 may have a larger transverse cross-sectional area than the humidification reservoir inlet flow path 282. The ratio of the velocities of air flowing through the discharge flow path 310 and the air purification flow path 117 which are located upstream may be changed depending on the ratio of the transverse cross-sectional areas of the blower flow path 115 and the humidification reservoir inlet flow path 282 which are located downstream. For example, the higher the ratio of the cross-sectional area of the blower flow path 115 to the cross-sectional area of the bypass 280, the higher the flow velocity in the air purification flow path 117 to the flow velocity in the discharge flow path 310.

**[0269]** A display module 103 may be positioned on one side of the humidification unit 10. The display module 103 may be disposed on the outer periphery of the humidification unit 10. The display module 103 may be disposed on an outer side of the humidification unit 10. The display module 103 may be exposed to the outside. For example, the display module 103 may be disposed on a front side of the humidification unit 10.

**[0270]** The display module 103 may show information on the indoor space and/or the humidification unit 10. For example, the display module 103 may show information on at least one of the temperature of the indoor space, the humidity of the indoor space, the air cleanliness in the indoor space, the amount of water stored in the humidification unit 10, and the volume and direction of air from the humidification unit 10.

**[0271]** The display module 103 may include an output part and an input part. The user may enter information on at least one of temperature setting, humidity setting, air volume, and air direction through the display module 103.

**[0272]** The display module 103 may be disposed on one side of the blower flow path 115, and the bypass 280 may be disposed on the other side of the blower flow path 115. The one side and the other side may face each other. For example, the display module 103 may be disposed at the front of the blower flow path 115, and the bypass 280 may be disposed at the rear of the blower flow path 115.

**[0273]** The solenoid valve 251 may open or close the connecting duct 250. The solenoid valve 251 may be disposed on the connecting duct 250. The solenoid valve 251 may be disposed at one end of the connecting duct 250. The solenoid valve 251 may be disposed between the heating reservoir 240 and the connecting duct 250. The solenoid valve 251 may control the amount of water released from the heating reservoir 240 to the connecting duct 250. The solenoid valve 251 may be disposed inward from the blower flow path 115, inside the humidification unit 10.

**[0274]** The diaphragm 272 may be disposed at the bottom of the humidification reservoir 270. A plurality of diaphragms 272 may be provided. The plurality of diaphragms 272 may be disposed at the bottom of the humidification reservoir 270 and spaced apart from each

other. For example, two diaphragms 272 may be provided at the bottom of the humidification unit 10, and these two diaphragms 272 may be spaced apart from each other.

**[0275]** Referring to FIG. 14, the humidifier 1 will be described.

**[0276]** FIG. 14 is a cutaway cross-sectional view taken along the line E1-E2 in FIG. 12.

**[0277]** FIG. 14 illustrates the discharge flow path 310 and the air purification flow path 117 which are formed by the shell 40 and the tank holder 30.

**[0278]** The humidifier 1 may have a discharge flow path 310 through which humidified air flows. The discharge flow path 310 may extend vertically. The discharge flow path 310 may be formed between the shell 40 and the tank holder 30. The discharge flow path 310 may be formed between the inner shell 41 and the tank holder 30. The discharge flow path 310 may be spaced laterally outward from the tank 20.

**[0279]** A transverse cross-section of the discharge flow path 310 may have a loop shape. The loop shape may be the shape of a closed circuit or the shape of an open circuit. That is, the transverse cross-section of the discharge flow path 310 may be continuous or discontinuous. The shape of a discontinuous open circuit may refer to the shape of the discharge flow path 310 whose cross-section is broken due to a barrier at one side of the transverse cross-section of the discharge flow path 310.

**[0280]** The humidifier 1 may have an air purification flow path through which air blown from the blower fan 112 flows. The blown air may be air purified by the filter. The air purification flow path 117 may extend vertically. The air purification flow path 117 may be formed between the shell 40 and the tank holder 30. The air purification flow path 117 may be formed between the inner shell 41 and the outer shell 42. The air purification flow path 117 may be spaced laterally outward from the tank 20. The distance the air purification flow path 117 is spaced laterally outward from the tank 20 may be greater than the distance the discharge flow path 310 is spaced laterally outward from the tank 20.

**[0281]** The air purification flow path 117 may be spaced outward from the discharge flow path 310. The air purification flow path 117 may be formed along the outer periphery of the discharge flow path 310. The air purification flow path 117 may cover the outer periphery of the discharge flow path 310. The air purification flow path 117 may be formed along the inner side of the shell 40. The shell 40 may be the outer shell 42.

**[0282]** A transverse cross-section of the air purification flow path 117 may have a loop shape. The loop shape may be the shape of a closed circuit or the shape of an open circuit. That is, the transverse cross-section of the air purification flow path 117 may be continuous or discontinuous. The shape of a discontinuous open circuit may refer to the shape of the air purification flow path 117 whose cross-section is broken due to a barrier at one side of the transverse cross-section of the air purifi-

cation flow path 117.

**[0283]** In the humidifier 1 according to an embodiment of the present disclosure, the discharge flow path 310 is positioned inside the air purification flow path 117 but is not limited thereto, and the air purification flow path 117 may be positioned inside the discharge flow path 310.

**[0284]** Referring to FIG. 15, the humidifier 1 will be described.

**[0285]** The outer peripheral edge of the holder opening 33 may be positioned horizontally outward from an outer peripheral edge of the sub opening 52. The outer peripheral edge of the holder opening 33 may be spaced a predetermined distance d1 horizontally outward from the outer peripheral edge of the sub opening 52. The holder opening 33 may have a larger cross-sectional area than the sub opening 52. The center axis of the holder opening 33 may correspond to the center axis of the sub opening 52. When the tank 20 is removed from the tank holder 30, condensate water formed on the outer periphery of the tank 20 may drip to the tank holder 30, and the condensate water collected in the tank holder 30 may be released through the holder opening 33. In this case, the condensate water released through the holder opening 33 may be drained to the sub guide 50 but not enter the sub opening 52.

**[0286]** Therefore, the humidifier may have no condensate water retained it.

**[0287]** Moreover, the durability of the humidifier can be improved.

**[0288]** The condensate water released through the holder opening 33 may be guided to the sub intake hole 51 along the sub guide 50. The condensate water guided to the sub intake hole 51 may drip to the humidification reservoir 270 through the outlet 290 communicating with the sub intake hole 51. The dripped condensate water, along with the water stored in the humidification reservoir 270, may turn back into vapor.

**[0289]** The radius of the holder opening 33 may be larger than the radius of the opening peripheral wall 53. The outer peripheral edge of the holder opening 33 may be positioned horizontally outward from an outer peripheral edge of the opening peripheral wall 53. The center axis of the holder opening 33 may correspond to the center axis of the opening peripheral wall 53.

**[0290]** The opening peripheral wall 53 may prevent the condensate water flowing along the sub guide 50 from entering the sub opening 52.

**[0291]** The upper end of the opening peripheral wall 53 may support the tank 20. The upper end of the opening peripheral wall 53 may come into contact with the protruding surface 24 of the tank 20.

**[0292]** The inner periphery of the opening peripheral wall 53 may correspond to the feed guide 26. The feed guide 26 may be inserted into the opening peripheral wall 53. The inner periphery of the opening peripheral wall 53 may face the outer periphery of the feed guide 26. The inner periphery of the opening peripheral wall 53 may come into contact with the feed guide 26.

**[0293]** The humidifier 1 may include a sub flow path 300 through which mist admitted from the sub intake hole 51 flows. The sub flow path 300 may be formed between the tank holder 30 and the sub guide 50. The lower surface of the tank holder 30 may be spaced upward from the sub guide 50. For example, the sub flow path 300 may be formed between the lower surface of the tank holder 30 and the sub guide 50.

**[0294]** The sub guide 50 may be slanted upward and laterally outward from the sub intake hole 51, and the vertical width of the sub flow path 300 may become smaller away from the sub intake hole 51.

**[0295]** The sub flow path 300 may be positioned between the sub guide 50 and the tank holder 30 and formed outward from the opening peripheral wall 53. Humidified air moving toward the discharge flow path 310 along the sub guide 50 may flow along the outer periphery of the opening peripheral wall 53.

**[0296]** The holder rib 35 may guide the mist flowing from the sub guide 50. The holder rib 35 may control the flow of mist passing through it. The length the holder rib 35 extends makes it possible to control the open area between the shell 40 and the holder rib 35. If the holder rib 35 extends longer, the distance between the holder rib 35 and the shell 40 may be shorter. If the holder rib 35 extends shorter, the distance between the holder rib 35 and the shell 40 may be longer. By adjusting the length of the holder rib 35 extended to one side of the tank holder 30, the amount of mist passing through the one side of the tank holder 30 may be controlled.

**[0297]** The holder rib 35 may extend longer toward the sub intake hole 51. One side of the holder rib 35 adjacent to the sub intake hole 51 may be extended longer than the other side of the holder rib 35. For example, a rear end of the holder rib 35 adjacent to the sub intake hole 51 may extend longer and be spaced inward from a sub peripheral wall 55 by a predetermined distance t1. Also, a front end of the holder rib 35 may extend shorter and be spaced inward from the sub peripheral wall 55 by a predetermined distance t2. The distance t1 by which the rear end of the holder rib 35 is spaced from the sub peripheral wall 55 may be shorter than the distance t2 by which the front end of the holder rib 35 is spaced from the sub peripheral wall 55. As such, the humidified air admitted through the sub intake hole 51 may be distributed uniformly in all directions of the discharge flow path 310.

**[0298]** This helps keep the humidified air admitted to the sub guide through the outlet and the sub intake hole from moving off to one side of the discharge flow path adjacent to the sub intake hole.

**[0299]** Moreover, mist can be discharged uniformly from all points of the outlet.

**[0300]** In addition, any discomfort the user may feel can be lessened.

**[0301]** Referring to FIGS. 1 to 15, a humidifier according to one aspect of the present disclosure includes: a tank for storing water; a humidification unit for generating

mist from water supplied from the tank; a tank holder disposed above the humidification unit, that covers the outer periphery of the tank so as to form a space where the tank is inserted; and a shell disposed above the humidification unit and spaced outward from the tank holder, wherein a discharge flow path may be formed between the tank holder and the shell, through which the mist generated from the humidification unit may flow.

**[0302]** According to another aspect of the present disclosure, the tank holder may be open at the top, and the tank may be inserted into or taken out through the open top.

**[0303]** According to another aspect of the present disclosure, a outlet may be formed between an upper end of the tank holder and an upper end of the shell, through which the mist generated from the humidification unit may be discharged, and the humidifier may include a discharge grille disposed at the outlet and a tank cap covering the open top of the tank, wherein the tank cap may be attached to an inner peripheral edge of the discharge grille or detached from the inner peripheral edge of the discharge grille.

**[0304]** According to another aspect of the present disclosure, the tank has an arc-shaped tank handle rotatably attached to an upper part of a peripheral wall of the tank, and a handle rest protruding from the peripheral wall of the tank, wherein the tank handle may be placed on the handle rest when rotated and laid down.

**[0305]** According to another aspect of the present disclosure, the outer periphery of the tank may be in close proximity to an inner side of the tank holder.

**[0306]** According to another aspect of the present disclosure, the tank holder may have a holder opening formed through the bottom of the tank holder.

**[0307]** According to another aspect of the present disclosure, the humidification unit may include an intake unit for receiving water from the tank, and the tank may include a feeder corresponding to the intake unit, wherein the feeder or the intake unit may penetrate through the holder opening.

**[0308]** According to another aspect of the present disclosure, the humidifier may include a sub guide disposed below the tank holder, for guiding the mist generated from the humidification unit.

**[0309]** According to another aspect of the present disclosure, the sub guide may have a sub intake hole through which the mist generated from the humidification unit is admitted.

**[0310]** According to another aspect of the present disclosure, a lower surface of the tank holder may be spaced upward from the sub guide to thereby form a sub flow path through which the mist admitted through the sub intake hole flows.

**[0311]** According to another aspect of the present disclosure, the sub guide may be slanted upward and laterally outward from the sub intake hole, so that the mist admitted through the sub intake hole moves upward.

**[0312]** According to another aspect of the present dis-

closure, the tank holder may include a holder rib that extends outward from a peripheral wall of the tank holder, along the periphery of the tank holder, wherein the holder rib may guide the mist flowing from the sub guide.

**[0313]** According to another aspect of the present disclosure, the holder rib may extend longer toward the sub intake hole.

**[0314]** According to another aspect of the present disclosure, the humidification unit may include an intake unit for receiving water from the tank, and the tank may include a feeder corresponding to the intake unit, wherein the sub guide may have a sub opening through which the feeder or the intake unit may penetrate.

**[0315]** According to another aspect of the present disclosure, the tank holder may have a holder opening that penetrates the bottom of the tank holder, and the outer periphery of the holder opening may be positioned horizontally outward from the outer periphery of the sub opening.

**[0316]** According to another aspect of the present disclosure, the sub guide may include an opening peripheral wall that protrudes upward along the outer periphery of the sub opening.

**[0317]** According to another aspect of the present disclosure, an upper end of the opening peripheral wall may be horizontal.

**[0318]** According to another aspect of the present disclosure, the tank holder may have a holder support extending downward from the lower surface of the tank holder, for supporting the tank holder.

**[0319]** According to another aspect of the present disclosure, the sub guide may have a support rest recessed downward so that the holder support is placed thereon.

**[0320]** According to another aspect of the present disclosure, the tank may include a feed guide disposed on the outer periphery of the feeder so as to correspond to the opening peripheral wall, wherein the feed guide may guide the insertion of the feeder into the sub opening.

**[0321]** According to another aspect of the present disclosure, the tank may include: a protruding surface which protrudes downward from a portion of the bottom of the tank where the feeder is positioned; and a protruding guide which connects the rest of the bottom of the tank and the protruding surface at a slant, wherein, when the tank is inserted into the tank holder, the protruding guide may be inserted into the holder opening.

**[0322]** According to another aspect of the present disclosure, a loop-shaped outlet may be formed between the tank holder and the shell, through which the mist generated from the humidification unit may be discharged.

**[0323]** According to another aspect of the present disclosure, the outlet may be an annular opening.

**[0324]** According to another aspect of the present disclosure, the shell may include: an inner shell spaced outward from the tank holder; and an outer shell spaced outward from the inner shell, wherein the discharge flow path may be formed between the tank holder and the inner shell.

**[0325]** According to another aspect of the present disclosure, the humidification unit may include a blower fan for forcing air to flow upward, wherein the air forced to flow by the blower fan may flow to a space between the inner shell and the outer shell.

**[0326]** Referring to FIGS. 1 to 15, a humidifier according to one aspect of the present disclosure may include: a tank having a feeder for supplying stored water; a humidification unit having an intake unit coupled to the feeder to be supplied with water, for generating mist by using the supplied water; a tank holder disposed above the humidification unit, that covers the outer periphery of the tank so as to form a space where the tank is inserted; and a shell disposed above the humidification unit and spaced outward from the tank holder, wherein the tank holder may have a holder opening through which the feeder or the intake unit penetrates, so that the feeder and the intake unit are coupled together.

**[0327]** 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.

**[0328]** 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.

**[0329]** The detailed description thereof should not be construed as restrictive in all aspects but considered as illustrative. The scope of the present disclosure should be determined by reasonable interpretation of the appended claims and all changes that come within the equivalent scope of the invention are included in the scope of the present disclosure.

[List of Reference Numerals]

#### **[0330]**

1: Humidifier  
10: Humidification unit  
11: Inlet  
20: Tank  
23: Protruding guide  
24: Protruding surface  
25: Feeder  
26: Feed guide  
27: Tank handle  
28: Handle rest  
29: Tank cap  
30: Tank holder  
33: Holder opening  
34: Holder support

35: Holder rib  
40: Shell  
41: Inner shell  
42: Outer shell  
50: Sub guide  
51: Sub intake hole  
52: Sub opening  
53: Opening peripheral wall  
54: Support rest  
101: Base  
117: Air purification flow path  
210: Intake unit  
230: Valve guide  
232: Floating valve  
240: Heating reservoir  
250: Connecting duct  
260: Steam pipe  
270: Humidification reservoir  
280: Bypass  
290: Outlet  
310: Discharge flow path  
320: Outlet  
330: Discharge grille

#### **Claims**

##### **1. A humidifier comprising:**

a tank configured to store water;  
a humidification unit configured to generate mist from water supplied from the tank;  
a tank holder disposed above the humidification unit, and covering an outer periphery of the tank to define a space where the tank is inserted; and  
a shell disposed above the humidification unit and spaced outward from the tank holder, wherein a discharge flow path is defined between the tank holder and the shell, through which the mist generated from the humidification unit flows.

##### **2. The humidifier of claim 1, wherein the tank holder has an open top, and wherein the tank is inserted into or taken out through the open top.**

##### **3. The humidifier of claim 2, further comprising:**

a discharge grille disposed at the outlet; and  
a tank cap covering the open top of the tank, wherein an outlet is defined between an upper end of the tank holder and an upper end of the shell, through which the mist generated from the humidification unit is discharged, and wherein the tank cap is coupled to an inner peripheral edge of the discharge grille or detached from the inner peripheral edge of the discharge grille.

grille.

4. The humidifier according to any one of the preceding claims, wherein the outer periphery of the tank is in close to an inner side of the tank holder. 5
5. The humidifier according to any one of the preceding claims, further comprising a sub guide disposed below the tank holder, and guiding the mist generated from the humidification unit. 10
6. The humidifier of claim 5, wherein the sub guide has a sub intake hole through which the mist generated from the humidification unit is admitted. 15
7. The humidifier of claim 6, wherein a lower surface of the tank holder is spaced upward from the sub guide and defines a sub flow path through which the mist admitted through the sub intake hole flows. 20
8. The humidifier of claim 6 or 7, wherein the sub guide is slanted upward toward an outside thereof, and allows the mist admitted through the sub intake hole to move upward. 25
9. The humidifier according to any one of claims 5 to 8, wherein the tank holder comprises a holder rib protruding outward from a peripheral wall of the tank holder, along the periphery of the tank holder, and wherein the holder rib guides the mist flowing from the sub guide. 30
10. The humidifier of claim 9 in combination with claim 6, wherein the holder rib extends longer toward the sub intake hole. 35
11. The humidifier according to any one of claims 5 to 10, wherein the humidification unit comprises an intake unit configured to receive water from the tank, 40
 

wherein the tank includes a feeder corresponding to the intake unit, and

wherein the sub guide has a sub opening through which the feeder or the intake unit penetrates. 45
12. The humidifier of claim 11, wherein the sub guide comprises an opening peripheral wall that protrudes upward along the outer periphery of the sub opening. 50
13. The humidifier of claim 12, wherein an upper end of the opening peripheral wall is horizontal.
14. The humidifier according to any one of the preceding claims, wherein the tank holder comprises a holder support extending downward from the lower surface of the tank holder, and supporting the tank holder. 55

15. The humidifier of claim 14 in combination with claim 5, wherein the sub guide comprises a support rest recessed downward, allowing the holder support to be placed thereon.

FIG. 1

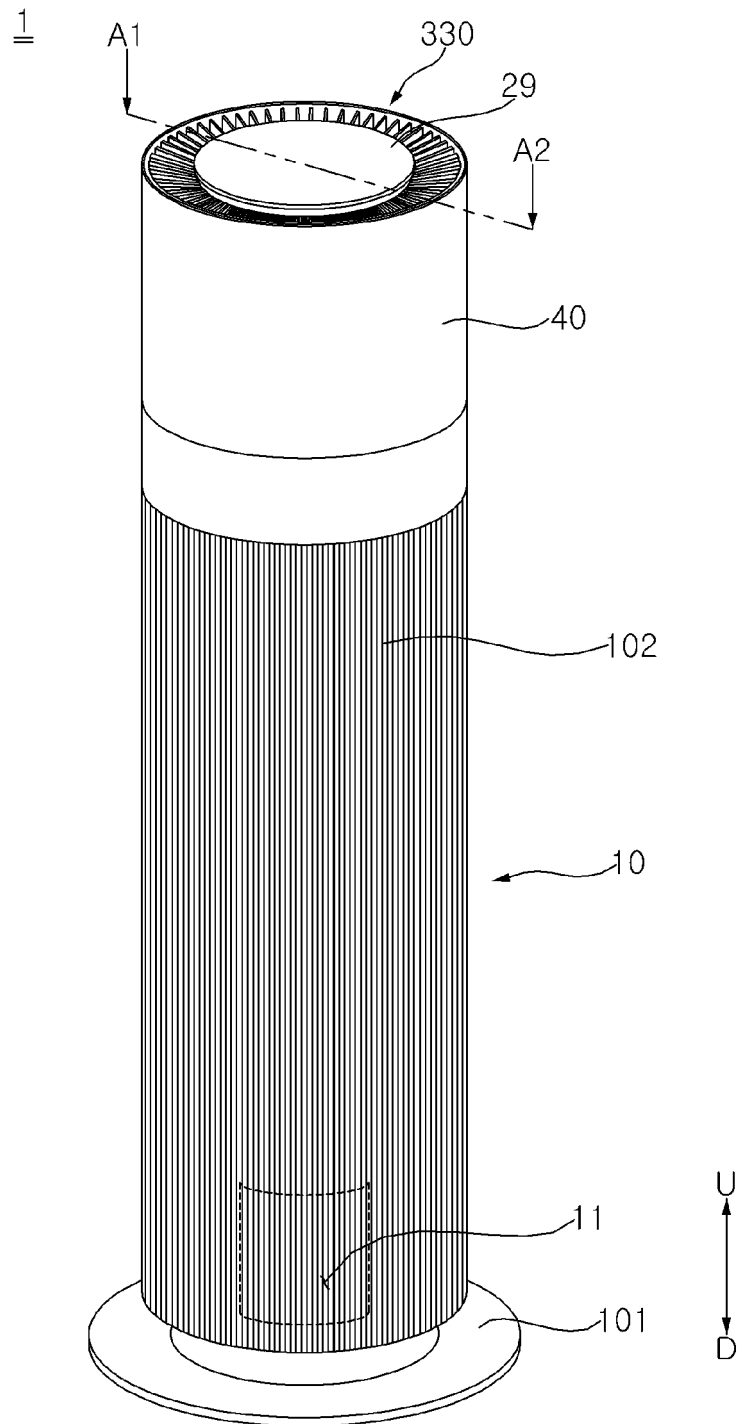


FIG. 2

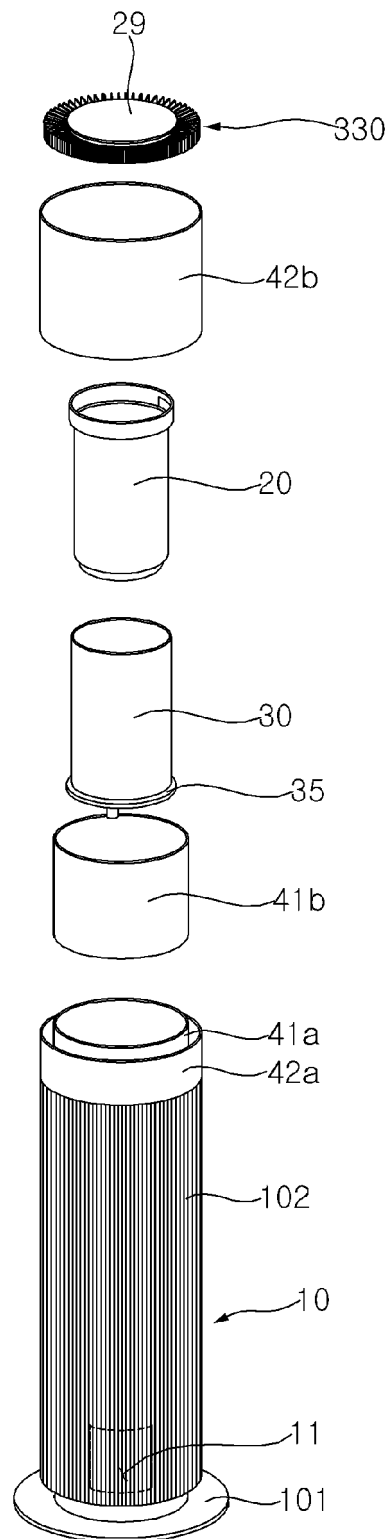


FIG. 3

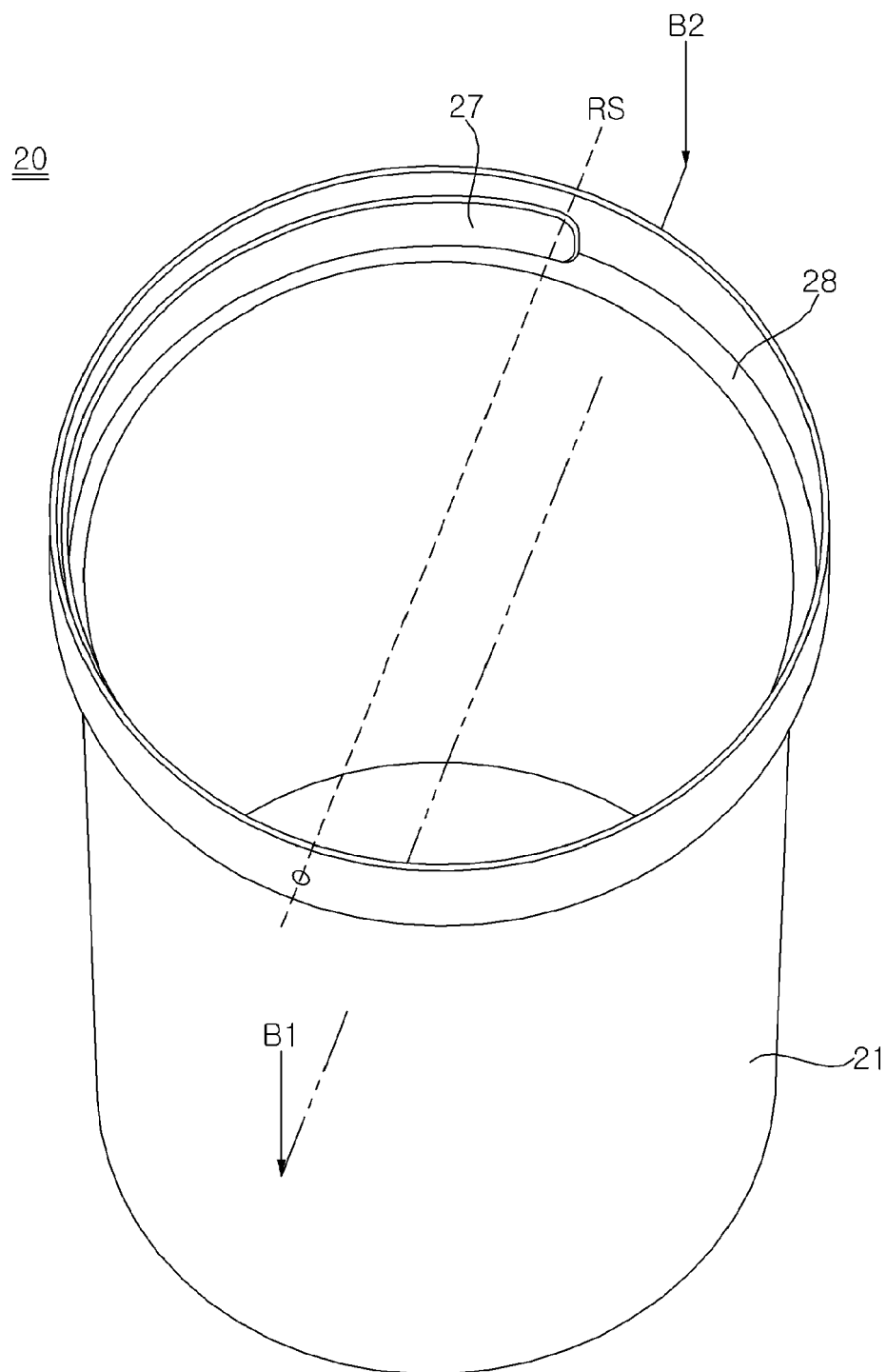


FIG. 4

20

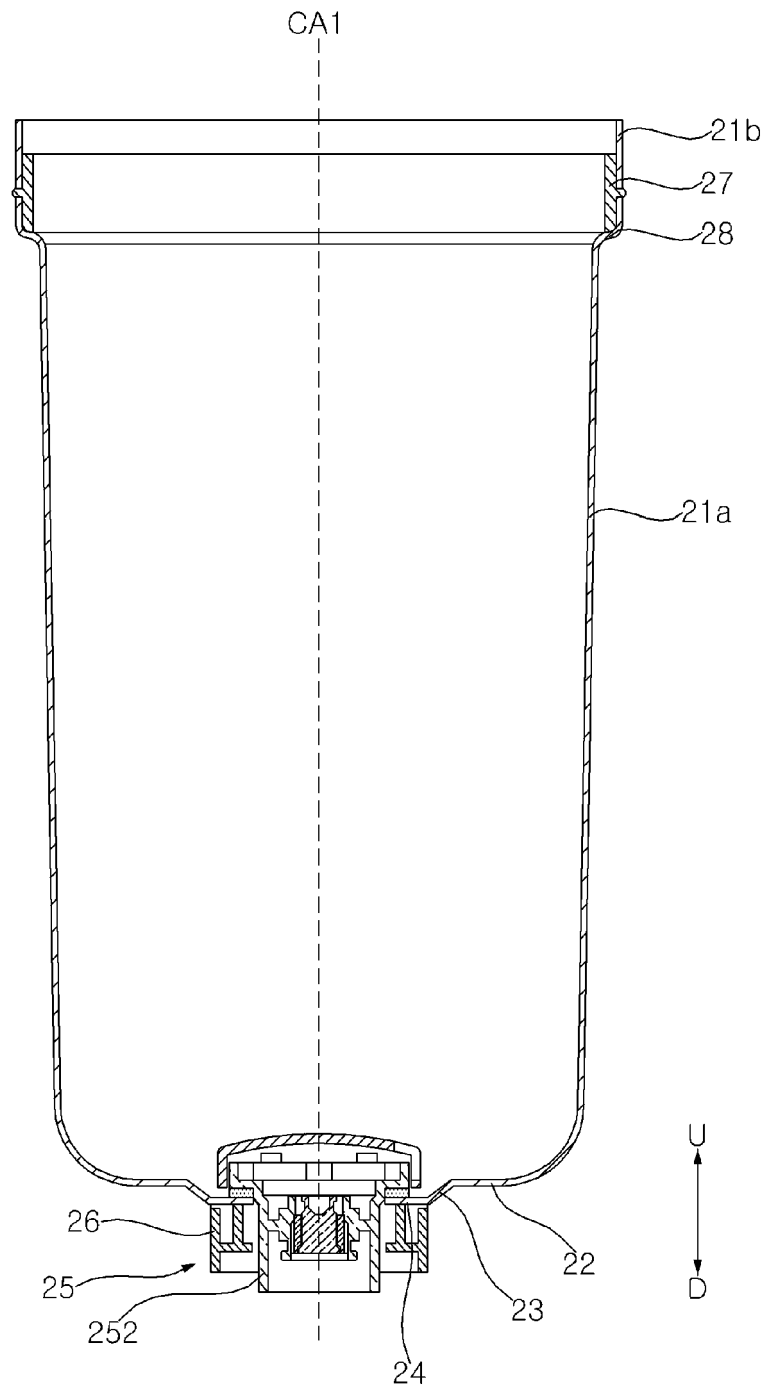


FIG. 5

30

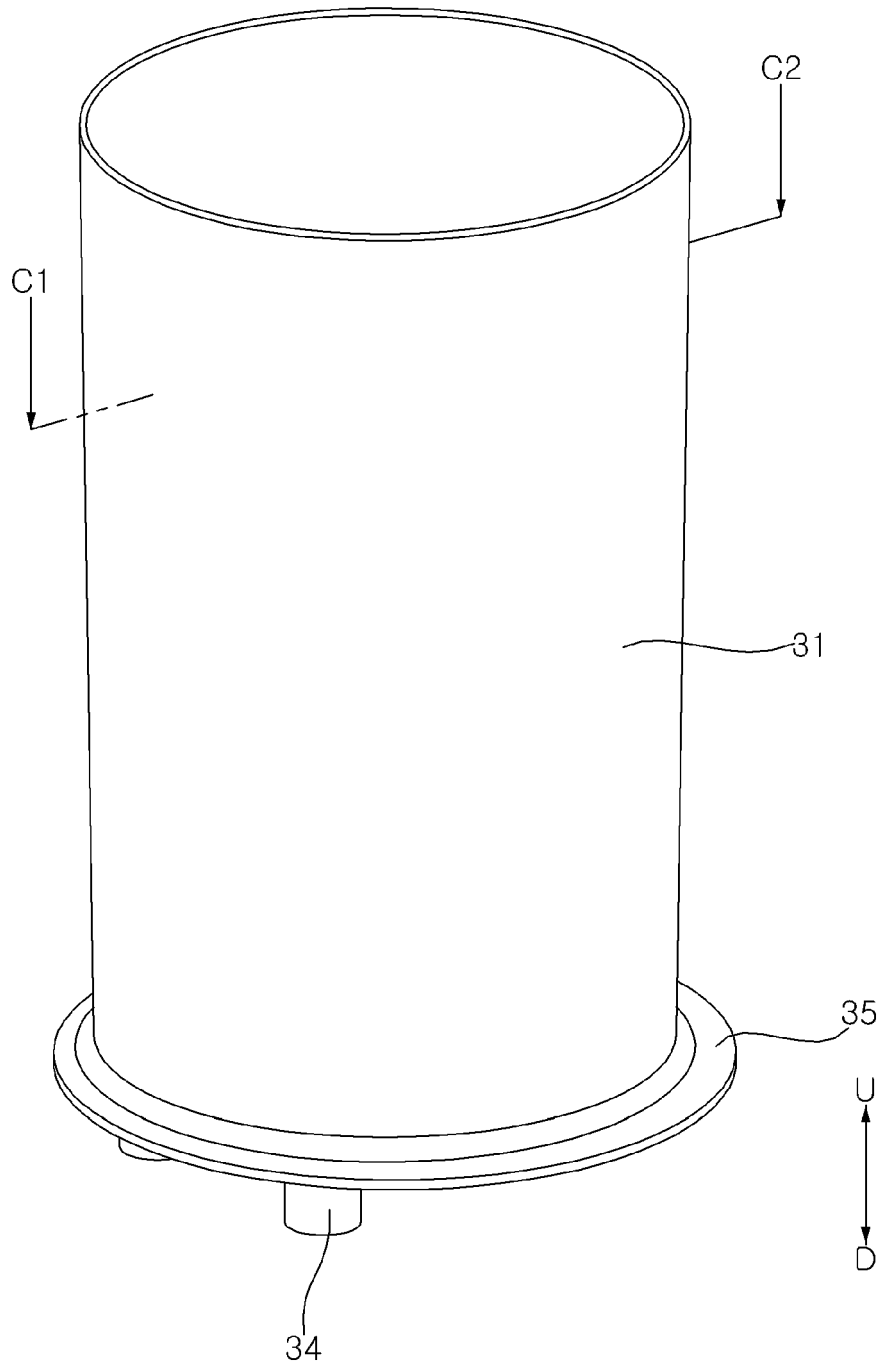


FIG. 6

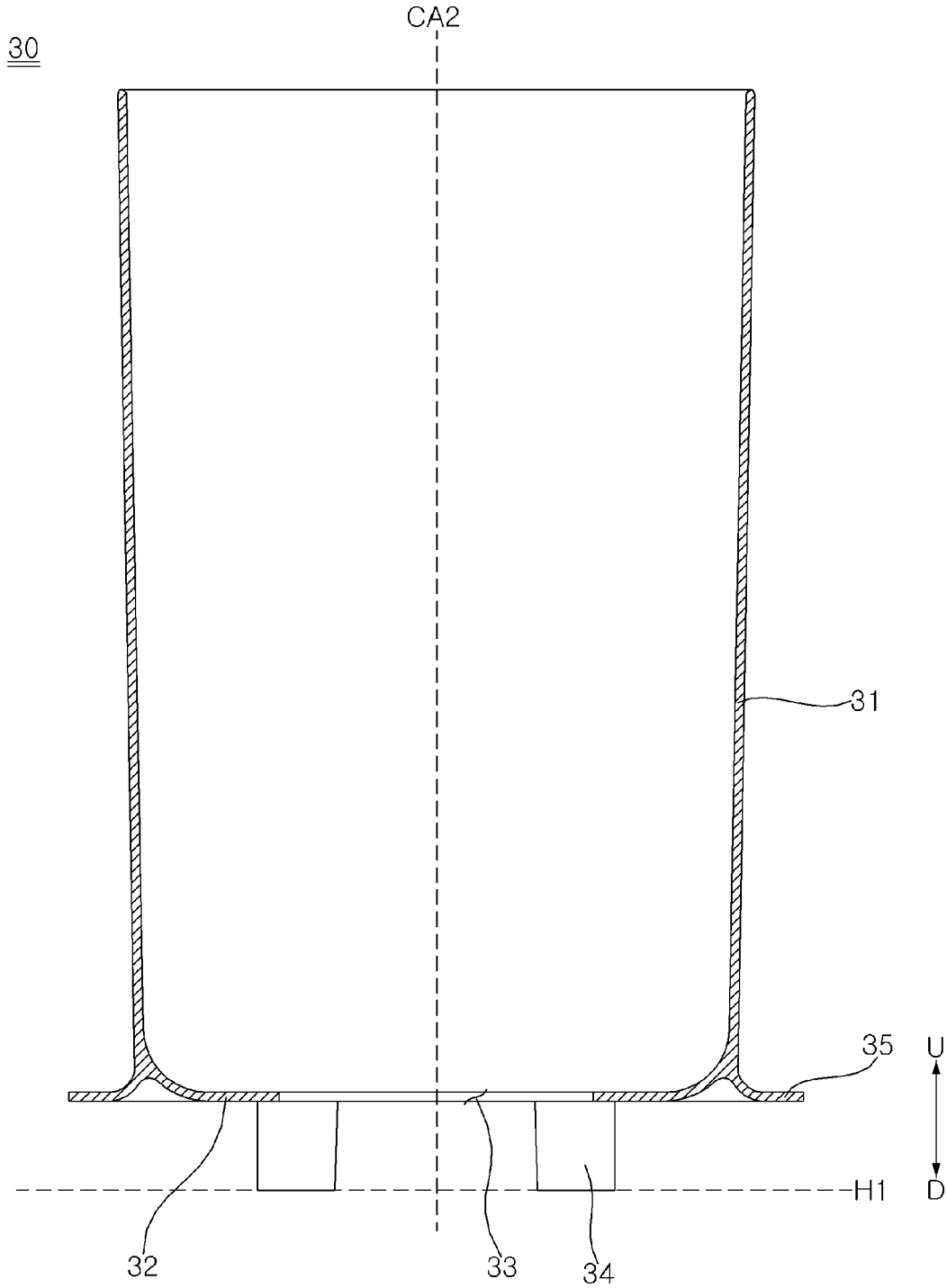


FIG. 7

30

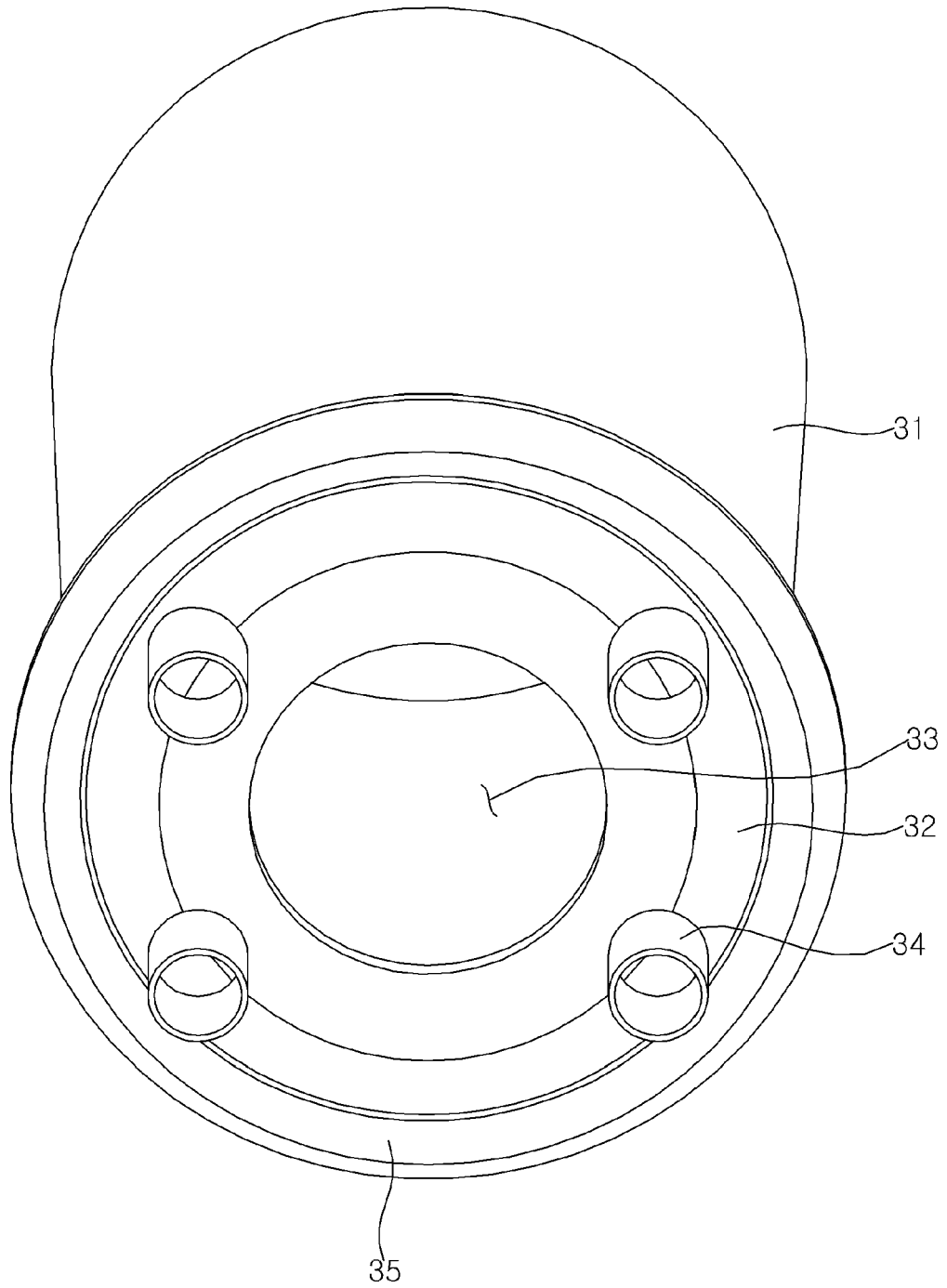


FIG. 8

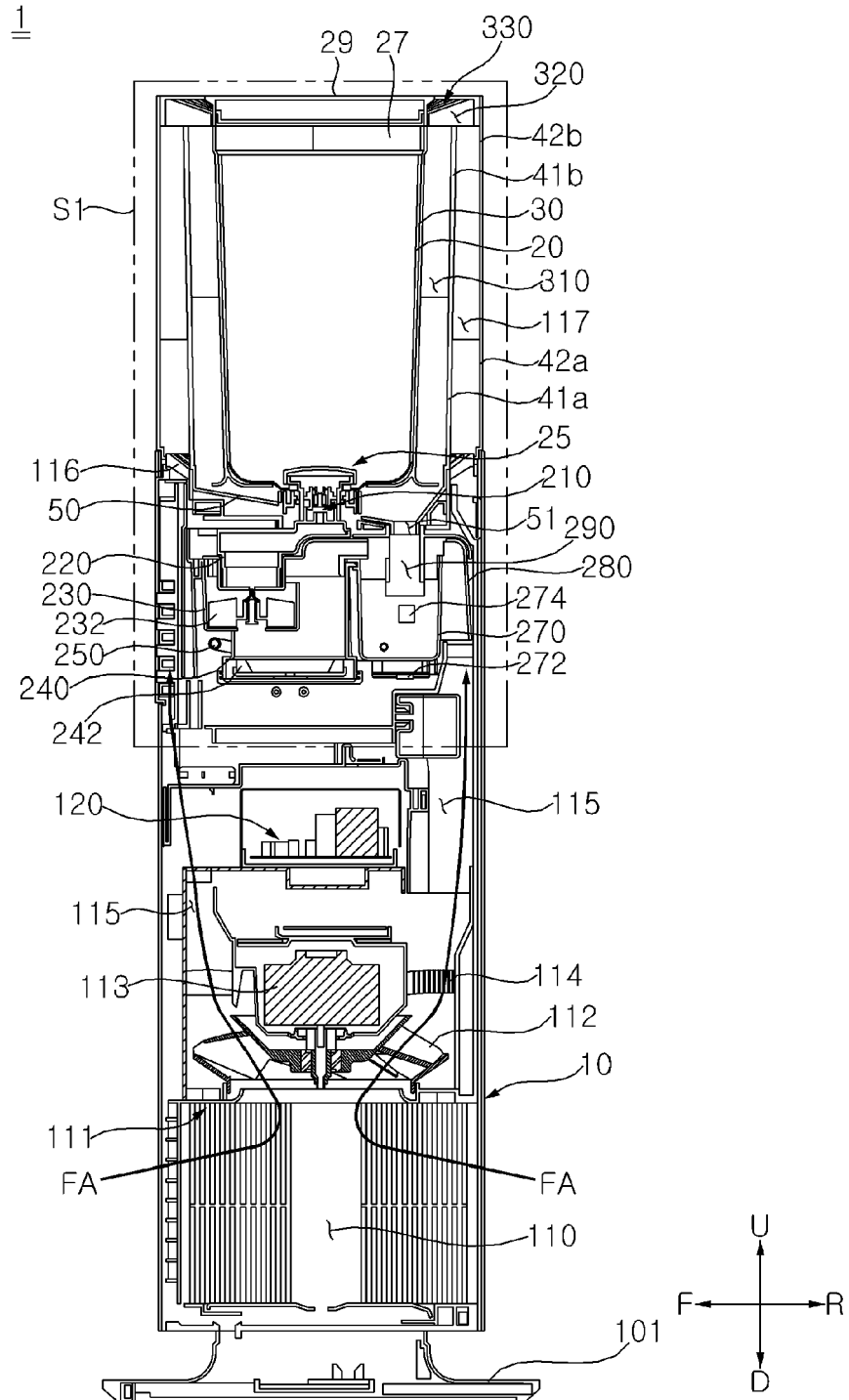


FIG. 9

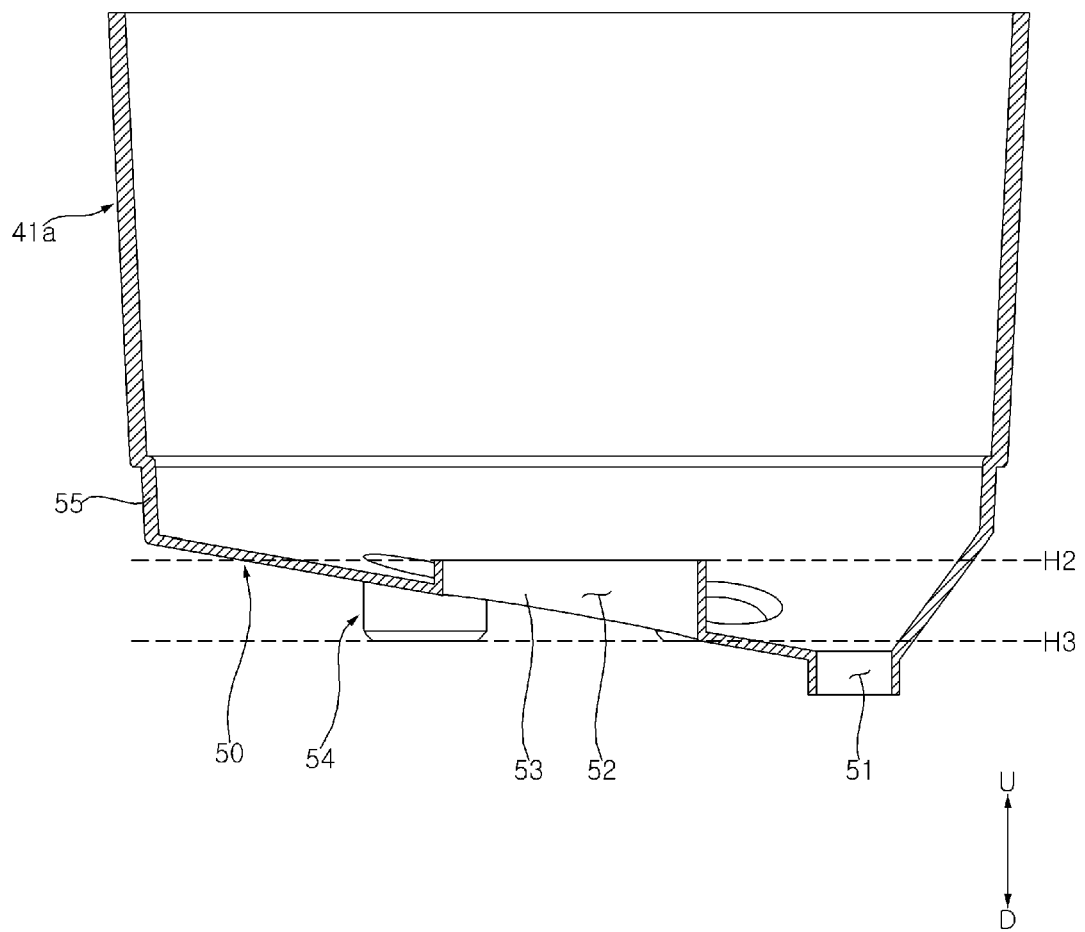


FIG. 10

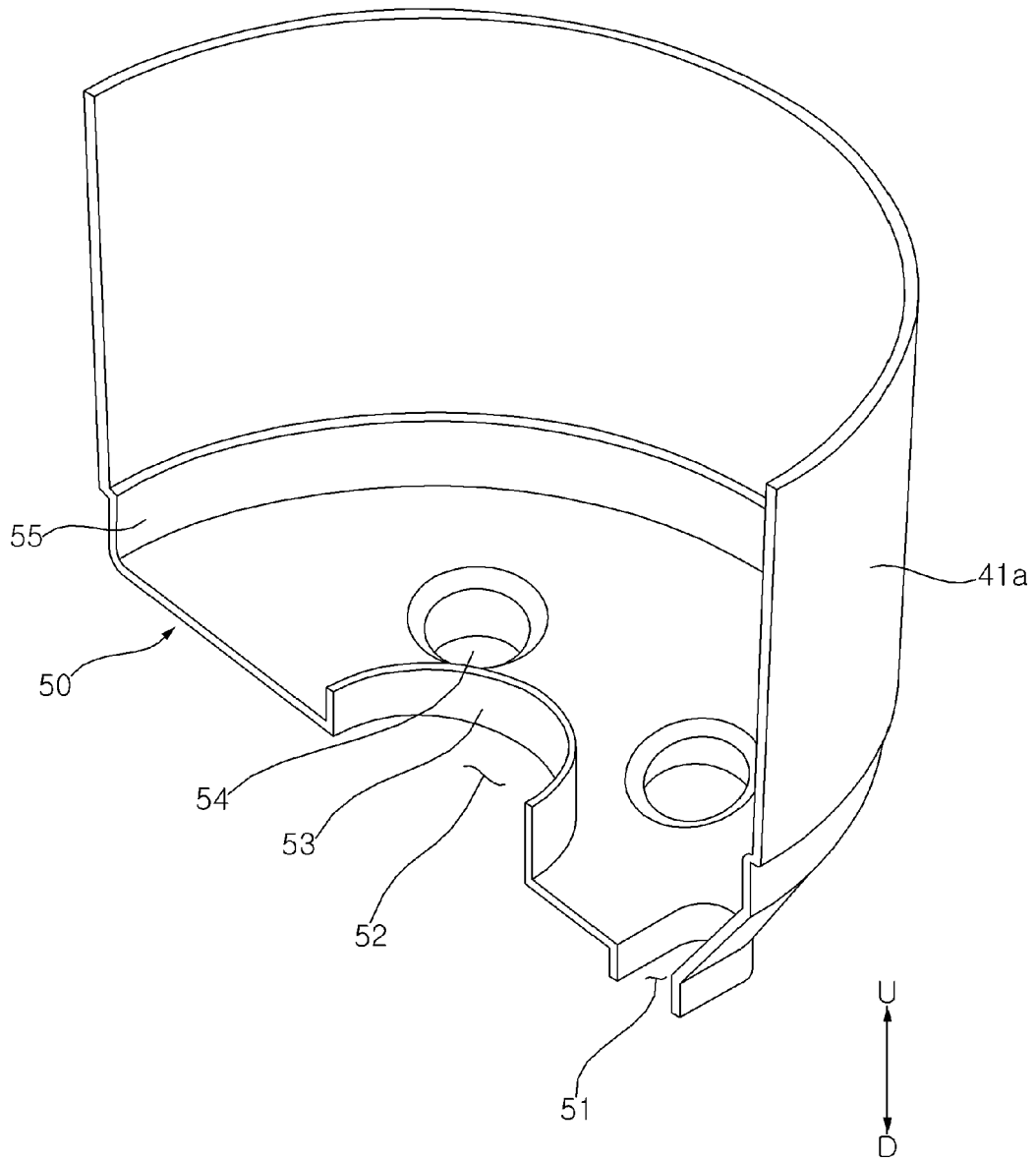


FIG. 11

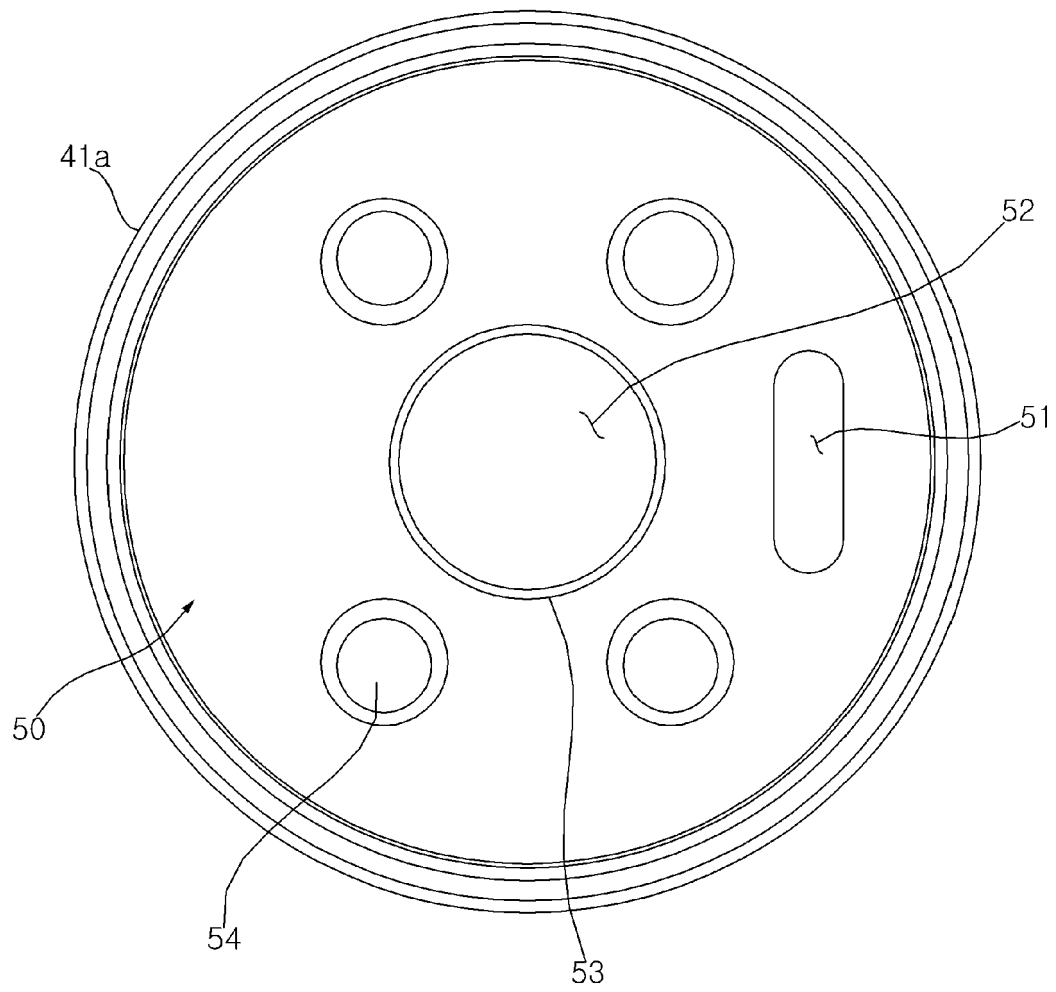


FIG. 12

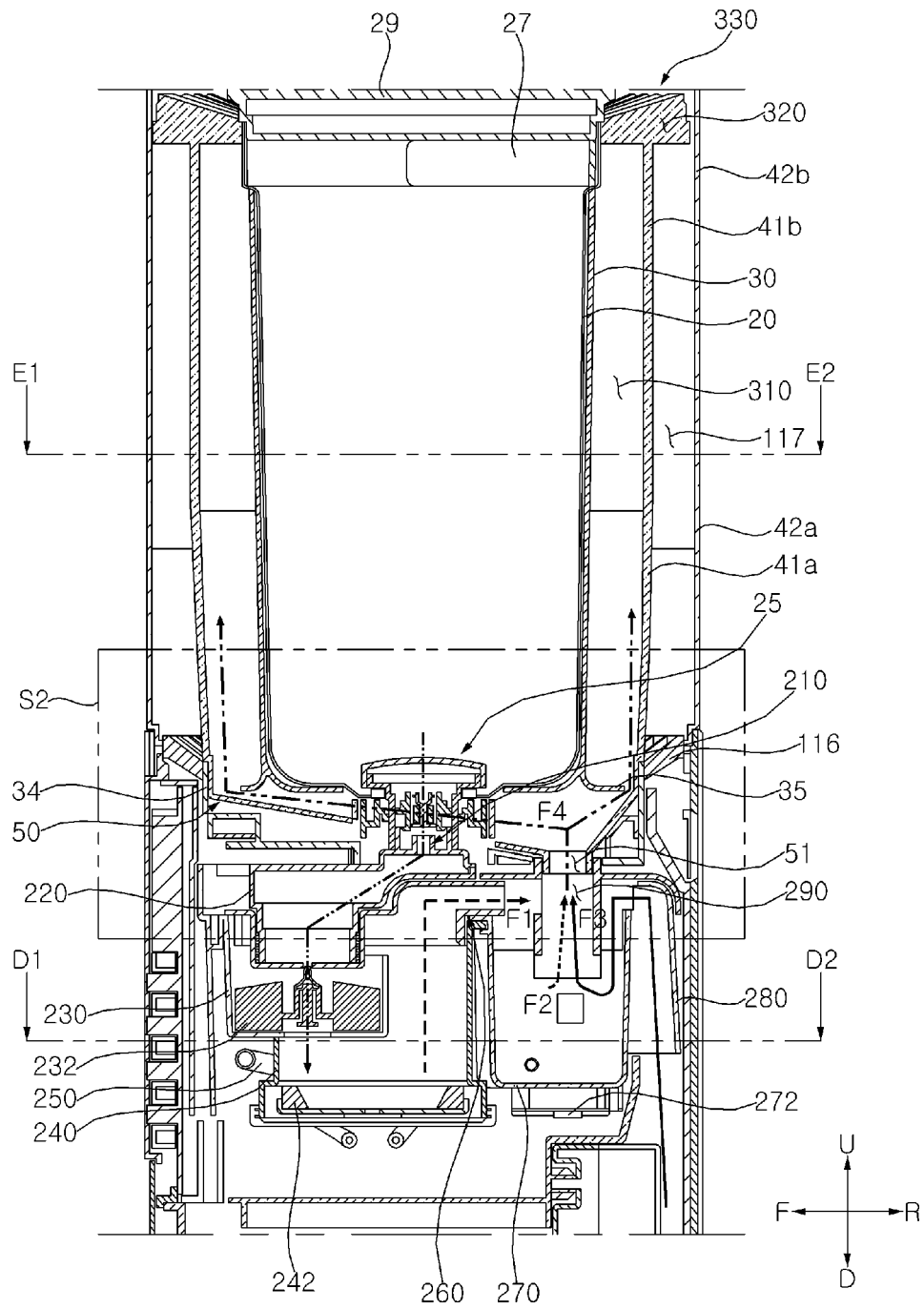


FIG. 13

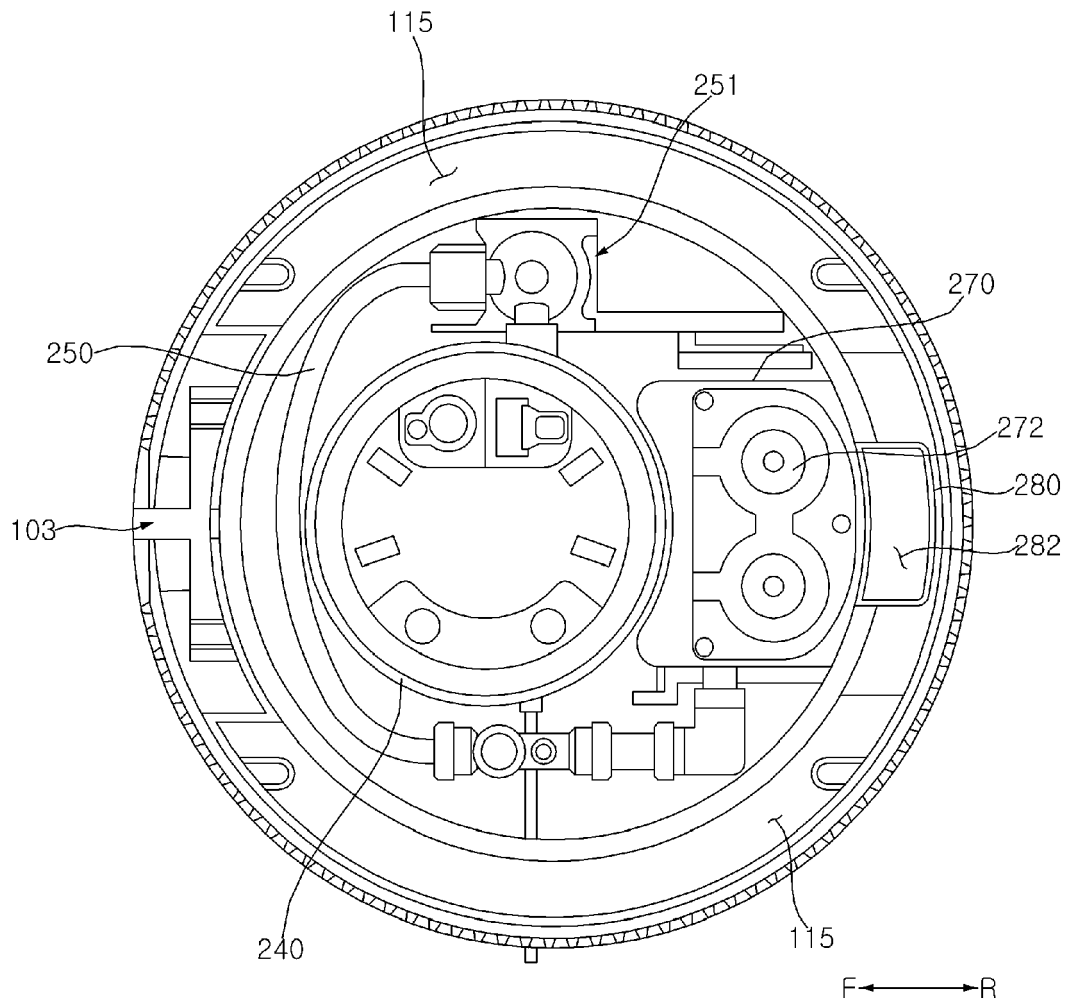


FIG. 14

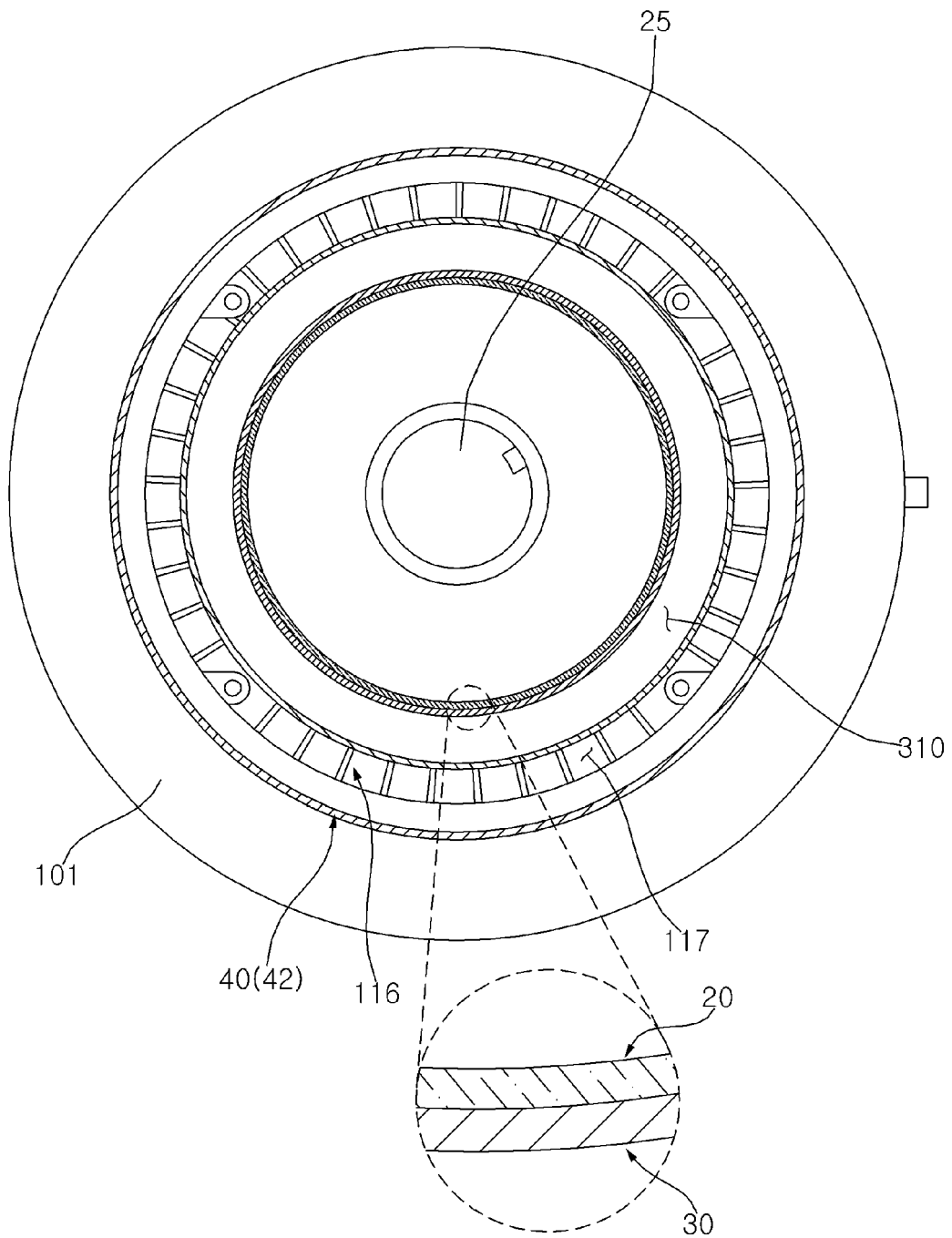
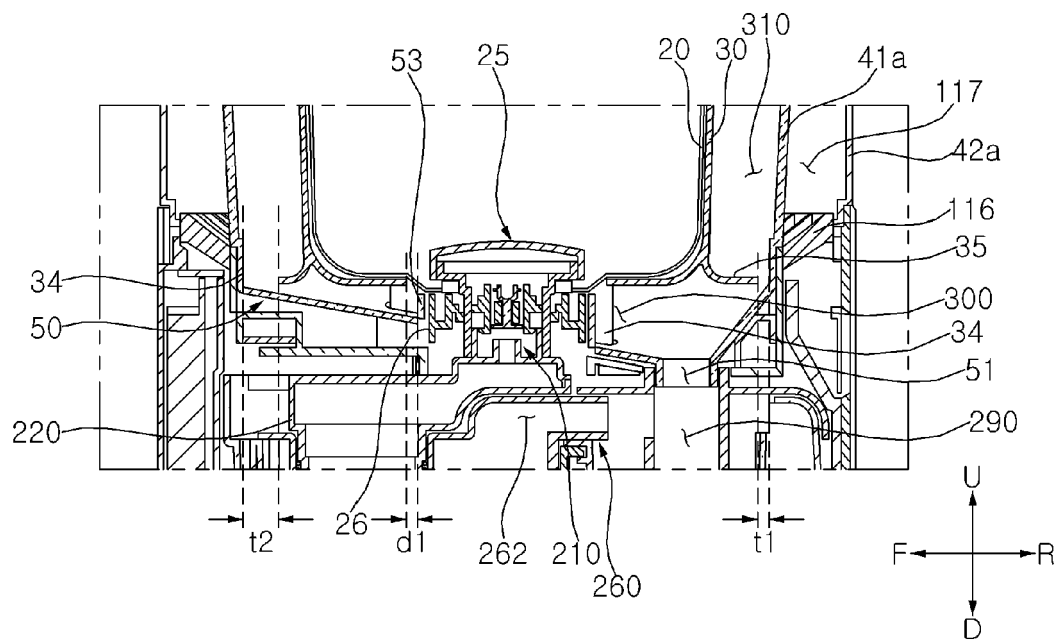


FIG. 15





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