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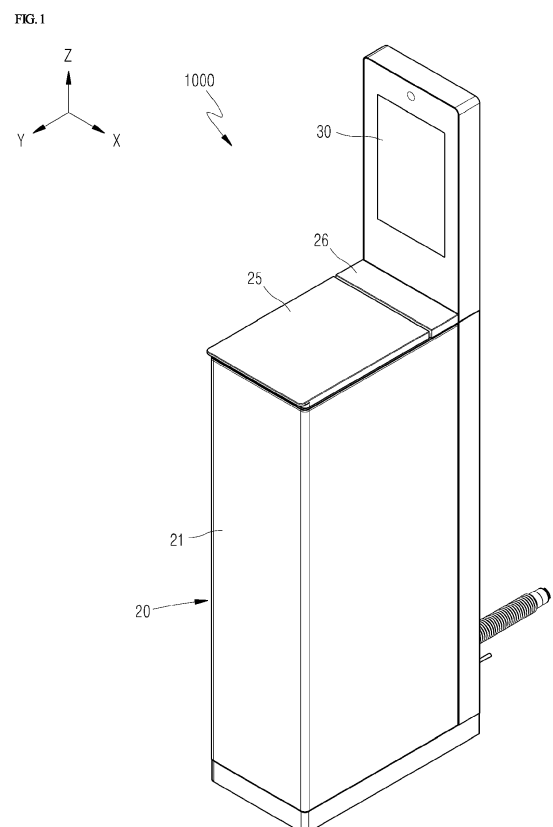
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(54) **CUP WASHER**

(57) A cup washer includes a tub having a space to accommodate a cup to be washed therein, a drying part located at a rear surface of the tub, a first portion of the drying part being spaced apart from the tub to define a first space between the rear surface of the tub and the first portion of the drying part, a second portion of the drying part being connected to the rear surface of the tub, the drying part being configured to heat incoming outside air and then supply the heated air to the tub, and an additive supply part located in the first space, the additive supply part being coupled to the rear surface of the tub, the additive supply part being configured to supply an additive to the tub.



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Description**CROSS-REFERENCE TO RELATED APPLICATION**

[0001] This present application claims the benefit of priority to Korean Patent Application No. 10-2023-0180145, filed in the Republic of Korea on December 12, 2023, the disclosure of which is herein incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION**1. Field of the invention**

[0002] The present disclosure relates to a cup washer, and more specifically, to a cup washer that washes a cup by spraying water.

2. Description of the Prior Art

[0003] A cup washer is a device that washes a cup by spraying water. Recently, as the awareness of practicing carbon neutrality has expanded throughout society, the number of people carrying personal or reusable cups has increased. Accordingly, the number of government offices, companies, and stores where cup washers are installed for the hygiene and convenience of users (employees) is increasing.

[0004] In relation to the cup washer described above, Korean Utility Model Publication No. 20-1994-0020198 (hereinafter referred to as 'Prior Art Document 1') discloses a cup washer.

[0005] Specifically, Prior Art Document 1 discloses a brush that rotates for washing a cup, a detergent distribution container that supplies a detergent to the brush, and a configuration used to mount the cup washer on a faucet

[0006] However, the cup washer of Prior Art Document 1 does not have a structure to dry the moisture remaining in the cup after washing the cup, which may make it difficult to use the washed cup immediately and may result in a hygiene problem, causing inconvenience to a user.

[0007] In addition, Korean Patent Publication No. 10-2020-0016470 (hereinafter, referred to as "Prior Art Document 2") discloses an automatic cup washer.

[0008] Specifically, Prior Art Document 2 discloses a configuration in which a user inserts a used cup into the cup washer and automatically washes the inserted cup by using steam.

[0009] However, the cup washer of Prior Art Document 2 also has a problem in that no separate structure for drying the cup after washing is provided.

[0010] As described above, in the case of a cup washer that sprays water to wash a cup, not only a structure for washing the cup but also a structure for drying the washed cup is required, and it is necessary for these structures to allow the cup washer to be used efficiently

and conveniently.

SUMMARY OF THE INVENTION

[0011] The present disclosure is to solve the above-described problems of a cup washer that washes a cup by spraying water.

[0012] Specifically, the present disclosure is to provide a cup washer in which a structure for washing a cup and a structure for drying a washed cup is optimized to allow each component to be efficiently arranged for providing its function.

[0013] In addition, the present disclosure provides a cup washer in which a structure for cleaning a cup and a structure for drying a washed cup are optimized to allow a user to conveniently use the cup washer.

[0014] In addition, the present disclosure provides a cup washer in which a structure for cleaning a cup and a structure for drying a washed cup are optimized to allow each component to stably maintain its function

[0015] The technical problems to be addressed by the present disclosure are not limited to those described above, and other technical problems, which are not described above, will be clearly understood by a person ordinarily skilled in the related art to which the present disclosure belongs.

[0016] In view of the foregoing, a cup washer according to an aspect of the present disclosure has a structure in which each component is efficiently arranged to exhibit its function. Specifically, the cup washer is configured to have a structure in which a drying part is arranged on the rear side of the tub to be spaced apart from each other by a first space the tub, and an additive supply part is disposed in this first space.

[0017] In addition, a cup washer according to an aspect of the present disclosure is configured to have a structure that can be conveniently used by a user. Specifically, the cup washer is configured to have a structure in which the tub is arranged on the front side, the drying part is arranged on the rear side, and an outside air inlet of the drying part is connected to a rear panel.

[0018] In addition, in the cup washer according to one aspect of the present disclosure, an internal flow path may be provided in the drying duct of the drying part along a surface parallel to the rear panel.

[0019] In addition, in the cup washer according to one aspect of the present disclosure, a tub connection pipe of the drying part may connect the tub and the drying duct.

[0020] In addition, the cup washer according to one aspect of the present disclosure is configured in a structure in which each component is capable of stably maintaining its function. Specifically, the blowing fan may be placed to be relatively higher than a location where the tub connection pipe is connected to the tub.

[0021] In addition, in the cup washer according to an aspect of the present disclosure, an air heater of the drying part may be disposed in the upper end portion of the internal flow path.

[0022] In addition, the cup washer according to an aspect of the present disclosure may be configured in an inclined structure in which the tub connection pipe is inclined downward toward the tub.

[0023] In addition, in the cup washer according to an aspect of the present disclosure, the drying duct may be configured by coupling a first assembly and a second assembly.

[0024] In addition, in the cup washer according to an aspect of the present disclosure, the tub connection pipe may be configured in an integrated tubular shape.

[0025] In addition, in the cup washer according to an aspect of the present disclosure, the drying duct and the tub connection pipe may be coupled by being fitted to each other.

[0026] In addition, in the cup washer according to an aspect of the present disclosure, the location where the drying duct and the tub connection pipe are coupled may be placed to be relatively higher than the maximum water level in the tub.

[0027] In addition, in the cup washer according to an aspect of the present disclosure, the location where the drying duct and the tub connection pipe are coupled may be placed to be relatively lower than the outside air inlet.

[0028] In addition, in the cup washer according to an aspect of the present disclosure, a front frame may support the front panel, and a rear frame may support the rear panel.

[0029] In addition, in the cup washer according to an aspect of the present disclosure, the drying part may be coupled to and supported by the rear frame.

[0030] In addition, in the cup washer according to an aspect of the present disclosure, the second assembly may be fastened to the rear frame.

[0031] In addition, in the cup washer according to an aspect of the present disclosure, the air inside the tub may be discharged through an air discharge part installed in the upper end portion of the tub.

[0032] In addition, in the cup washer according to an aspect of the present disclosure, the air discharge part may be connected between the rear surface of the tub and the rear panel.

[0033] In addition, in the cup washer according to an aspect of the present disclosure, the location where the air discharge part is connected to the tub may be placed to be relatively lower than the location where the air discharge part is connected to the rear panel.

[0034] In addition, in the cup washer according to an aspect of the present disclosure, a water barrier may be formed on the air discharge path of the air discharge part.

[0035] Solutions to the technical problems to be achieved in the present disclosure are not limited to the solutions described above, and other solutions not described above will be clearly understood by a person ordinarily skilled in the art to which the present disclosure belongs from the description below.

[0036] The effects of the cup washer according to the present disclosure will be described as follows.

[0037] According to at least one of the embodiments of the present disclosure, since the drying part is arranged on the rear side of the tub to be spaced apart from each other by a first space, and the additive supply part is disposed in the first space, the vibration of the tub being transmitted to the drying part is minimized so that performance degradation can be prevented, and additive supply to the tub can be performed smoothly.

[0038] In addition, according to at least one of the embodiments of the present disclosure, since the tub is disposed on the front side, the drying part is disposed on the rear side, and the outside air inlet of the drying part is connected to the rear panel, it can be ensured that the outside air smoothly flows into the drying part and maintenance and repair of the drying part is easily performed while facilitating a user's access to the tub.

[0039] In addition, according to at least one of the embodiments of the present disclosure, since the internal flow path is formed in the drying duct of the drying part along a surface parallel to the rear panel, the internal flow path can be efficiently arranged in the limited internal space of the cup washer.

[0040] In addition, according to at least one of the embodiments of the present disclosure, since the tub connection pipe of the drying part interconnects the tub and the drying duct, dry air can be smoothly supplied to the tub while arranging the tub and the drying duct to be spaced apart from each other.

[0041] In addition, according to at least one of the embodiments of the present disclosure, since the blowing fan is placed to be relatively higher than the location where the tub connector is connected to the tub, the movement path of the air blown from the blowing fan to the tub can be efficiently provided while preventing the washing water contained in the tub from affecting the blowing fan during the washing process.

[0042] In addition, according to at least one of the embodiments of the present disclosure, since the air heater of the drying part is disposed in the upper end portion of the internal flow path, the washing water contained in the tub can be prevented from affecting the air heater during the washing process.

[0043] In addition, according to at least one of the embodiments of the present disclosure, since the tub connection pipe is configured in an inclined structure downward toward the tub, even when the washing water contained in the tub flows into the tub connection pipe during the washing process, the washing water can be returned back to the tub, and the air blown from the blowing fan placed at a relatively high location can be more smoothly blown toward the tub.

[0044] In addition, according to at least one of the embodiments of the present disclosure, since the drying duct is made by coupling the first assembly and the second assembly, the drying part can be easily assembled.

[0045] In addition, according to at least one of the embodiments of the present disclosure, since the tub

connection pipe has an integrated tubular shape, water leakage can be minimized when the washing water contained in the tub flows into the tub connection pipe during the washing process.

[0046] In addition, according to at least one of the embodiments of the present disclosure, since the drying duct and the tub connection pipe are coupled by fitting, even when washing water flows in at a location higher than the tub connection pipe in an unintended situation, the washing water is discharged through the connection portion, which is not completely sealed, between the drying duct and the tub connection pipe so that it is possible to minimize the washing water flowing into the drying duct.

[0047] In addition, according to at least one of the embodiments of the present disclosure, the location where the drying duct and the tub connection pipe are coupled is placed to be relatively higher than the maximum water level in the tub, it is possible to minimize the washing water flowing into the drying duct at the maximum water level in the tub.

[0048] In addition, according to at least one of the embodiments of the present disclosure, since the location where the drying duct and the tub connection pipe are coupled is placed to be relatively lower than the outside air inlet, it is possible to minimize the washing water, which has been discharged through the connection portion between the drying duct and the tub connection pipe, flowing into the outside air inlet in an unintended situation.

[0049] In addition, according to at least one of the embodiments of the present disclosure, since the front frame supports the front panel and the rear frame supports the rear panel, the cup washer can be maintained in a stable state with a predetermined rigidity.

[0050] In addition, according to at least one of the embodiments of the present disclosure, since the drying part is supported by the rear frame, the drying part can be maintained in a stable state even when vibration of the tub is transmitted thereto.

[0051] In addition, according to at least one of the embodiments of the present disclosure, since the second assembly is fastened to the rear frame, the drying part and the rear frame can be easily assembled and disassembled.

[0052] In addition, according to at least one of the embodiments of the present disclosure, since the air inside the tub is discharged through the air discharge part installed in the upper end portion of the tub, the air can be discharged without being affected by the washing water inside the tub.

[0053] In addition, according to at least one of the embodiments of the present disclosure, since the air discharge part is connected between the rear surface of the tub and the rear panel, exposure of the discharged air to a user can be minimized.

[0054] In addition, according to at least one of the embodiments of the present disclosure, since the location where the air discharge part is connected to the tub is

placed to be relatively lower than the location where the air discharge part is connected to the rear panel, even if the washing water inside the tub flows into the air discharge part, the washing water can be returned to the tub.

[0055] In addition, according to at least one of the embodiments of the present disclosure, since the water barrier is provided on the air discharge path of the air discharge part, it is possible to minimize the washing water discharged to the air discharge part after flowing into the air discharge part.

[0056] The additional scope of applicability of the present disclosure will become apparent from the following detailed description. However, various changes and modifications within the spirit and scope of the present disclosure can be clearly understood by a person ordinarily skilled in the art, and thus the detailed description and specific embodiments of the disclosure, should be understood as being given by way of example only.

BRIEF DESCRIPTION OF THE DRAWINGS

[0057] The above and other aspects, features, and advantages of the present disclosure will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the cup washer according to an embodiment of the present disclosure viewed from a front upper side;

FIG. 2 is a perspective view of the cup washer of FIG. 1 viewed from a rear upper side,

FIG. 3 is a perspective view of the cup washer of FIG. 1 in the state in which a front panel is removed;

FIG. 4 is a perspective view of the cup washer of FIG. 1, illustrating the state in which a door is opened;

FIG. 5 is a side view of the cup washer of FIG. 1 in which a frame, a panel, a door, and a display part are not illustrated;

FIG. 6 is a partial cross-sectional view of the cup washer of FIG. 5 in which a cup and a cup lid mounted on a rack are illustrated with imaginary lines;

FIG. 7 is a schematic view of a cup washer according to an embodiment of the present disclosure;

FIGS. 8 and 9 are views illustrating the coupled state of the tub, the additive supply part, and the drying part in the cup washer according to an embodiment of the present disclosure;

FIGS. 10 and 11 are views illustrating the drying part in the cup washer according to an embodiment of the present disclosure;

FIG. 12 is a view illustrating the arrangement relationship between the tub and the drying part in the cup washer according to an embodiment of the present disclosure;

FIG. 13 is a view illustrating the coupled state of the drying duct and the tub connection pipe in the cup washer according to an embodiment of the present disclosure;

FIG. 14 is a view illustrating the coupled state of the rear frame and the drying part in the cup washer according to an embodiment of the present disclosure;

FIGS. 15 and 16 are views illustrating an air discharge part in the cup washer according to an embodiment of the present disclosure; and

FIG. 17 is a cross-sectional view of the air discharge portion illustrated in FIG. 16.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

[0058] Hereinafter, embodiments of the present disclosure will be described in detail with reference to the accompanying drawings. However, in the following description of the present disclosure, descriptions of already well-known functions or constructions will be omitted in order to make the gist of the present disclosure clear.

[0059] The X direction, Y direction, and Z direction to be described in embodiments of the present disclosure may be orthogonal to each other. Each of the X and Y directions may be parallel to the horizontal direction, and the Z direction may be parallel to the vertical direction. When the X direction is parallel to the left-right direction, the Y direction may be parallel to the front-rear direction. When the X direction is parallel to the front-rear direction, the Y direction may be parallel to the left-right direction.

[0060] FIG. 1 is a perspective view of the cup washer 1000 according to an embodiment of the present disclosure viewed from a front upper side. FIG. 2 is a perspective view of the cup washer 1000 of FIG. 1 viewed from a rear upper side. FIG. 3 is a perspective view of the cup washer 1000 of FIG. 1 in the state in which a front panel 21 is removed.

[0061] Recently, as the awareness of practicing carbon neutrality has expanded throughout society, the number of people carrying personal or reusable cups has increased. Accordingly, the number of government offices, companies, and stores where cup washers are installed for the hygiene and convenience of users (employees) is increasing. The cup washer 1000 according to an embodiment of the present disclosure may be installed in government offices, companies, or stores. The above-mentioned personal cup or reusable cup may mean a cup (made of a glass or plastic material), a mug, a tumbler, or the like.

[0062] The cup washer 1000 according to an embodiment of the present disclosure may have a tower shape that is long in the vertical direction. Therefore, the floor area required for installation of the cup washer 1000 may be small compared to the total volume of the cup washer 1000.

[0063] The cup washer 1000 according to an embodiment of the present disclosure may include a frame 10, a panel 20, a display part 30, a tub 100, a spray part 300, a water reservoir 50, a sump 60, a circulation pump 70, a

drain pump 80, an additive storage part 500, an additive supply part 600, a drying part 400, and a controller 40. The controller 40 may integrally control the display part 30, the circulation pump 70, the drain pump 80, and the additive supply part 600.

[0064] The frame 10 may configure the framework of the cup washer 1000. The frame 10 may include a base frame 13, a front frame 11, a rear frame 12, and a horizontal frame 14.

[0065] The base frame 13 may configure the lowermost portion of the cup washer 1000. The base frame 13 may be seated on the ground. The front frame 11 and the rear frame 12 may define a shape extending upward from the edges of the base frame 13. The horizontal frame 14 may interconnect the front frame 11 and the rear frame 12 in the horizontal direction.

[0066] The panel 20 may be coupled to the frame 10 to isolate the components of the cup washer 1000 from the external environment. The panel 20 may include a front panel 21, a rear panel 22, a door 25, and a storage part cover 26.

[0067] The front panel 21 may be coupled to the frame 10 to define the front surface and both side surfaces of the cup washer 1000 under the door 25. The rear panel 22 may be coupled to the frame 10 to define the rear surface of the cup washer 1000 below the display part 30.

[0068] A vent 22a may be provided in the rear panel 22. Outside air may flow into the drying part 400 through the vent 22a. An air outlet 22b may be provided in the rear panel 22. Air from the drying part 400 may be discharged to the outside through the air outlet 22b. A handle 23 may be provided on the rear panel 22. A manager may easily move the cup washer 1000 by holding the handle 23.

[0069] The display part 30 may be provided in the upper portion of the cup washer 1000. The screen of the display part 30 may face the front side of the cup washer 1000. Therefore, the user of the cup washer 1000 may visually check the screen of the display part 30 from the front side of the cup washer 1000. The display part 30 may output the operating state of the cup washer 1000, such as "wash", "rinse", and "dry".

[0070] The display part 30 may be configured with a touch panel. The user may input an operation command for the cup washer 1000 through the display part 30.

[0071] The user may select a washing mode through the screen of the display part 30. As an example, the user may select a "normal washing mode" or a "quick washing mode" through the screen of the display part 30. The normal washing mode may refer to a mode in which a cup C is washed using a detergent and a conditioner. The quick washing mode may refer to a mode in which a cup C is washed only by spraying water without a detergent or a conditioner.

[0072] FIG. 4 is a perspective view of the cup washer 1000 of FIG. 1, illustrating the state in which a door 25 is opened. FIG. 5 is a side view of the cup washer 1000 of FIG. 1, in which the frame 10, the panel 20, the door 25, and the display part 30 are not illustrated.

[0073] The panel 20 may include atop panel 24. The top panel 24 may be coupled to the upper end portion of the front panel 21. The top panel 24 may isolate the components inside the front panel 21 from the external environment at the upper end portion of the front panel 21, except for an upper opening of the tub 100 and an upper opening of the additive storage part 500. The storage part cover 26 may open or close the upper opening of the additive storage part 500.

[0074] The door 25 may open or close the top opening of the tub 100. The door 25 may be rotatably coupled to the top panel 24. When the door 25 is closed (see FIG. 1), the door 25 may protrude forward from the front panel 21. When the door 25 is closed, the user may easily rotate (open) the door 25 by lifting the forward protruding portion upward.

[0075] FIG. 6 is a partial cross-sectional view of the cup washer 1000 of FIG. 5, illustrating a cup C and a cup lid Ca mounted on the rack 200 with imaginary lines.

[0076] The tub 100 may provide therein a space (hereinafter, referred to as a "washing space") in which the cup C is washed. The tub 100 may be in the form of a hollow three-dimensional object with an opening (hereinafter, referred to as a "cup inlet") at approximately the upper end thereof. The door 25 can open or close the cup inlet. The user may put the cup C into the washing space or take out the cup C from the washing space through the cup inlet.

[0077] A rack 200 on which the cup C and the cup lid Ca are mounted may be provided in the washing space. The rack 200 may be put into or taken out from the washing space through the cup inlet. The cup C and the cup lid Ca may be spaced apart from the inner surface of the tub 100 while being mounted on the rack 200. The cup C may be placed on the rack 200 with its top and bottom turned upside down.

[0078] The cup washer 1000 according to an embodiment of the present disclosure may include a spray part 300. The spray part 300 may be installed in the lower portion of the tub 100. When the cup C is mounted on the rack 200, the upper opening of the cup C may be located above the spray part 300. The spray part 300 is able to spray water toward the inside and outside of the cup C in the washing space. The spray part 300 may include a first spray nozzle 310 and a second spray nozzle 320.

[0079] FIG. 7 is a schematic view of the cup washer 1000 according to an embodiment of the present disclosure. FIG. 7 also illustrates the movement paths of water, additive, and air, and the relative arrangement of components may differ.

[0080] In FIG. 7, the dotted line arrows may indicate the path of water sprayed by the first spray nozzle 310. In addition, the solid arrows may indicate the path of water sprayed by the second spray nozzle 320. In addition, the thick black arrow may indicate the movement path of the additive. In addition, the thick white arrows may refer to air movement paths.

[0081] The water reservoir 50 is able to store water.

The water reservoir 50 may be heavier than other components. The water reservoir 50 may be coupled to the top surface of the base frame 13. Therefore, the overall center of gravity of the cup washer 1000 may be lowered. Therefore, even when the cup washer 1000 is configured in a tower shape that is long substantially in the vertical direction, the possibility of the cup washer 1000 falling over may be reduced.

[0082] The water reservoir 50 may be connected to a water supply pipe. Water from the water supply pipe may be supplied to the water reservoir 50. A water level sensor may be installed in the water reservoir 50. An opening/closing valve may be provided between the water supply pipe and the water reservoir 50. The controller 40 can control the opening/closing valve by receiving a signal from the water level sensor.

[0083] A heater and a temperature sensor may be provided in the water reservoir 50. The heater may heat the water in the water reservoir 50. The controller 40 may control the heater by receiving a signal from the temperature sensor.

[0084] The water in the water reservoir 50 may be supplied into the tub 100 through the washing water supply part 90. The washing water supply part 90 may include a washing water supply pipe 91 and an opening/closing valve 92. The controller 40 may control the opening/closing valve 92.

[0085] The additive storage part 500 may store an additive therein. The additive supply part 600 may supply the additive stored in the additive storage part 500 into the tub 100.

[0086] As described above, the user may select a washing mode through the screen of the display part 30. As an example, the user may select a "normal washing mode" or a "quick washing mode" through the screen of the display part 30.

[0087] The normal washing mode may refer to a mode in which a cup C is washed using a detergent and a conditioner. The quick washing mode may refer to a mode in which a cup C is washed only by spraying water without a detergent or a conditioner.

[0088] The normal washing mode may include a normal washing step and a drying step. When the user selects the "normal washing mode" through the screen of the display part 30, the water in the water reservoir 50 may be supplied into the tub 100 through the washing water supply part 90. The washing water supply part 90 may include a washing water supply pipe 91 and an opening/closing valve. In this case, the additive supply part 600 may supply the additive into the tub 100 for a set period of time. The additive may be mixed with water within the tub 100.

[0089] The water mixed with the additive may flow into the sump 60 on the lower side of the tub 100 through the filter part 800 by gravity. The circulation pump 70 may press the water flowing into the sump 60 toward the first spray nozzle 310.

[0090] The first spray nozzle 310 may spray the water

mixed with the additive toward the inside and outside of the cup C. In addition, the circulation pump 70 may supply water flowing into the sump 60 into the tub 100 through the washing water spray part 95. The washing water spray part 95 may spray the water mixed with the additive toward the cup lid Ca.

[0091] The circulation pump 70 may operate for a set period of time. When the set period of time elapses, the water flowing into the sump 60 may move to a drainpipe 81 through the drain pump 80 and may be drained out of the cup washer 1000 (completing of the normal washing step).

[0092] The additive may include a first additive and a second additive. The first additive may be provided as a detergent. The second additive may be provided as a conditioner. In this case, the normal washing step may include a first normal washing step and a second normal washing step.

[0093] The first normal washing step may be the step of washing the cup C with the water mixed with the first additive. The second normal washing step may be the step of washing the cup C with the water mixed with the second additive. The first normal washing step and the second normal washing step may be performed sequentially.

[0094] Once the normal washing step is completed, the drying step may be performed. The drying part 400 may supply heated air into the tub 100. During this process, moist air within the tub 100 may be discharged to the outside. The drying step may be performed for a set period of time (completing of the drying step).

[0095] The second spray nozzle 320 may be connected to the water supply pipe. A three-way valve may be installed between the water supply pipe and the water reservoir 50. The second spray nozzle 320 may be connected to the water supply pipe through the three-way valve. An opening/closing valve may be provided between the second spray nozzle 320 and the three-way valve. The controller 40 may control the three-way valve and the open/close valve.

[0096] The quick washing mode may include a quick washing step and a drying step. When the user selects the "quick washing mode" through the screen of the display part 30, the second spray nozzle 320 may be connected to the water supply pipe through the three-way valve. In the quick washing mode, the additive may not be supplied into the tub 100.

[0097] The second spray nozzle 320 may spray water not mixed with the additive into the cup C. The opening/closing valve may open the flow path between the water supply pipe and the second spray nozzle 320 for a set period of time. When the set period of time elapses, the water flowing into the sump 60 may move to a drainpipe 81 through the drain pump 80 and may be drained out of the cup washer 1000 (completing of the quick washing step).

[0098] Once the quick washing step is completed, the drying step may be performed. The drying part 400 may

supply heated air into the tub 100. During this process, moist air within the tub 100 may be discharged to the outside. The drying step may be performed for a set period of time (completing of the drying step).

[0099] FIGS. 8 and 9 are views illustrating a coupled state of a tub 100, an additive supply part 600, and a drying part 400 in a cup washer 1000 according to an embodiment of the present disclosure.

[0100] A cup washer 1000 according to an embodiment of the present disclosure includes a tub 100, a drying part 400, and an additive supply part 600.

[0101] The tub 100 is a portion that provides a space for washing a cup C stored therein. When a cup C is put into the washing space of the tub 100, water is sprayed onto the cup C to wash the cup C.

[0102] The drying part 400 is partially connected to the rear surface of the tub 100 and is disposed so that at least a portion of the drying part 400 is spaced apart the rear of the tub 100 by a first space S 1 in a state in which a second portion of the drying part 400 is connected to the rear surface of the tub 100 to heat the incoming outside air and supply the heated air to the tub 100.

[0103] Specifically, the drying part 400 may be configured to dry the water remaining in the cleaned cup C as described above. That is, the drying part 400 may supply heated air to the tub 100 to dry the cleaned cup C. This drying part 400 may be equipped with a heater for heating air and a blower for forcibly blowing air.

[0104] Meanwhile, vibration may be generated in the tub 100 during the process of spraying water into the cup C, and when such vibration is transmitted to the drying part 400, the components of the drying part 400, such as the heater and the blower, may not exhibit their intended functions properly.

[0105] Accordingly, it may be desirable to arrange the drying part 400 to be spaced apart from the rear of the tub 100 by the first space S1 to minimize transmission of vibration of the tub 100 to the drying part 400. However, in order to supply air heated in the drying part 400 to the tub 100, a portion of the drying part 400 needs to be connected to the rear surface of the tub 100.

[0106] The additive supply part 600 is disposed in the first space S 1 and is coupled to the rear surface of the tub 100 to supply an additive to the tub 100.

[0107] Specifically, the additive supply part 600 may be configured to supply an additive such as detergent or rinse to the tub 100. That is, the additive supply part 600 may improve washing efficiency by supplying an additive to the tub 100 during the washing process of the cup C.

[0108] To this end, it may be desirable for the additive supply part 600 to be disposed close to the tub 100 to smoothly supply the additive to the tub 100. In addition, in order to properly arrange each component within the limited specifications of the cup washer 1000, it is necessary to consider both performance and space efficiency when arranging the tub 100, the drying part 400, and the additive supply part 600.

[0109] Therefore, it may be desirable to dispose the

additive supply part 600 in the first space S1 between the tub 100 and the drying part 400 and to couple the additive supply part 600 to the rear surface of the tub 100.

[0110] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the drying part 400 to be spaced apart from the rear of the tub 100 by the first space S1 and placing the additive supply part 600 in the first space S1, transmission of vibration of the tub 100 to the drying part 400 can be minimized to prevent performance degradation, and additive supply to the tub 100 can be smoothly performed.

[0111] The cup washer 1000 according to an embodiment of the present disclosure may further include a front panel 21 and a rear panel 22.

[0112] The front panel 21 is a portion that covers the front side of the tub 100, and the rear panel 22 is a portion that covers the rear side of the drying part 400. The front panel 21 and the rear panel 22 may define the exterior of the cup washer 1000. That is, the main components of the cup washer 1000 (the tub 100, the drying part 400, the additive supply part 600, and the like) may be arranged in the inside covered by the front panel 21 and rear panel 22 not to be exposed to the outside.

[0113] In this case, the rear panel 22 may be connected to an outside air inlet 401 of the drying part 400. That is, a vent 22a is provided in a portion of the rear panel 22 so that air outside the cup washer 1000 can flow into the inside of the cup washer 1000. The vent 22a may be provided in the rear panel 22 in view of the fact that it is desirable to minimize external exposure.

[0114] In addition, the air that flows into the inside of the cup washer 1000 through the vent 22a of the rear panel 22 may be introduced into the outside air inlet 401 of the drying part 400, heated, and then supplied to the tub 100.

[0115] Therefore, since the outside air inlet 401 of the drying part 400 should be placed close to the rear panel 22, it may be desirable to place the drying part 400 on the rear side of the cup washer 1000.

[0116] In addition, as described above, in view of the fact that the drying part 400 including the heater and blower requires frequent inspection and replacement, it is desirable to place the drying part 400 on the rear side of the cup washer 1000 so that the drying part 400 can be checked by removing only the rear panel 22.

[0117] In addition, in terms of the overall structure of the cup washer 1000, the tub 100 is configured to allow a user to insert and remove the cup C. Therefore, it is desirable to place the tub 100 on the front side of the cup washer 1000 to facilitate user access.

[0118] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the tub 100 on the front side, placing the drying part 400 on the rear side, and the outside air inlet 401 of the drying part 400 is connected to the rear panel 22, outside air can be smoothly introduced into the drying part 400, and maintenance of the drying part 400 can be easily performed while facilitating user access to the tub 100.

[0119] FIGS. 10 and 11 are views illustrating the drying

part 400 in the cup washer 1000 according to an embodiment of the present disclosure. FIG. 12 is a view illustrating the arrangement relationship between the tub 100 and the drying part 400 in the cup washer 1000 according to an embodiment of the present disclosure. FIG. 13 is a view illustrating the coupled state of the drying duct 420 and the tub connection pipe 430 in the cup washer 1000 according to an embodiment of the present disclosure. FIG. 14 is a view illustrating the coupled state of the rear frame 12 and the drying part 400 in the cup washer 1000 according to an embodiment of the present disclosure.

[0120] In the cup washer 1000 according to an embodiment of the present disclosure, the drying part 400 may include a blowing fan 410 and a drying duct 420.

[0121] The blowing fan 410 is configured to draw in outside air through the outside air inlet 401 and to blow the air toward the tub 100. The blowing fan 410 forcibly blows the air so that the air can be forced to flow in the dryer 400 and the tub 100.

[0122] One end of the drying duct 420 is coupled to the blowing fan 410, and an internal flow path F10 is defined along a surface parallel to the rear panel 22. That is, an internal flow path F10, which is an air movement path, is defined in the drying duct 420 so that the air forcibly sent by the blowing fan 410 can be moved to the tub 100 along the internal flow path F10.

[0123] Meanwhile, in order to supply heated air from the drying part 400 to the tub 100, it is necessary to heat the air in a portion of the internal flow path F10. Thus, the internal flow path F10 needs to have a predetermined length. In this case, when the internal flow path F10 occupies the space in the front-rear direction of the cup washer 1000, the space efficiency may deteriorate due to the structure in which the tub 100, the drying part 400, and the additive supply part 600 are arranged in the front-rear direction of the cup washer 1000.

[0124] Therefore, it may be desirable to provide the internal flow path F10 along the surface parallel to the rear panel 22 to minimize the space occupied by the internal flow path F10 in the front-rear direction of the cup washer 1000.

[0125] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by forming the internal passage F10 along the surface parallel to the rear panel 22 in the drying duct 420 of the drying part 400, the internal flow path F10 can be arranged efficiently in the limited internal space of the cup washer 1000.

[0126] In the cup washer 1000 according to an embodiment of the present disclosure, the drying part 400 may further include a tub connection pipe 430 extending from the other end of the drying duct 420 and connected to the rear surface of the tub 100 through a tub connector 431 provided at the end.

[0127] As described above, in view of the fact that the additive supply part 600 is disposed in the first space S1 between the drying part 400 and the tub 100 when the internal passage F10 is defined in the drying duct 420 along the surface parallel to the rear panel 22, the drying

duct 420 may be arranged to be spaced apart from the tub 100.

[0128] Therefore, in order to supply heated air from the drying part 400 to the tub 100, a component may be required to connect the internal flow path F10 of the drying duct 420 to the tub 100.

[0129] For this purpose, the tub connection pipe 430 may connect the other end of the drying duct 420 to the rear surface of the tub 100. In this case, the portion of the tub connection pipe 430 connected to the rear surface of the tub 100 may be the tub connector 431.

[0130] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by connecting the tub 100 to the drying duct 420 by the tub connection pipe 430 of the drying part 400, dry air can be smoothly supplied to the tub 100 while the tub 100 and the drying duct 420 are spaced apart from each other.

[0131] In the cup washer 1000 according to an embodiment of the present disclosure, the blowing fan 410 may be placed at a relatively higher position than the tub connector 431. That is, the blowing fan 410 may be placed relatively higher than the position where the tub connection pipe 430 is connected to the tub 100.

[0132] In view of the fact that washing water is accommodated in the tub 100 when washing the cup C, the washing water may also flow into the tub connection pipe 430 connected to the tub 100 through the tub connector 431. In this case, when the blower fan 410 is placed at a lower position than the tub connector 431, there may be a relatively high possibility that the washing water flowing into the tub connection pipe 430 through the tub connector 431 will affect the blowing fan 410.

[0133] Therefore, it may be desirable to minimize the effect of the washing water on the flowing fan 410 even when the washing water in the tub 100 flows into the tub connection pipe 430 by placing the blowing fan 410 at a relatively higher position than the tub connector 431.

[0134] Meanwhile, in order to ensure that more air volume is supplied to the tub 100 when air is forcibly sent through the blower fan 410, it may be advantageous for the internal flow path F10 between the tub 100 and the blower fan 410 to be shorter. In addition, it may be advantageous to place the blowing fan 410 at a high portion to forcibly blow air toward the tub 100 to a certain downward portion

[0135] Therefore, it may be desirable to cause the air forcibly sent by the blowing fan 410 to move to a certain downward portion by placing the blowing fan 410 at a relatively higher position than the tub connector 431.

[0136] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the tub connection pipe 430 at a relatively higher position than the position where the tub connection pipe 430 is connected to the tub 100, the movement path of the air blown from the blowing fan 410 to the tub 100 can be efficiently formed while the washing water contained in the tub 100 does not affect the blowing fan 410 during the washing process.

[0137] In the cup washer 1000 according to an embodiment of the present disclosure, the drying part 400 may further include an air heater 440. In this case, the internal flow path F10 may include a first section F10a, a second section F10b, and a third section F10c.

[0138] Specifically, the air heater 440 is disposed in the drying duct 420 to heat the air passing through the internal flow path F10, and may heat air through heat exchange with relatively low temperature air that comes into contact with the air heater.

[0139] The first section F10a is a portion of the internal flow path F10 that extends upward from the blowing fan 410, and the air flowing into the drying part 400 through the outside air inlet 401 may be moved upward along the first section F10a within the drying duct 420 via the blowing fan 410.

[0140] The second section F10b is a portion which extends laterally from the first section F10a and in which the air heater 440 is disposed. That is, the air moved upward along the first section F10a within the drying duct 420 may be moved laterally along the second section F10b. Then, the air passing through the second section F10b may be heated by the air heater 440 disposed in the second section F10b.

[0141] The third section F10c is a portion extending downward from the second section F10b to the tub connection pipe 430. The air moved laterally along the second section F10b inside the drying duct 420 can be moved downward along the third section F10c and supplied to the tub 100 through the tub connection pipe 430.

[0142] As described above, the internal flow path F10 may generally have a $\cap$ shape or an upside-down "u" shape, and the air heater 440 may be disposed in the upper portion of the internal flow path F10. Accordingly, even if the washing water in the tub 100 flows into the tub connection pipe 430, the impact of the washing water on the air heater 440 can be minimized.

[0143] Meanwhile, in order to ensure that the heated air is supplied into the tub 100 with the least amount of heat loss, it may be desirable to place the air heater 440 relatively close to the tub 100.

[0144] For this purpose, it may be desirable to place the air heater 440 in the third section F10c of the drying duct 420, but when the air heater 440 is placed excessively close to the tub connector 431, there may be a high risk that the air heater 440 will be affected by washing water flowing into the tub connection pipe 430.

[0145] Accordingly, in order to minimize heat loss of heated air and to minimize the influence of washing water, the air heater 440 may be placed at the upper end portion of the third section F10c of the drying duct 420.

[0146] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the air heater 440 of the drying part 400 in the upper end portion of the internal flow path F10, the washing water contained in the tub 100 can be prevented from affecting the air heater 440 during the washing process.

[0147] In the cup washer 1000 according to an embodiment of the present disclosure, the tub connection pipe 430 may have a shape of which the height relative to the base decreases toward the tub connector 431. That is, the tub connection pipe 430 may be configured to have a structure inclined downward toward the tub 100.

[0148] As described above, when washing the cup C, the washing water in the tub 100 may flow into the tub connection pipe 430. Accordingly, it may be desirable to form the tub connection pipe 430 in a structure inclined downward toward the tub 100 such that the washing water flowing into the tub connection pipe 430 is returned to the tub 100.

[0149] In addition, when the blower fan 410 is placed at a relatively higher position than the tub connector 431 as described above, so that the air pressured by the blower fan 410 moves to a certain downward portion, it may be desirable to form the tub connection pipe 430 to have a structure inclined downward toward the tub 100 in terms of air direction

[0150] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by forming the tub connection pipe 430 in a structure inclined downward toward the tub 100, the washing water can be returned to the tub 100 and the air blown from the blowing fan 410 placed relatively high can be blown more smoothly toward the tub 100, even when the washing water contained in the tub 100 flows into the tub connection pipe 430 during the washing process.

[0151] In the cup washer 1000 according to an embodiment of the present disclosure, the drying duct 420 may include a first assembly 421 and a second assembly 422. In this case, the tub connection pipe 430 may be inserted and coupled to the coupled ends of the first assembly 421 and the second assembly 422.

[0152] Specifically, the first assembly 421 is a portion that covers the front side of the internal flow path F 10, and the second assembly 422 is a portion that is coupled to the first assembly 421 to cover the rear side of the internal flow path F10.

[0153] That is, the internal space provided by coupling the first assembly 421 and the second assembly 422 may define the internal flow path F10 of the drying duct 420. Then, the drying duct 420 and the tub connection pipe 430 may be coupled by inserting the tub connection pipe 430 into the coupled ends of the first assembly 421 and the second assembly 422.

[0154] In view of the fact that the air heater 440 is disposed in the internal flow path F10 (particularly, the second section F10b) of the drying duct 420, assembly of the drying duct 420 and the air heater 440 may be difficult. Therefore, it may be desirable to separately manufacture the drying duct 420 as the first assembly 421 and the second assembly 422 and then to assemble the first assembly 421 and the second assembly 422 in the state in which the air heater 440 is disposed.

[0155] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by forming the

drying conduct 420 by coupling the first assembly 421 and the second assembly 422, the drying part 400 can be easily assembled.

[0156] In the cup washer 1000 according to an embodiment of the present disclosure, the tub connection pipe 430 may be formed in an integrated tubular shape and extend from the other end of the drying duct 420. That is, unlike the separately manufactured drying duct 420, the tub connection pipe 430 may be made of an integrated tubular member.

[0157] As described above, in view of the fact that the washing water in the tub 100 may flow into the tub connection pipe 430 when washing the cup C, it may be desirable to make the tub connection pipe 430 as an integral member to minimize water leakage.

[0158] In particular, in view of the fact that the tub connection pipe 430 is the part that most directly receives the vibration of the tub 100, it needs to be formed integrally to have a predetermined rigidity so that its original function can be properly performed.

[0159] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by forming the tub connection pipe 430 in an integrated tubular shape, leakage can be minimized when the washing water contained in the tub 100 flows into the tub connection pipe 430 during the washing process.

[0160] In the cup washer 1000 according to an embodiment of the present disclosure, the tub connection pipe 430 may be fitted and coupled to the other end of the drying duct 420. That is, the coupled portion between the tub connection pipe 430 and the drying duct 420 may be simply fitted without forming a separate airtight structure.

[0161] As described above, when washing the cup C, the washing water in the tub 100 may flow into the tub connection pipe 430, but in an unintended abnormal situation, the washing water may flow into the drying duct 420 beyond the tub connection pipe 430.

[0162] In this case, in view of the fact that the washing water may damage the air heater 440 or the blowing fan 410 and may reduce the performance of the air heater or the blowing fan, it may be less disadvantageous for the washing water to be discharged to the outside of the tub connection pipe 430 and the drying duct 420 rather than flowing into the drying duct 420.

[0163] Therefore, it may be desirable to fit the drying duct 420 and the tub connection pipe 430 to each other by fitting such that washing water is discharged through the coupled portion of the tub connection pipe 430 and the drying duct 420 before the washing water flows beyond the tub connection pipe 430 into the drying duct 420.

[0164] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by coupling the drying duct 420 and the tub connection pipe 430 in a fitting manner, it is possible to minimize washing water flowing into the drying duct 420 by being discharged through the connection portion of the drying duct 420 and the tub connection pipe 430, which is not completely sealed, even when the washing water flows into a position higher

than the hub connection pipe 430 in an unintended situation.

[0165] In the cup washer 1000 according to an embodiment of the present disclosure, the other end of the drying duct 420 may be placed at a position relatively higher than the maximum water level of the tub 100. That is, the location where the drying duct 420 and the tub connection pipe 430 are coupled may be placed to be higher than the maximum water level of the tub 100.

[0166] As described above, since the tub 100 and the tub connection pipe 430 are connected through the tub connector 431, washing water may flow into the tub connection pipe 430 as high as the water level in the tub 100.

[0167] In this case, since it is necessary to prevent washing water from flowing into the drying duct 420 beyond the tub connection pipe 430, it may be desirable to place the location where the drying duct 420 and the tub connection pipe 430 are connected to be higher than the maximum water level in the tub 100.

[0168] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the location where the drying duct 420 and the tub connection pipe 430 are coupled to be relatively higher than the maximum water level in the tub 100, it is possible to minimize the washing water flowing into the drying duct 420 at the maximum water level in the tub 100.

[0169] In the cup washer 1000 according to an embodiment of the present disclosure, the other end of the drying duct 420 may be placed at a relatively lower position than the outside air inlet 401. That is, the location where the drying duct 420 and the tub connection pipe 430 are coupled may be placed to be lower than the outside air inlet 401.

[0170] As described above, since the washing water may be discharged through the connection portion of the drying duct 420 and the tub connection pipe 430 in an unintentional abnormal situation, the washing water discharged in this way may flow into the outside air inlet 401.

[0171] In this case, since problems such as damage to the blowing fan 410 or deterioration of performance may occur due to the washing water, it is necessary to prevent washing water discharged through the connection portion of the drying duct 420 and the tub connection pipe 430 from flowing into the outside air inlet 401.

[0172] Therefore, it may be desirable to place the location where the drying duct 420 and the tub connection pipe 430 are coupled to be lower than the outside air inlet 401 to minimize washing water flowing into the outside air inlet 401 even when the washing water is discharged to the corresponding portion.

[0173] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the location where the drying duct 420 and the tub connection pipe 430 are coupled to be relatively lower than the outside air inlet 401, it is possible to minimize washing water flowing into the outside air inlet 401 when the washing water is discharged through the connection

portion of the drying duct 420 and the tub connection pipe 430 in an unintended situation.

[0174] The cup washer 1000 according to an embodiment of the present disclosure may further include a front frame 11 and a rear frame 12.

[0175] The front frame 11 is disposed on the front side of the tub 100 and supports the front panel 21, and the rear frame 12 is disposed on the rear side of the drying part 400 and supports the rear panel 22.

[0176] That is, the front frame 11 and the rear frame 12 form the framework of the cup washer 1000 so that the main components of the cup washer 1000 can be supported by the front frame 11 and the rear frame 12.

[0177] In this case, the front frames 11 may be arranged as a pair on the front side of the tub 100, and the rear frames 12 may be arranged as a pair on the rear side of the drying part 400. In addition, the front frame 11 and the rear frame 12 may be coupled to a separate frame structure to distribute and transmit a load applied thereto.

[0178] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by causing the front frame 11 to support the front panel 21 and the rear frame 12 to support the rear panel 22, the cup washer 1000 can be maintained in a stable state with a certain rigidity.

[0179] In the cup washer 1000 according to an embodiment of the present disclosure, the drying part 400 may be supported by being coupled to the rear frame 12. That is, the drying part 400 may be supported on the rear frame 12 rather than on the tub 100.

[0180] As described above, since vibration is generated in the tub 100 during the washing process, it is necessary to minimize the transmission of such vibration to the drying part 400. In this case, when the drying part 400 is supported on the tub 100, it may be undesirable in that the vibration of the tub 100 is transmitted to the drying part 400 to a relatively large extent.

[0181] Therefore, it may be desirable to minimize the effect of vibration of the tub 100 on the drying part 400 by allowing the drying part 400 disposed on the rear side of the tub 100 to be supported by the rear frame 12 which supports the rear panel 22.

[0182] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by coupling the drying part 400 to be supported by the rear frame 12, the drying part 400 can be maintained in a stable state even if vibration of the tub 100 is transmitted thereto.

[0183] In the cup washer 1000 according to an embodiment of the present disclosure, the second assembly 422 may be coupled by being fastened to the rear frame 12. That is, the drying part 400 may be coupled to the rear frame 12 by fastening the second assembly 422 disposed on the rear side of the drying duct 420 to the rear frame 12.

[0184] As described above, in view of the fact that the drying part 400 requires frequent inspection and replacement, since the drying part 400 is placed on the rear side of the cup washer 1000, the drying part 400 can be

checked by only removing the rear panel 22.

[0185] In this case, by fastening the second assembly 422 of the drying duct 420 to the rear frame 12, the drying duct 420 and the rear frame 12 can be easily assembled and disassembled when necessary, and the drying duct 420 including the first assembly 421 and the second assembly 422 can also be easily assembled and disassembled.

[0186] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by fastening the second assembly 422 to the rear frame 12, the drying part 400 and the rear frame 12 can be easily assembled and disassembled.

[0187] FIGS. 15 and 16 are views illustrating an air discharge part 700 in the cup washer 1000 according to an embodiment of the present disclosure. FIG. 17 is a cross-sectional view of the air discharge part 700 illustrated in FIG. 16.

[0188] The cup washer 1000 according to an embodiment of the present disclosure may further include an air discharge part 700 installed at the upper end of the tub 100 so that the air inside the tub is discharged.

[0189] As described above, when a cup C is dried by supplying heated air from the drying part 400 to the tub 100, it is necessary to discharge air that has been used for drying and is at a relatively low temperature to the outside of the tub 100.

[0190] In this case, since it is not desirable to discharge the washing water remaining inside the tub 100 together with the discharged air, it may be desirable to provide a structure in which only the air is discharged while preventing the washing water from being discharged.

[0191] Therefore, by installing the air discharge part 700 at the upper end of the tub 100 to discharge air at a location above the maximum water level in the tub 100, only air can be discharged without washing water being discharged.

[0192] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by causing the air inside the tub 100 to be discharged through the air discharge part 700 installed at the upper end of the tub 100, the air can be discharged without being affected by the washing water inside the tub 100.

[0193] In the cup washer 1000 according to an embodiment of the present disclosure, the air discharge part 700 may be connected between the rear surface of the tub 100 and the rear panel 22. That is, an air outlet 22b is provided in a portion of the rear panel 22 so that the air inside the tub 100 can be discharged to the outside of the cup washer 1000.

[0194] Like the above-described vent 22a, it is desirable to minimize external exposure of the air outlet 22b, and in view of the fact that the air discharged from the cup washer 1000 may cause discomfort or the like to the user when the air comes into contact with the user, the air outlet 22b may be provided in the rear panel 22.

[0195] Accordingly, since the air discharge part 700 is connected between the rear surface of the tub 100 and

the rear panel 22, the air inside the tub 100 can be discharged to the rear side of the cup washer 1000 through the rear panel 22.

[0196] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by connecting the air discharge part 700 between the rear surface of the tub 100 and the rear panel 22, it is possible to minimize exposure of the discharged air to the user.

[0197] In the cup washer 1000 according to an embodiment of the present disclosure, the portion of the air discharge part 700 connected to the tub 100 may be placed at a relatively lower position than the portion connected to the rear panel 22.

[0198] As described above, even when the air discharge part 700 is placed at the upper end of the tub 100 so that the washing water is not discharged to the air discharge part 700, in some cases, the washing water may flow into the air discharge part 700 in situations such as splashing.

[0199] Accordingly, it may be desirable to provide the portion where the air discharge part 700 is connected to the tub 100 to be relatively lower than the portion where the air discharge part 700 is connected to the rear panel 22 so that the washing water flowing into the air discharge part 700 can be returned again into the tub 100.

[0200] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by placing the location where the air discharge part 700 is connected to the tub 100 to be relatively lower than the location where the air discharge part 700 is connected to the rear panel 22, the washing water inside the tub 100 can be returned to the tub 100 even when the washing water flows into the air discharge part 700.

[0201] In the cup washer 1000 according to an embodiment of the present disclosure, the air discharge part 700 may have a water barrier 710 formed along a direction intersecting the longitudinal direction

[0202] As described above, even when the washing water flowing into the air discharge part 700 is recovered by varying the height of both ends of the air discharge part 700, there is still a risk that a certain amount of the washing water may be discharged to the outside through the air discharge part 700.

[0203] Therefore, it may be desirable to form a step such as the water barrier 710 in the longitudinal direction of the air discharge part 700 so that the washing water flowing into the air discharge part 700 is blocked by the water barrier 710 and is prevented from being discharged to the outside.

[0204] In this way, in the cup washer 1000 according to an embodiment of the present disclosure, by forming the water barrier 710 is on the air discharge path of the air discharge part 700, it is possible to minimize the discharge of washing water flowing into the air discharge part 700 to the outside.

[0205] The cup washer 1000 according to an embodiment of the present disclosure may include a tub 100 and a drying part 400. In this case, the drying part 400 may

include a blowing fan 410, a drying duct 420, and a tub connection pipe 430.

[0206] Specifically, the tub 100 may provide a space where a cup C accommodated therein is washed.

[0207] The drying part 400 may be placed on the rear side of the tub 100 in a state in which a portion thereof is connected to the rear surface of the tub 100 to heat incoming outside air and then to supply the heated air to the tub 100.

[0208] The blowing fan 410 can suction outside air through the outside air inlet 401 and blow the air toward the tub 100.

[0209] The drying duct 420 may include a first assembly 421, one end of which is coupled to the blowing fan 410 to cover the front side of the internal flow path F10, and a second assembly 422 which is coupled to the first assembly 421 to cover the rear side of the internal flow path F10.

[0210] The tub connection pipe 430 may have an integrated tubular shape extending from the other end of the drying duct 420, and may be connected to the rear surface of the tub 100 through the tub connector 431 provided at the end thereof

[0211] Although specific embodiments of the present disclosure have been described and illustrated above, it is evident to a person ordinarily skilled in the art that the present disclosure is not limited to the described embodiments, and various changes and modifications can be made without departing from the technical idea and scope of the present disclosure. Accordingly, such modifications or variations should not be understood individually from the technical spirit and viewpoint of the present disclosure, and the modifications and variations should be deemed to fall within the scope of the claims of the present disclosure.

Claims

1. A cup washer (1000) comprising:
 - a tub (100) configured to provide a space in which a cup accommodated therein can be washed;
 - a drying part (400) arranged on a rear side of the tub (100) and spaced apart from a rear end of the drying part (400) by a first space in a state in which a portion of the drying part (400) is connected to a rear surface of the tub (100), wherein the drying part (400) is configured to heat incoming outside air and then supply the heated air to the tub (100); and
 - an additive supply part (600) disposed in the first space and coupled to the rear surface of the tub (100) to supply an additive to the tub (100).
2. The cup washer (1000) of claim 1, further comprising:

a front panel (21) configured to cover a front side of the tub (100); and
a rear panel (22) configured to cover a rear side of the drying part (400) and connected to an outside air inlet (401) of the drying part (400).

3. The cup washer (1000) of claim 2, wherein the drying part (400) comprises:

a blowing fan (410) configured to suction the outside air through the outside air inlet (401) and to blow the air toward the tub (100); and
a drying duct (420) comprising one end coupled to the blowing fan (410) and an internal flow path (F10) defined along a surface thereof parallel to the rear panel (22).

4. The cup washer (1000) of claim 3, wherein the drying part (400) further comprises a tub connection pipe (430) extending from a remaining end of the drying duct (420) and connected to the rear surface of the tub (100) through a tub connector (431) provided at an end thereof.

5. The cup washer (1000) of claim 4, wherein the blowing fan (410) is disposed at a relatively higher location than the tub connector (431).

6. The cup washer (1000) of claim 4 or 5, wherein the drying part (400) further comprises an air heater (440) disposed in the drying duct (420) configured to heat air passing through the internal flow path (F10), and
wherein the internal flow path (F10) comprises:

a first section (F10a) extending upward from the blowing fan (410);
a second section (F10b) extending laterally from the first section (F10a), the air heater (440) being disposed in the second section (F10b); and
a third section (F10c) extending downward from the second section (F10b) to the tub connection pipe (430).

7. The cup washer (1000) according to any one of claims 4 to 6, wherein the tub connection pipe (430) is provided in a shape in which a height of the tub connection pipe (430) decreases toward the tub connector (431).

8. The cup washer (1000) according to any one of claims 4 to 7, wherein the drying duct (420) comprises:

a first assembly (421) configured to cover a front side of the internal flow path (F10); and
a second assembly (422) coupled to the first

- assembly (421) to cover a rear side of the internal flow path (F10), and
wherein the tub connection pipe (430) is inserted and coupled to coupled ends of the first assembly (421) and the second assembly (422). 5
9. The cup washer (1000) according to any one of claims 4 to 8, wherein the tub connection pipe (430) has an integrated tubular shape and extends from the remaining end of the drying duct (420). 10
10. The cup washer (1000) according to any one of claims 4 to 9, wherein the tub connection pipe (430) is fitted and coupled to the remaining end of the drying duct (420). 15
11. The cup washer (1000) according to any one of claims 4 to 10, wherein the remaining end of the drying duct (420) is placed at a relatively higher location than a maximum water level in the tub (100). 20
12. The cup washer (1000) according to any one of claims 4 to 10, wherein the remaining end of the drying duct (420) is disposed at a relatively lower position than the outside air inlet (401). 25
13. The cup washer (1000) according to any one of claims 8 to 12, further comprising:
- a front frame (11) disposed on the front side of the tub (100) and configured to support the front panel (21); and 30
- a rear frame (12) disposed on the rear side of the drying part (400) and configured to support the rear panel (22). 35
14. The cup washer (1000) of claim 13, wherein the drying part (400) is coupled to and supported by the rear frame (12). 40
15. The cup washer (1000) of claim 13 or 14, wherein the second assembly (422) is fastened and coupled to the rear frame (12). 45
- Amended claims in accordance with Rule 137(2) EPC.**
1. A cup washer (1000) comprising:
- a tub (100) configured to provide a space in which a cup accommodated therein can be washed; 50
- a drying part (400) arranged on the rear side of the tub (100) to be spaced apart from each other by a first space, wherein a portion of the drying part (400) is connected to a rear surface of the tub (100), and wherein the drying part (400) is configured to heat incoming outside air by heat 55
- exchange and then supply the heated air to the tub (100) through the portion of the drying part (400); and
an additive supply part (600) disposed in the first space and coupled to the rear surface of the tub (100) to supply an additive to the tub (100).
2. The cup washer (1000) of claim 1, further comprising:
- a front panel (21) configured to cover a front side of the tub (100); and
a rear panel (22) configured to cover a rear side of the drying part (400) and connected to an outside air inlet (401) of the drying part (400).
3. The cup washer (1000) of claim 2, wherein the drying part (400) comprises:
- a blowing fan (410) configured to suction the outside air through the outside air inlet (401) and to blow the air toward the tub (100); and
a drying duct (420) comprising a first end coupled to the blowing fan (410) and an internal flow path (F10) defined along a surface thereof parallel to the rear panel (22).
4. The cup washer (1000) of claim 3, wherein the drying part (400) further comprises a tub connection pipe (430) extending from a second end of the drying duct (420) and connected to the rear surface of the tub (100) through a tub connector (431) provided at an end thereof.
5. The cup washer (1000) of claim 4, wherein the blowing fan (410) is located higher than the tub connector (431).
6. The cup washer (1000) of claim 4 or 5, wherein the drying part (400) further comprises an air heater (440) disposed in the drying duct (420) configured to heat air passing through the internal flow path (F10), and
wherein the internal flow path (F10) comprises:
- a first section (F10a) extending upward from the blowing fan (410);
a second section (F10b) extending laterally from the first section (F10a), the air heater (440) being disposed in the second section (F10b); and
a third section (F10c) extending downward from the second section (F10b) to the tub connection pipe (430),
wherein the air passing through the internal flow path (F10) is moved upward along the first section (F10a), then the air moved upward along the first section (F10a) is moved laterally along the

second section (F10b) and then the air moved laterally along the second section (F10b) is moved downward along the third section (F10c).

7. The cup washer (1000) according to any one of claims 4 to 6, wherein the tub connection pipe (430) extends downward between the second end of the drying duct (420) and the tub connector (431). 5

8. The cup washer (1000) according to any one of claims 4 to 7, wherein the drying duct (420) comprises: 10
 - a first assembly (421) configured to cover a front side of the internal flow path (F10); and 15
 - a second assembly (422) coupled to the first assembly (421) to cover a rear side of the internal flow path (F10), and
 - wherein the tub connection pipe (430) is inserted and coupled to coupled ends of the first assembly (421) and the second assembly (422). 20

9. The cup washer (1000) according to any one of claims 4 to 8, wherein the tub connection pipe (430) has an integrated tubular shape and extends from the second end of the drying duct (420). 25

10. The cup washer (1000) according to any one of claims 4 to 9, wherein the tub connection pipe (430) is fitted and coupled to the second end of the drying duct (420). 30

11. The cup washer (1000) according to any one of claims 4 to 10, wherein the second end of the drying duct (420) is placed at a relatively higher location than a maximum water level in the tub (100). 35

12. The cup washer (1000) according to any one of claims 4 to 10, wherein the second end of the drying duct (420) is disposed at a relatively lower position than the outside air inlet (401). 40

13. The cup washer (1000) according to any one of claims 8 to 12, further comprising: 45
 - a front frame (11) disposed on the front side of the tub (100) and configured to support the front panel (21);
 - and a rear frame (12) disposed on the rear side of the drying part (400) and configured to support the rear panel (22). 50

14. The cup washer (1000) of claim 13, wherein the drying part (400) is coupled to and supported by the rear frame (12).

15. The cup washer (1000) of claim 13 or 14, wherein the second assembly (422) is fastened and coupled to the rear frame (12). 55

FIG. 1

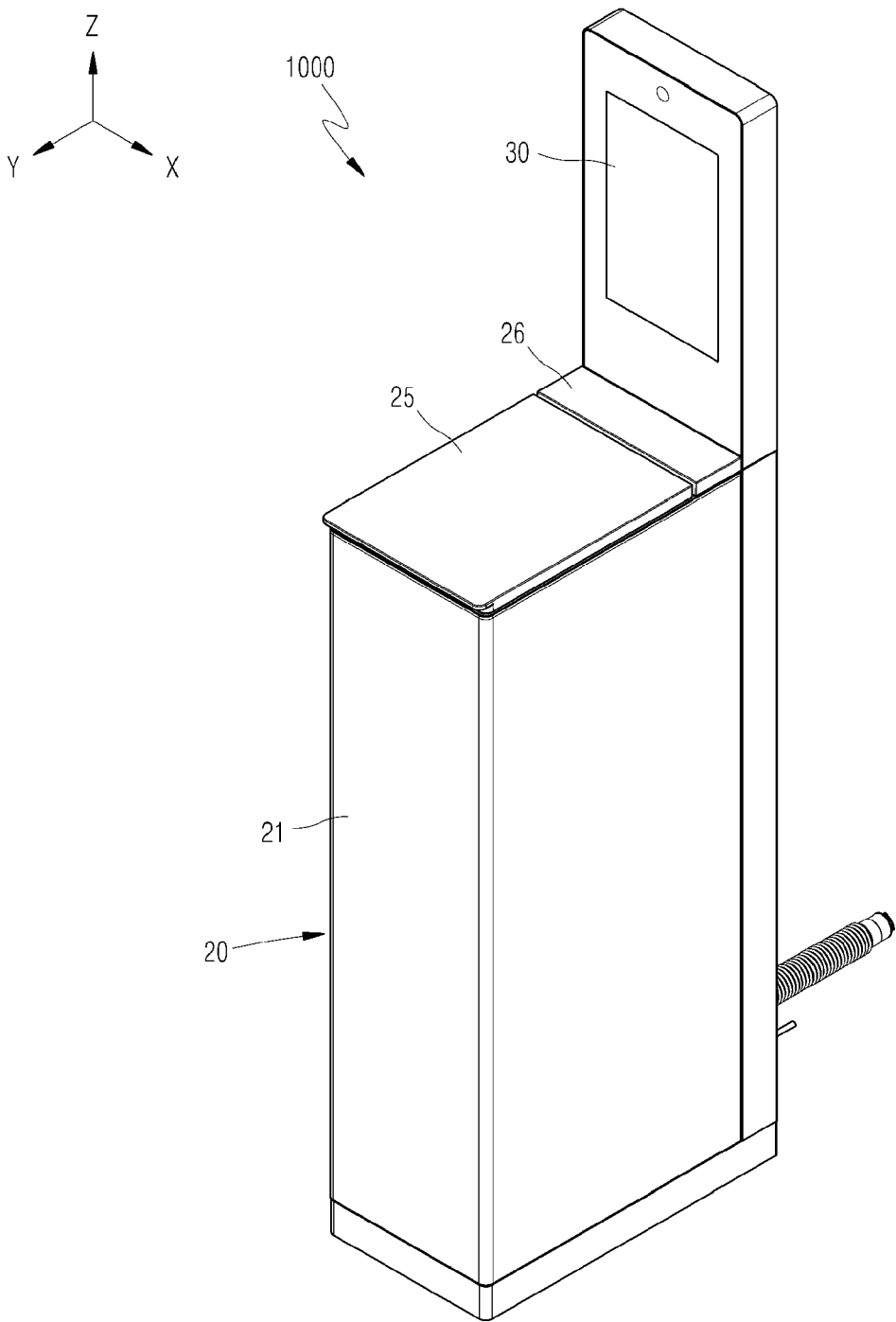


FIG. 2

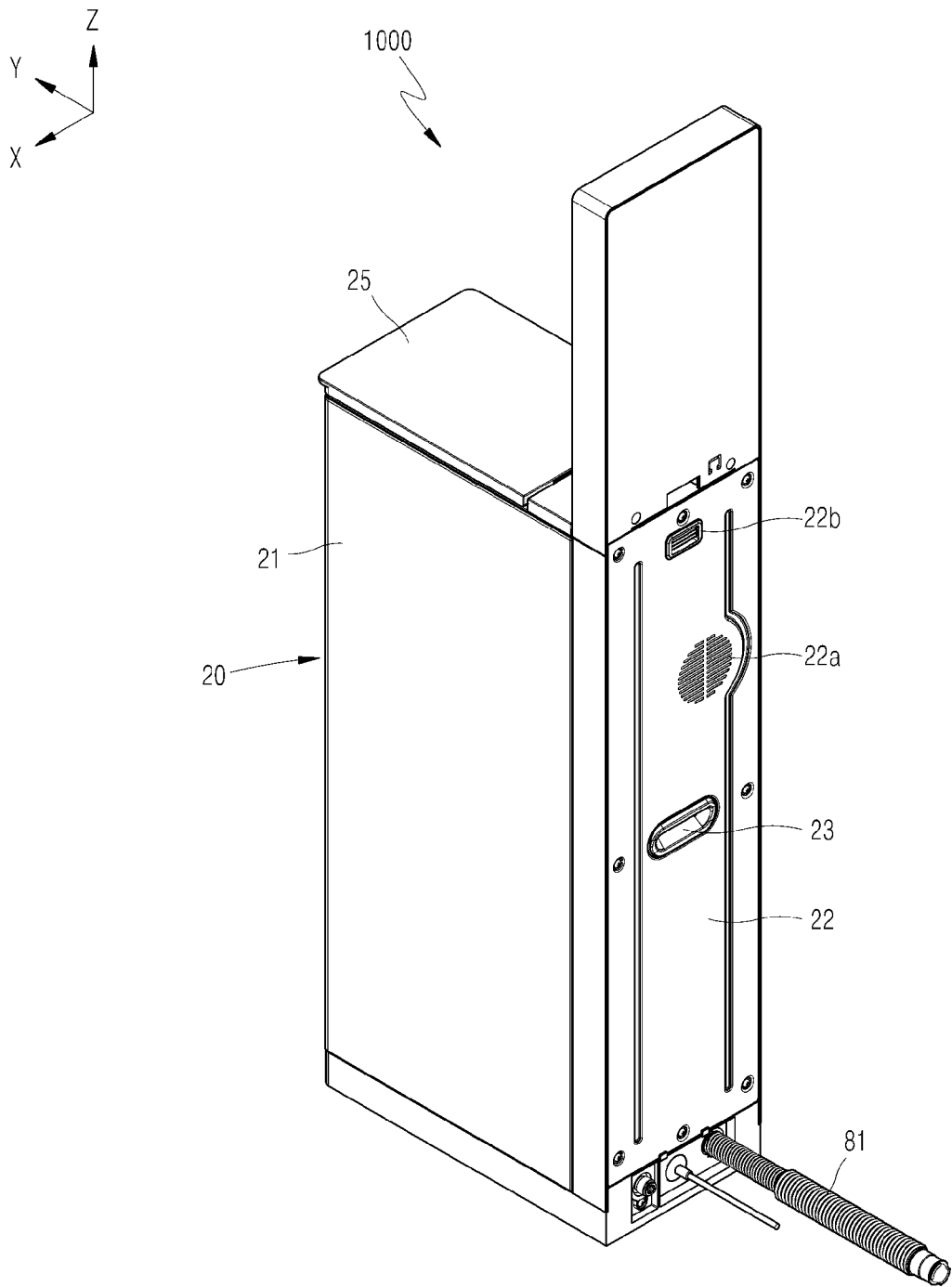


FIG. 3

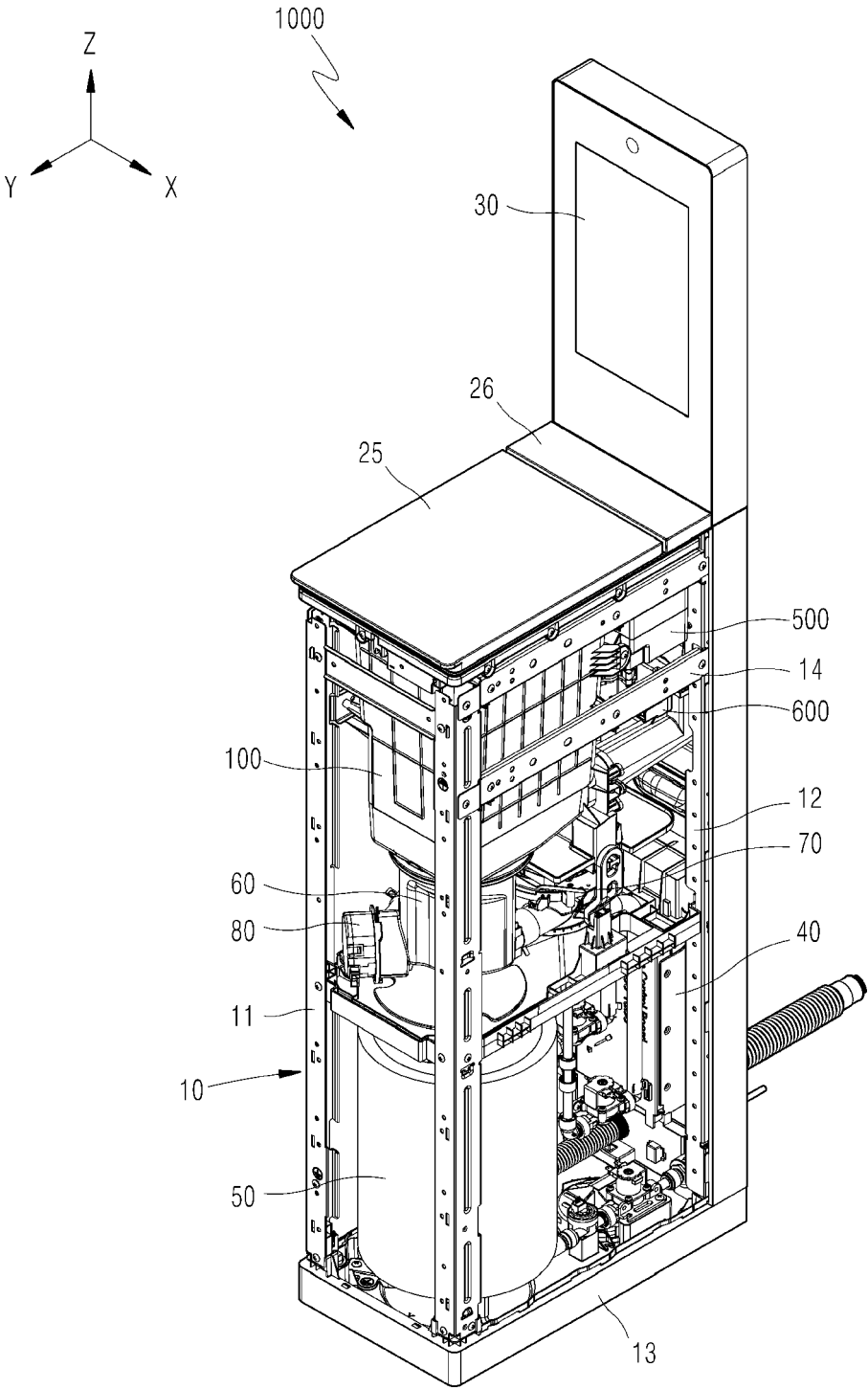


FIG. 4

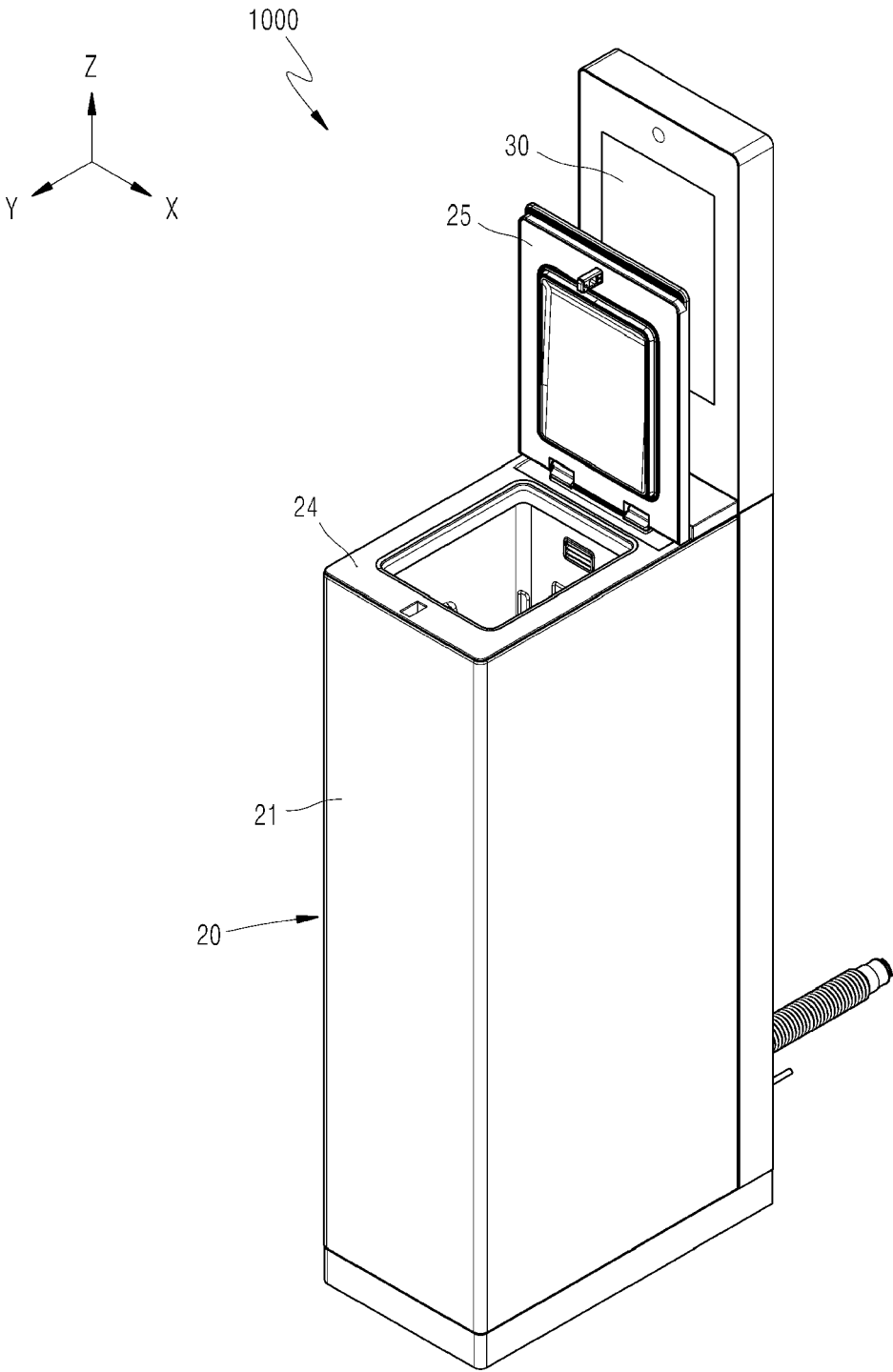


FIG. 5

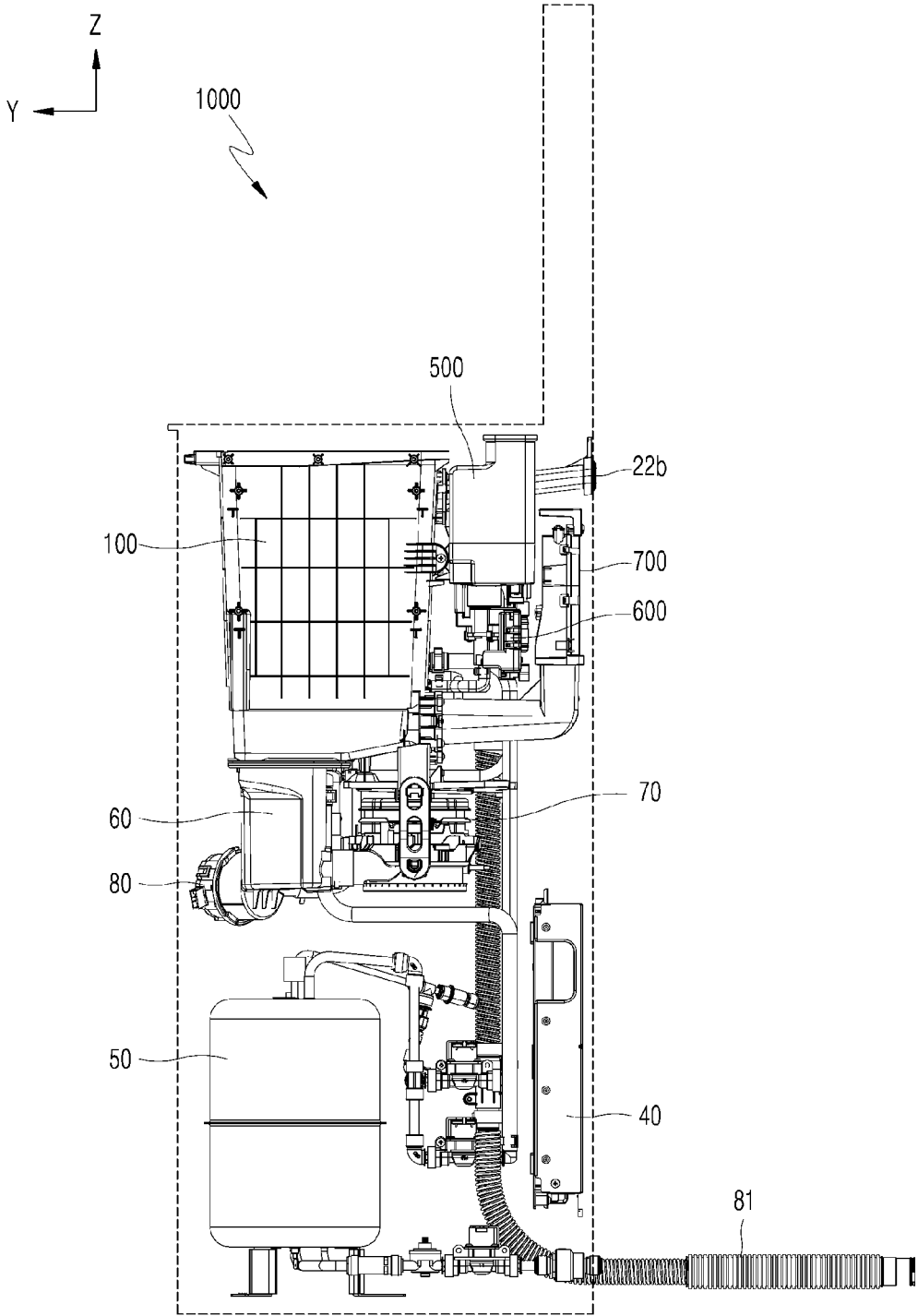


FIG. 6

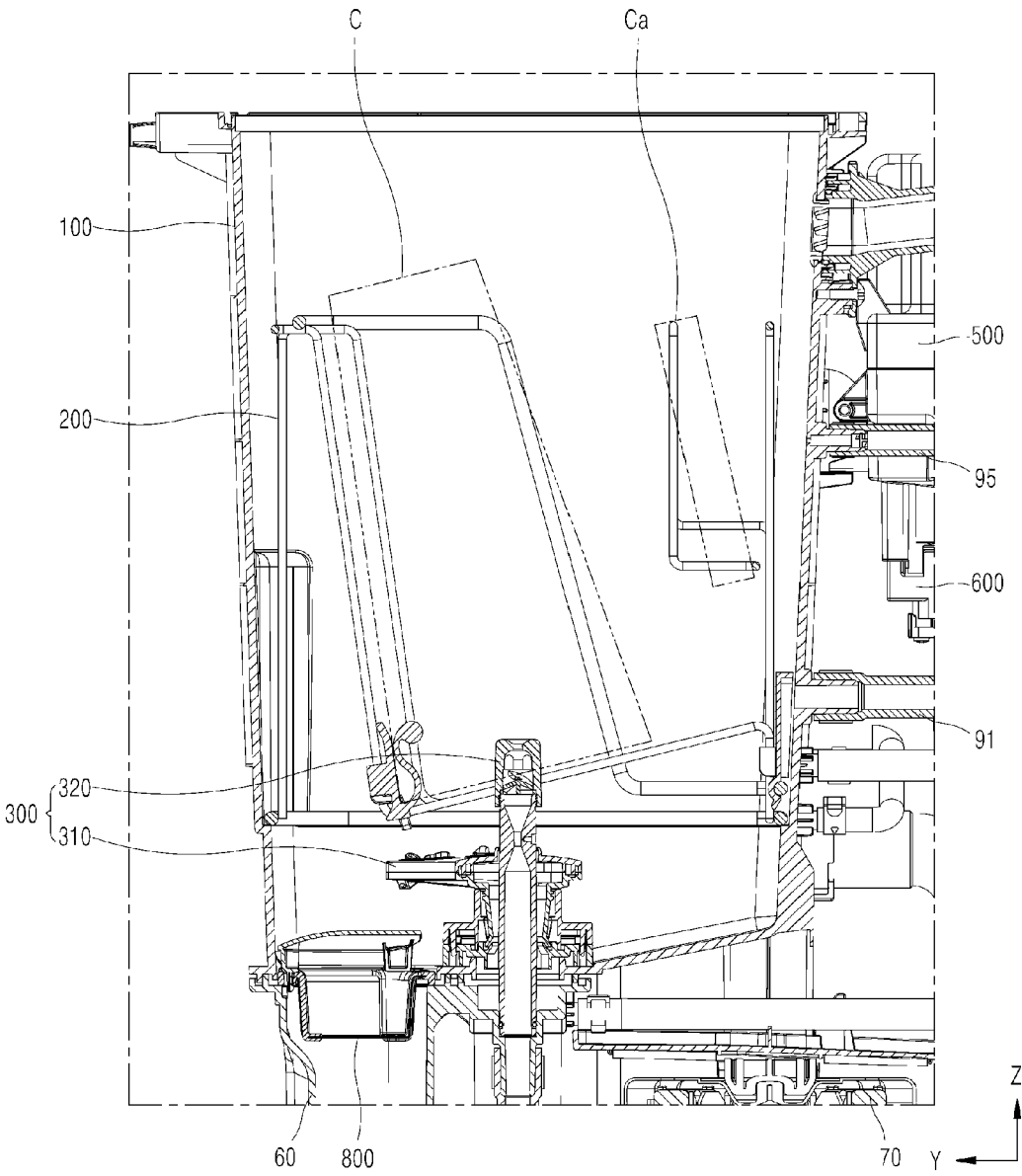


FIG. 7

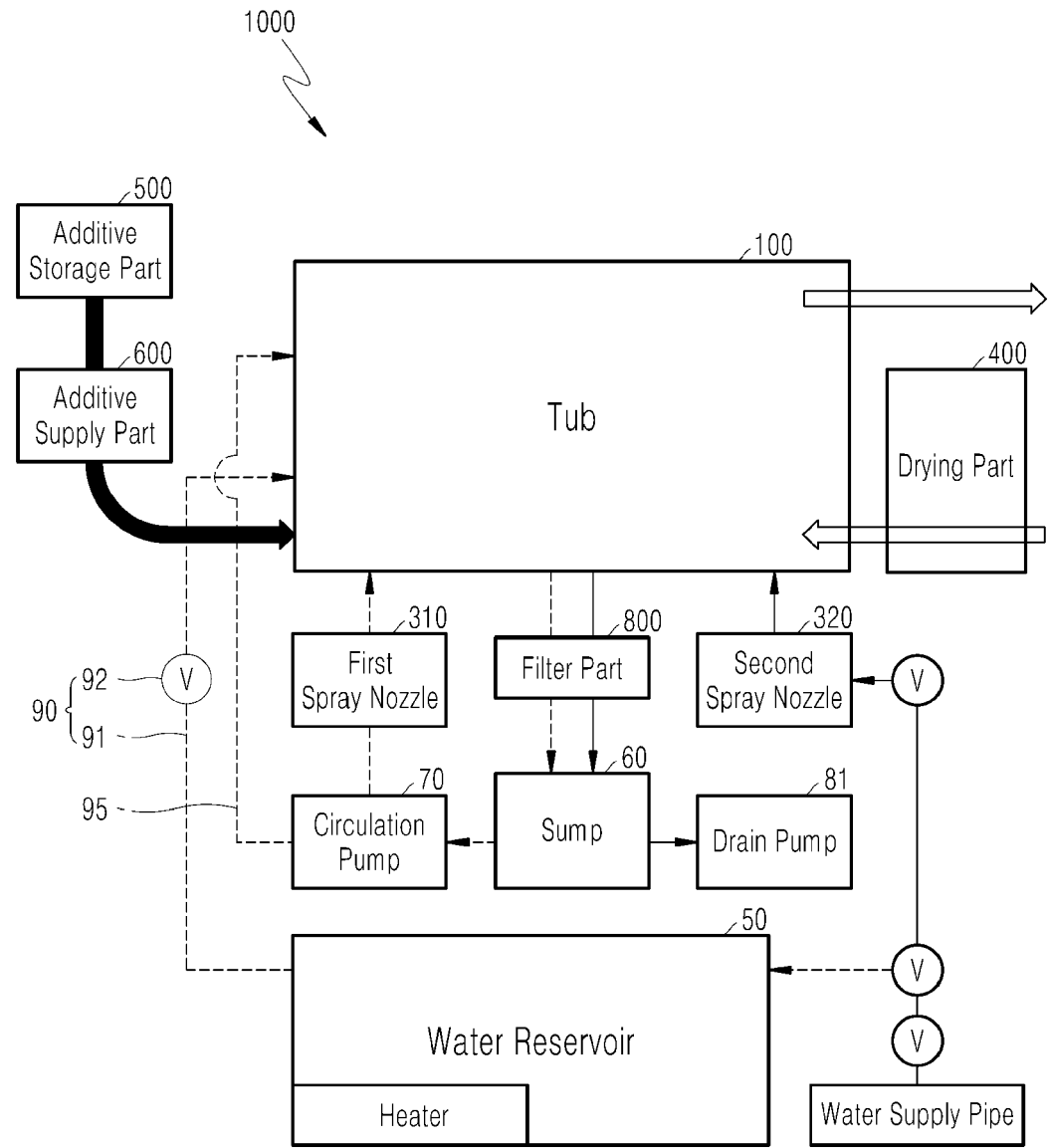


FIG. 8

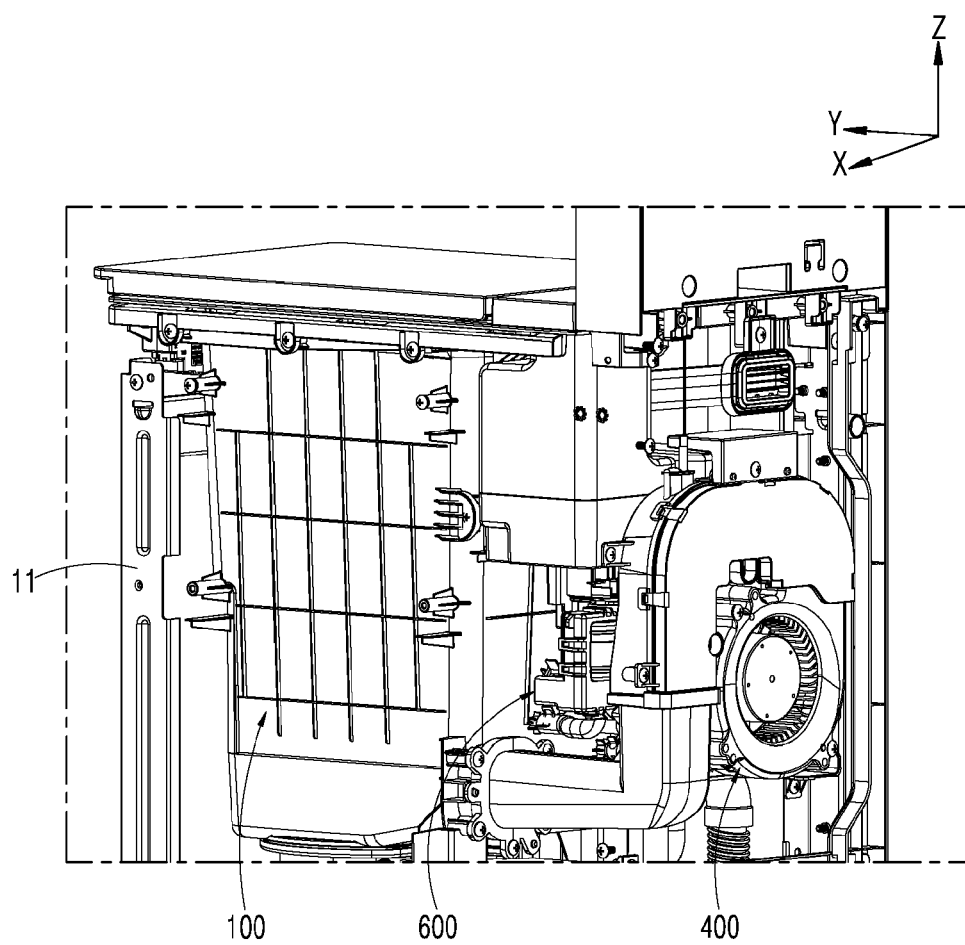


FIG. 9

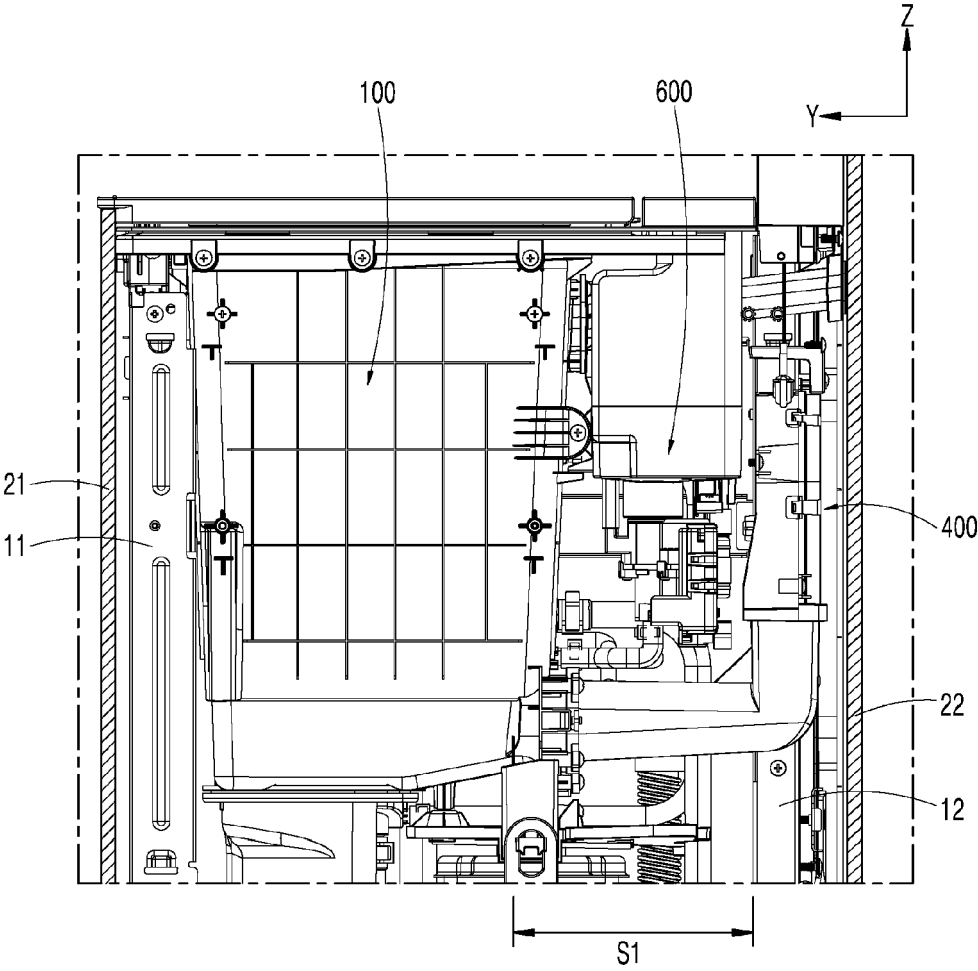


FIG. 10

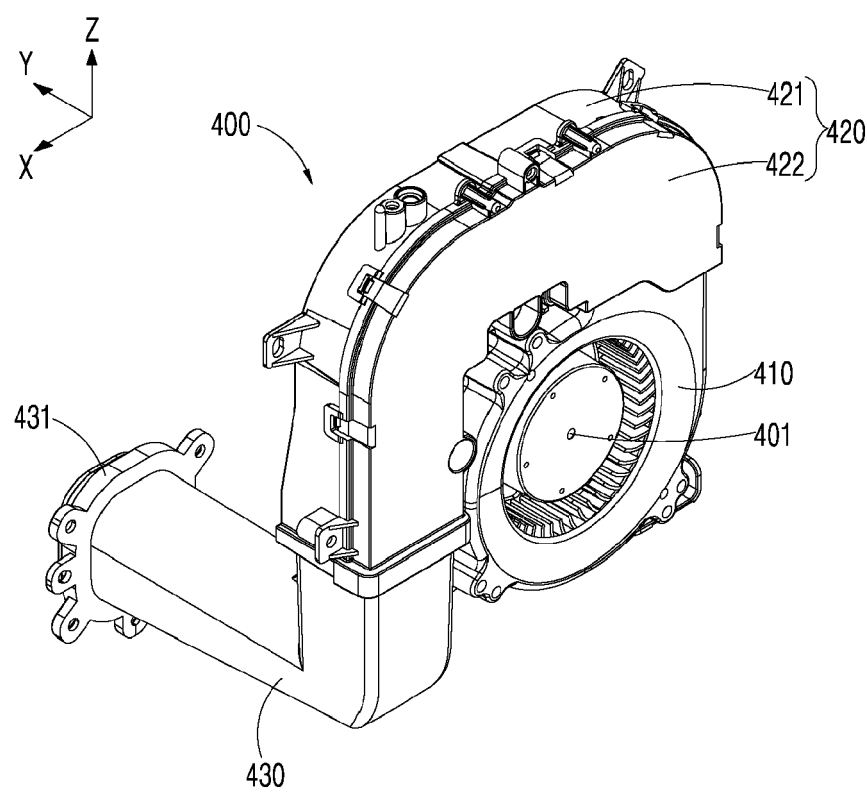


FIG. 11

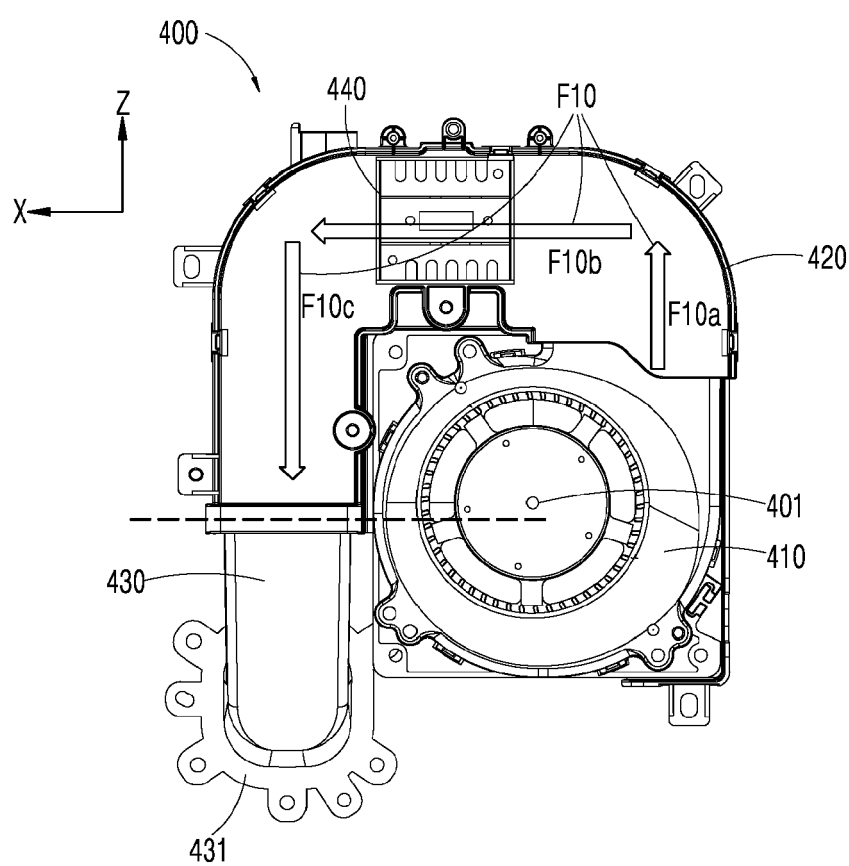


FIG. 12

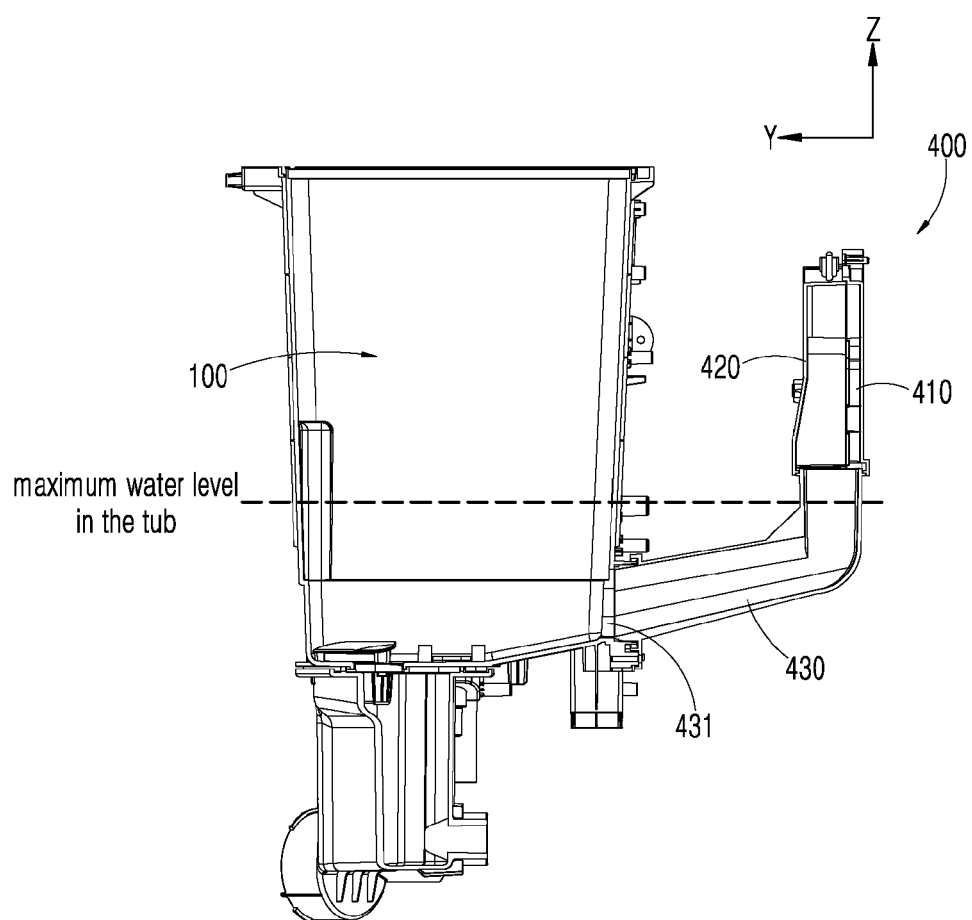


FIG. 13

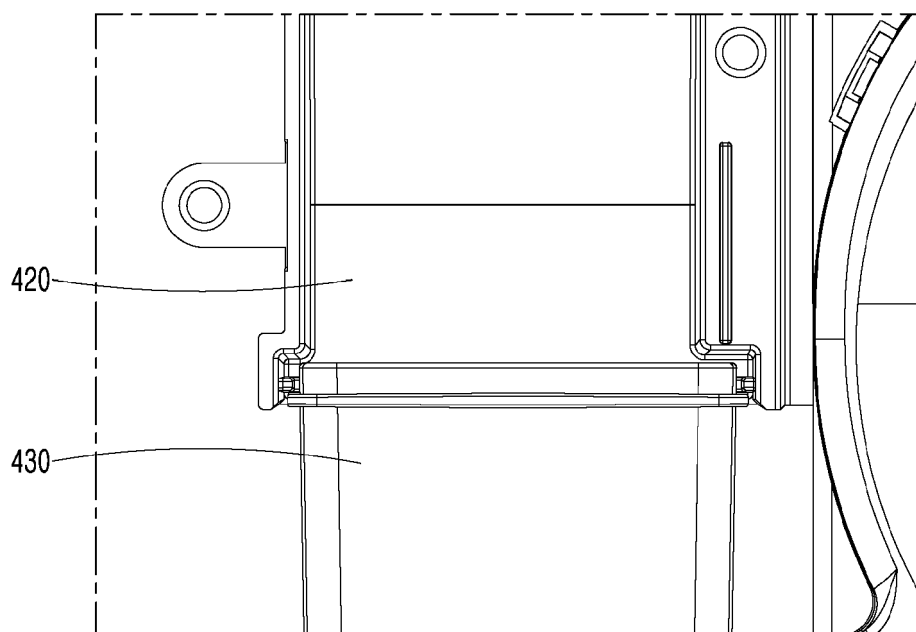


FIG. 14

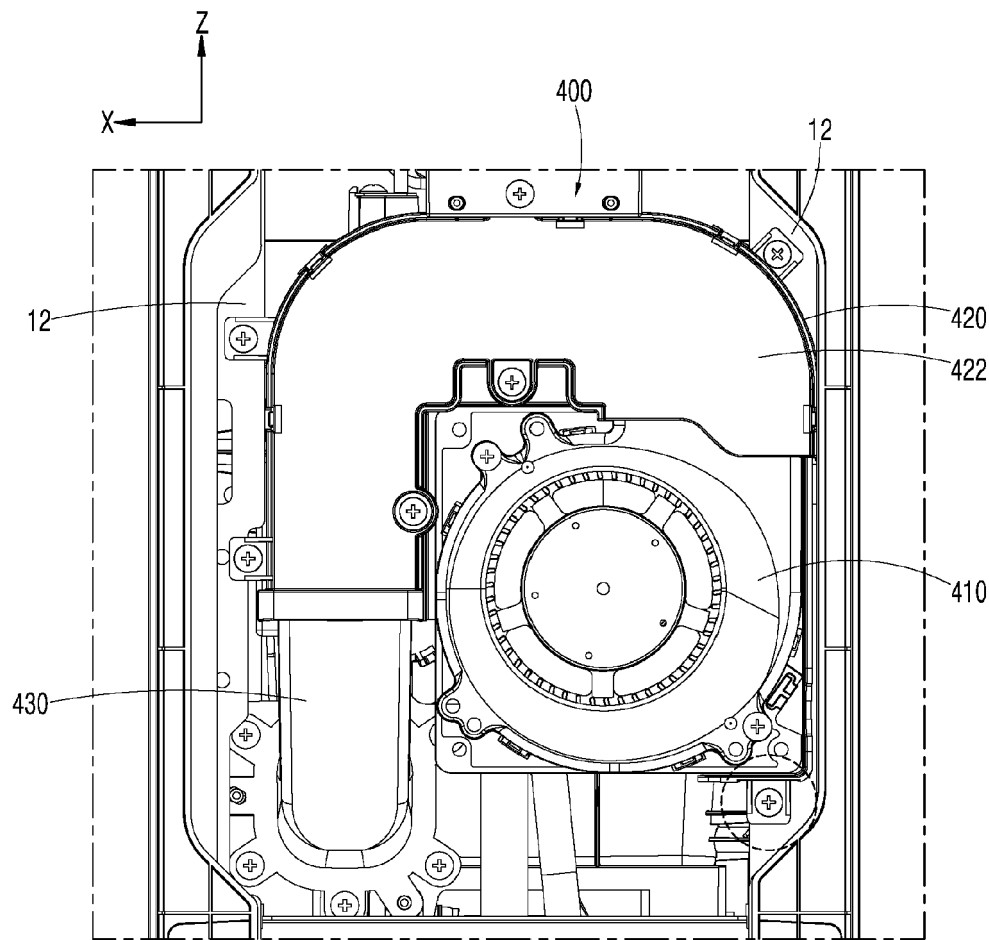


FIG. 15

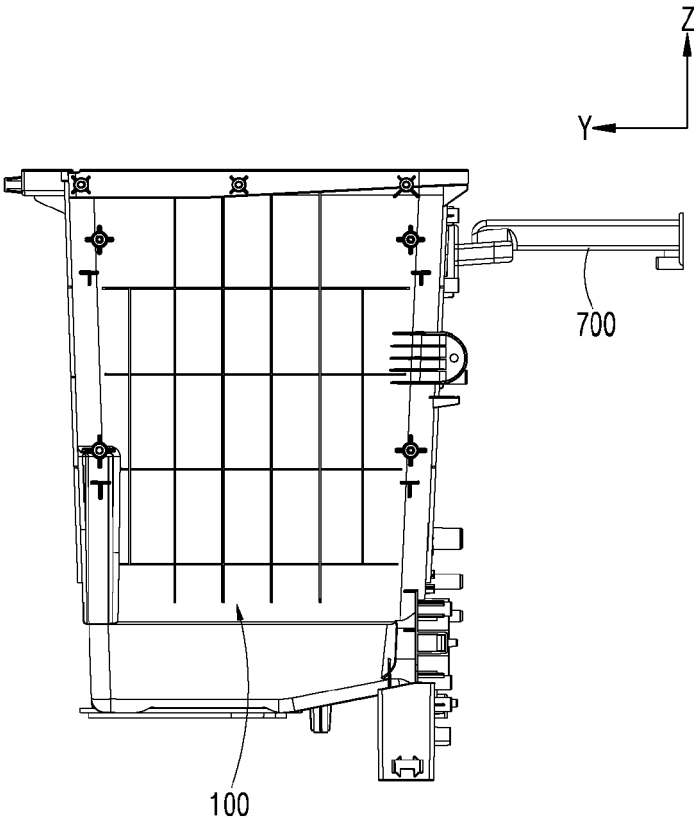


FIG. 16

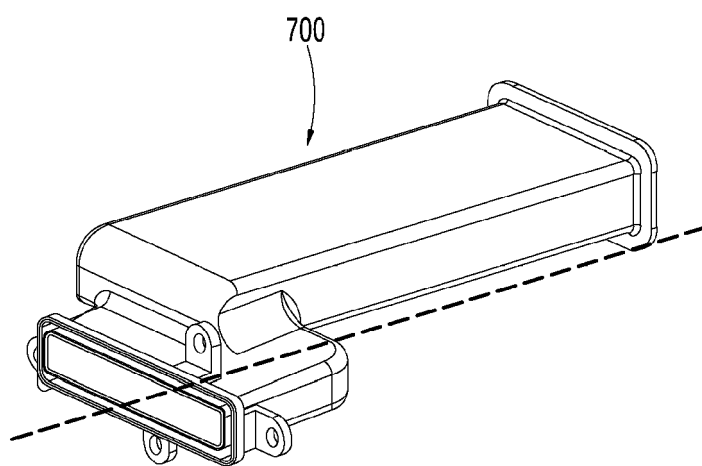
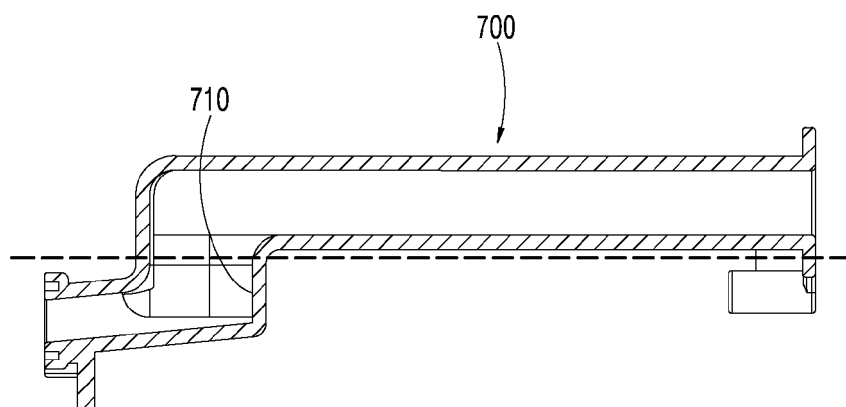


FIG. 17





EUROPEAN SEARCH REPORT

Application Number

EP 24 16 9148

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A	US 11 786 100 B2 (ILLINOIS TOOL WORKS [US]) 17 October 2023 (2023-10-17) * figures *	1-15	
A	WO 2009/008828 A1 (ASKO CYLINDA AB [SE]; PERSSON THOMAS [SE]; KARLSSON KENT [SE]) 15 January 2009 (2009-01-15) * claims; figures *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L D06F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		27 September 2024	Stroppa, Giovanni
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