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Park et al.

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(54) **DISHWASHER**

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A47L 15/42 (2006.01)

(52) **U.S. Cl.**
CPC ***A47L 15/4214*** (2013.01); ***A47L 15/4209*** (2016.11); ***A47L 15/4217*** (2013.01); ***A47L 15/4244*** (2013.01); ***A47L 15/4274*** (2013.01); ***A47L 15/4291*** (2013.01); *A47L 2401/14* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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(57) **ABSTRACT**

Disclosed herein is a dishwasher. The dishwasher includes a tub forming a washing chamber and a water tank mounted on an outer circumferential surface of the tub to communicate with the tub. The water tank includes a reservoir provided to store washing water and including a washing water outlet, a partition wall forming one side surface of the reservoir, an outside air inlet provided to maintain an internal pressure, a flow path connecting the reservoir to the outside air inlet, and an inclined rib having an inclination with respect to a water surface of the washing water in the reservoir and provided to form an air pocket.

14 Claims, 15 Drawing Sheets

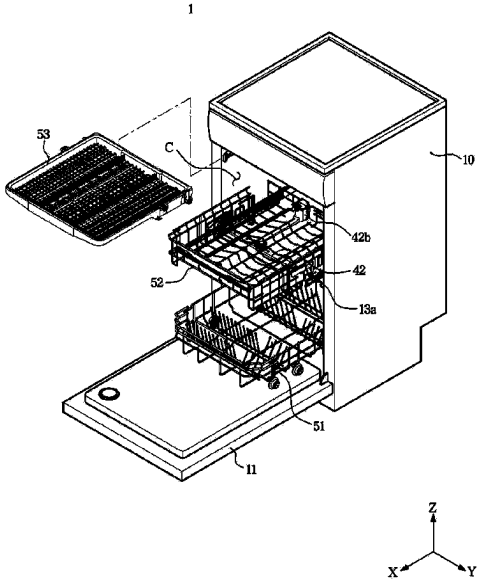

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FIG. 1

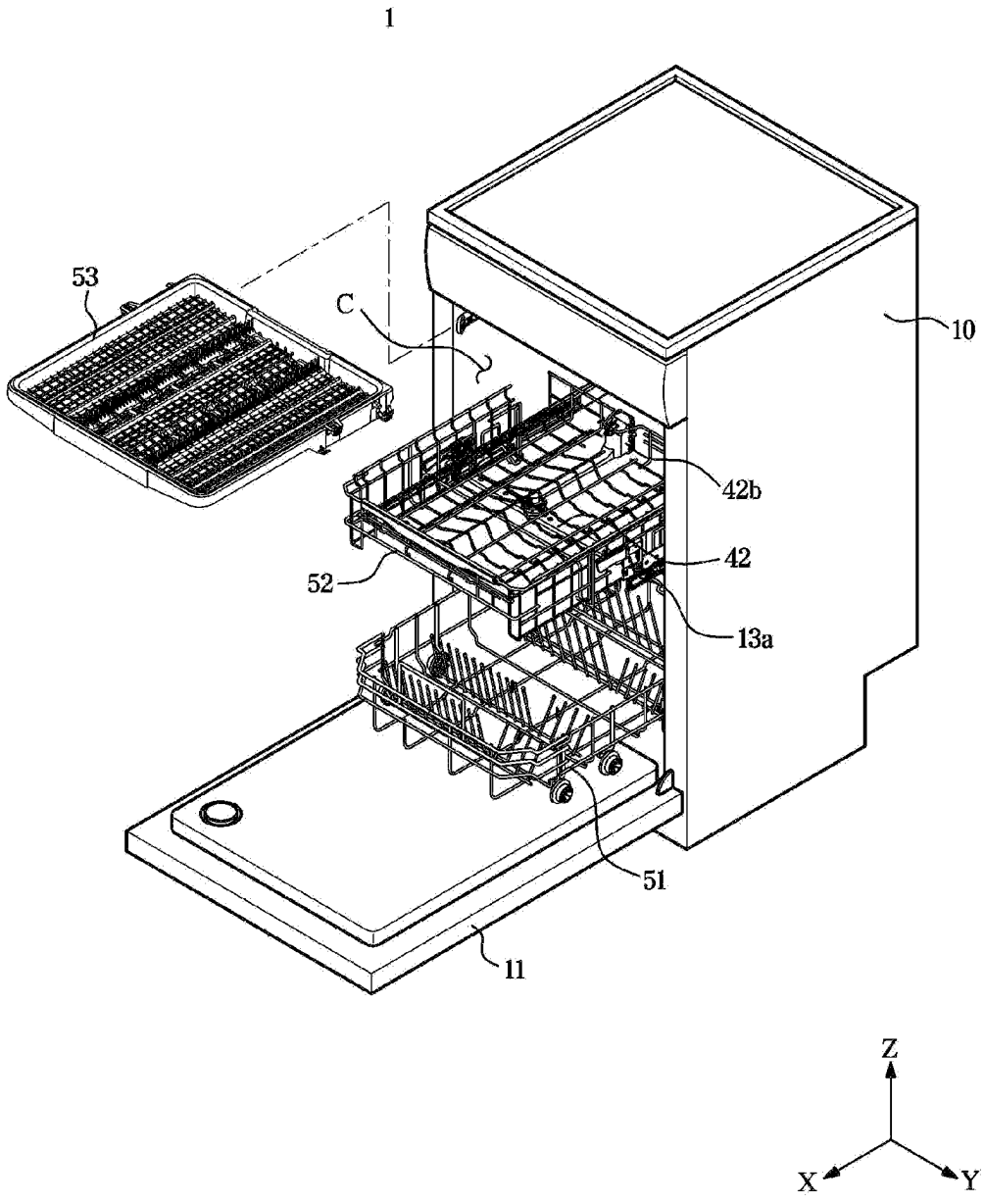

FIG. 2

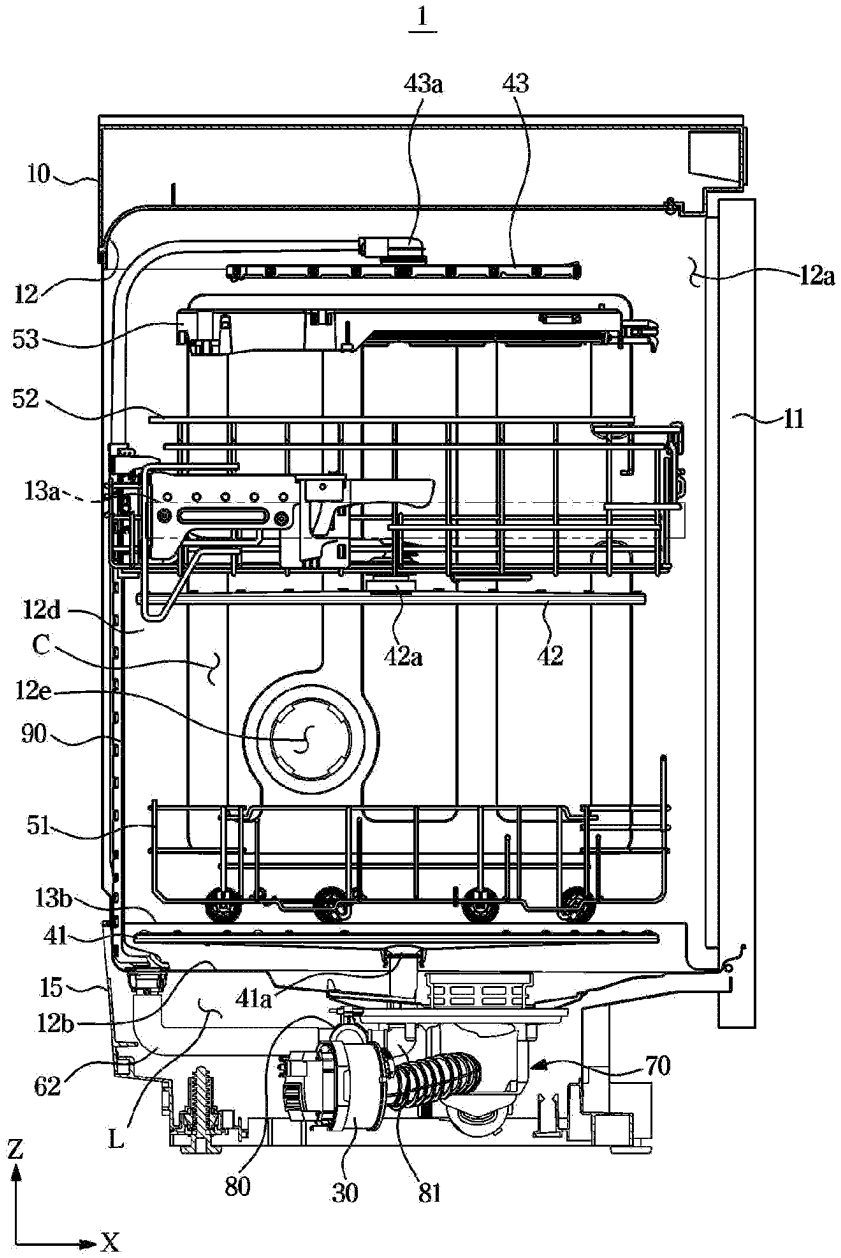
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FIG. 3

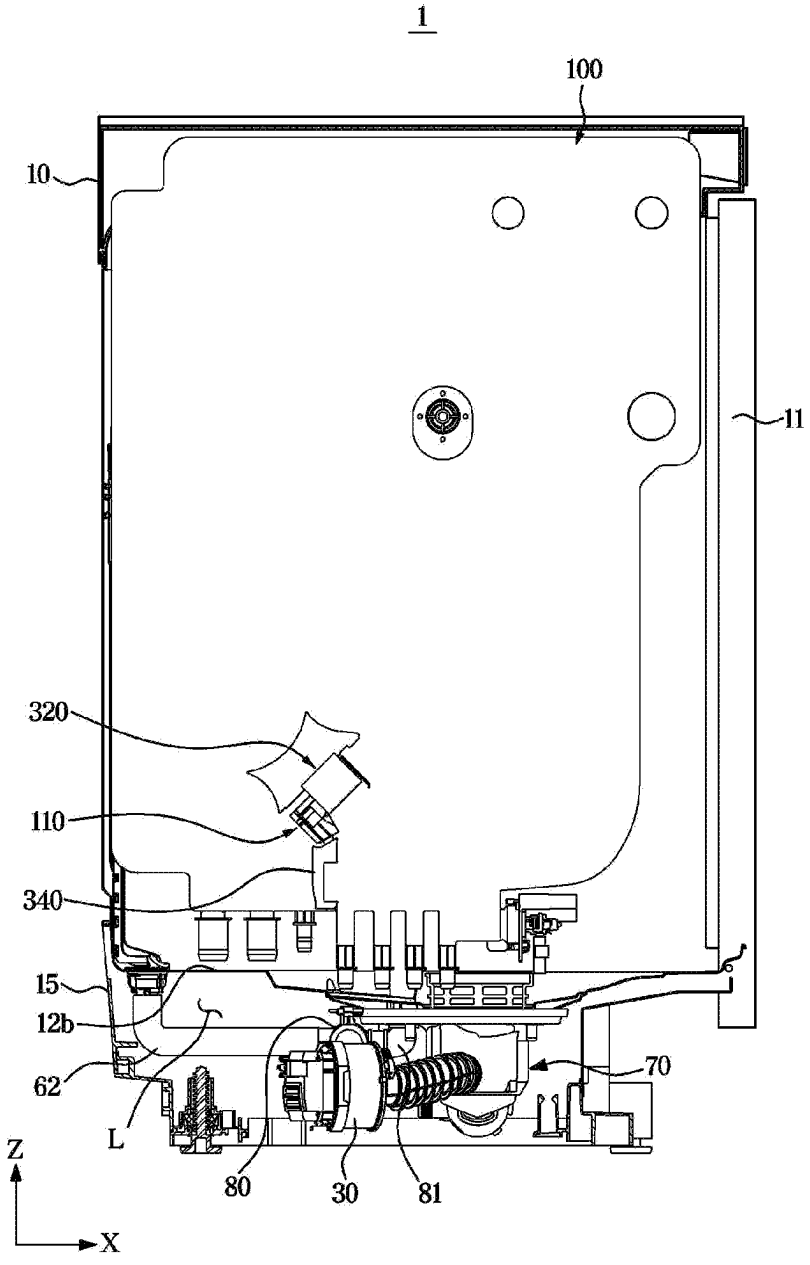
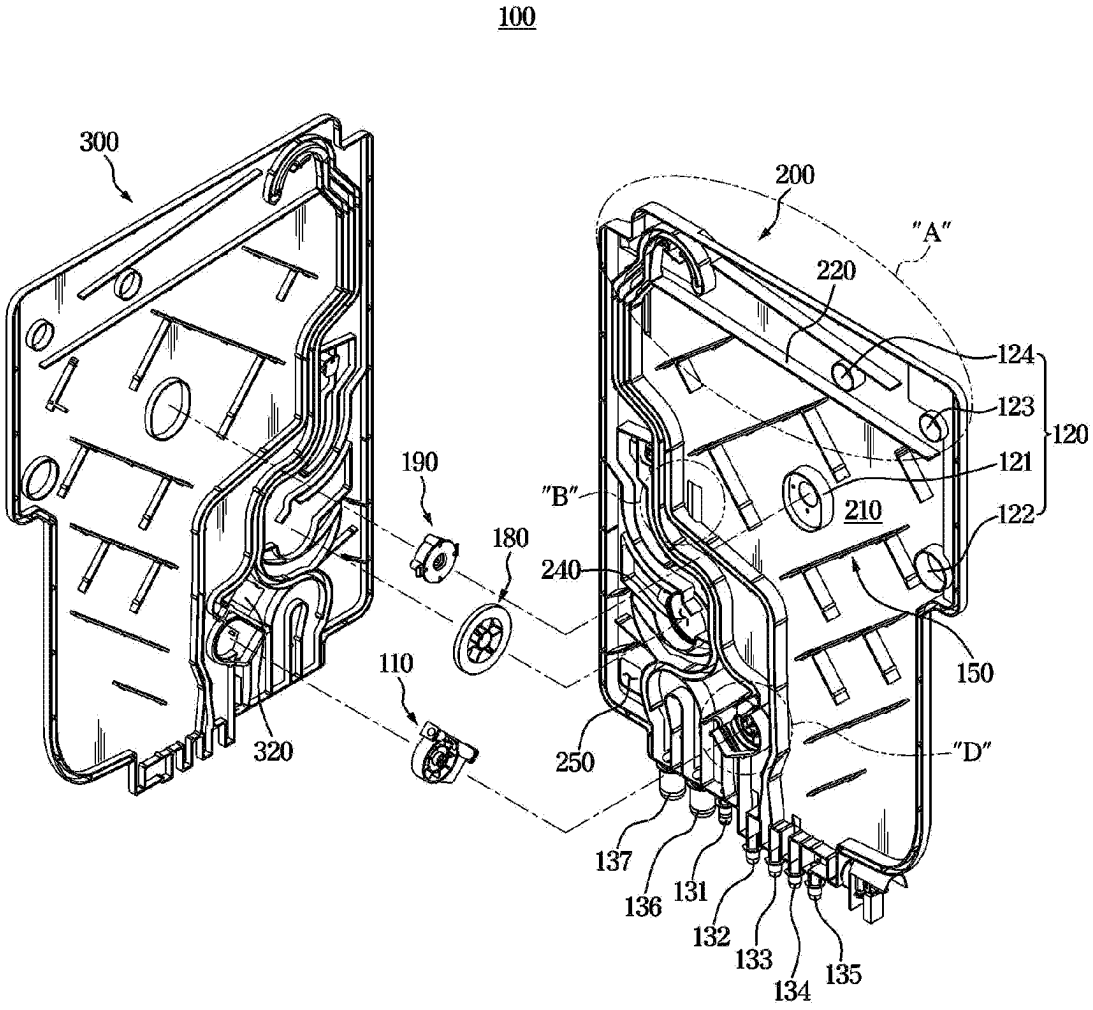


FIG. 4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"D"
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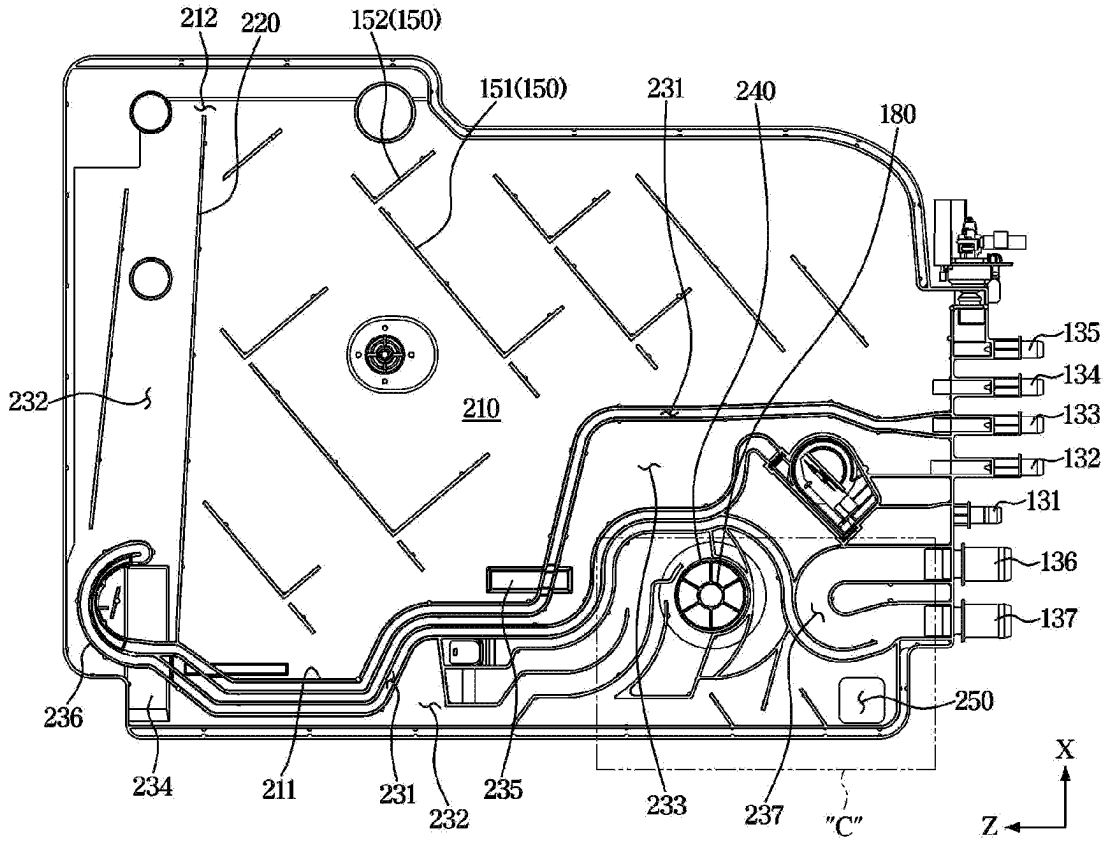
136
131
132
133
134
135

FIG. 5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211
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232
235
233
237
"C"
X
Z

FIG. 6

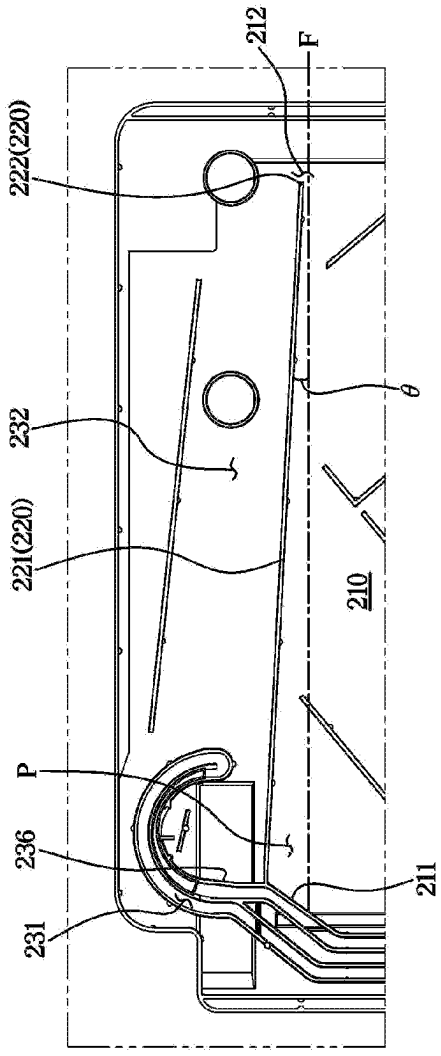

FIG. 7

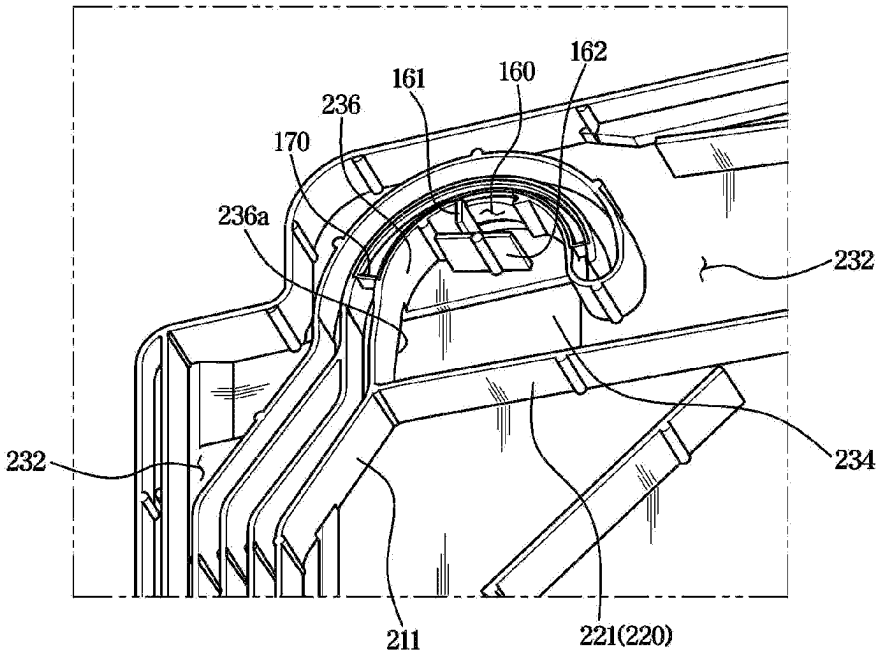

FIG. 8

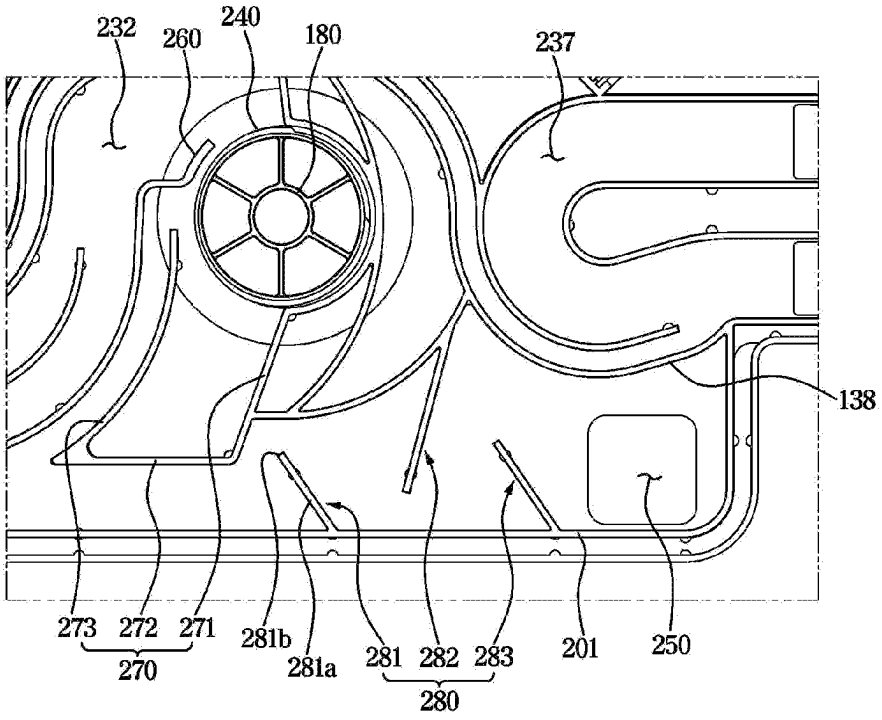
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FIG. 9

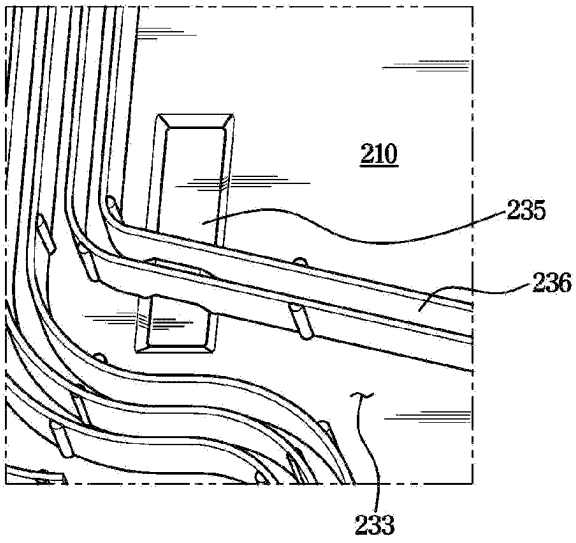


FIG. 10

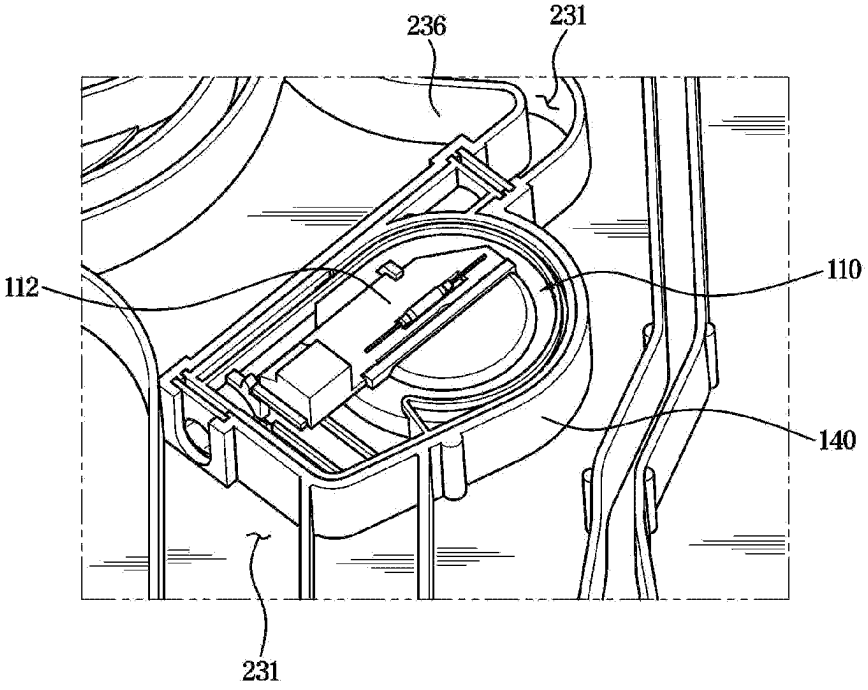


FIG. 11

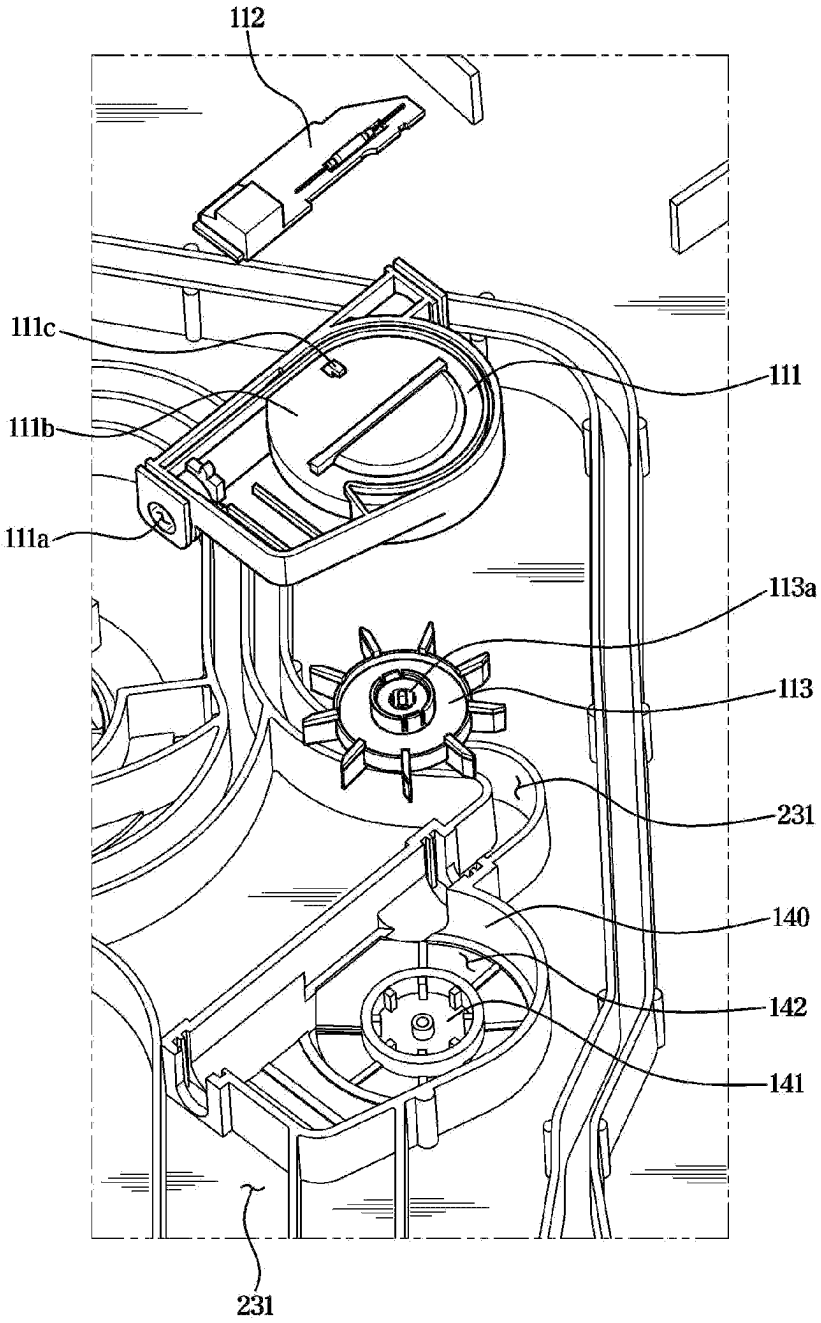


FIG. 12

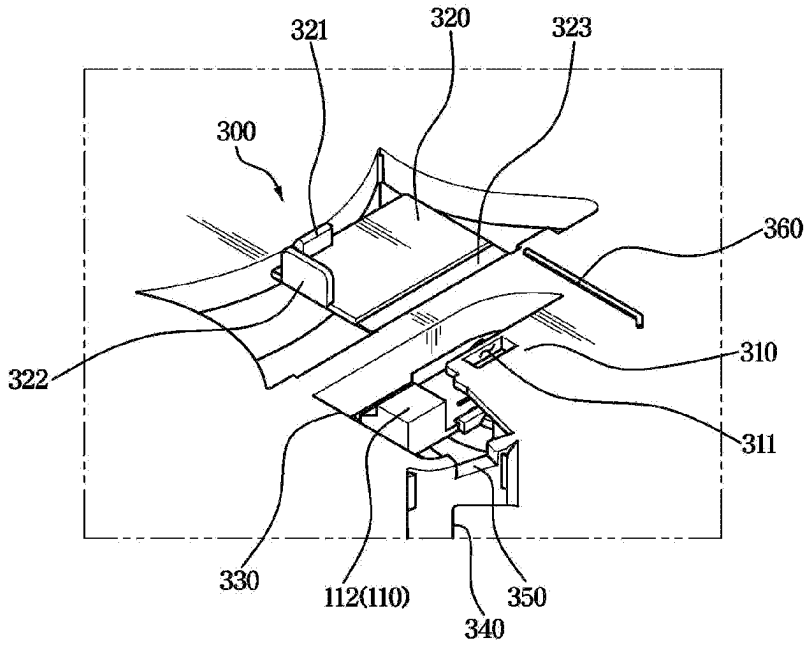


FIG. 13

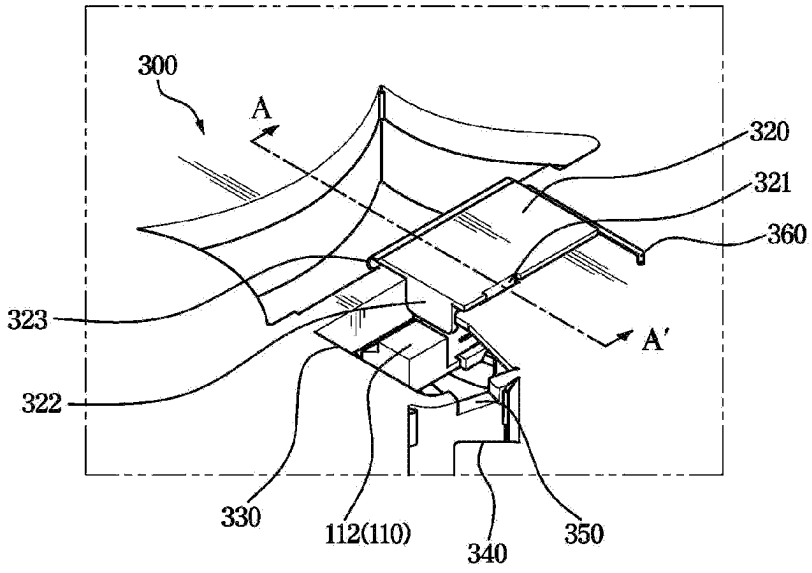


FIG. 14

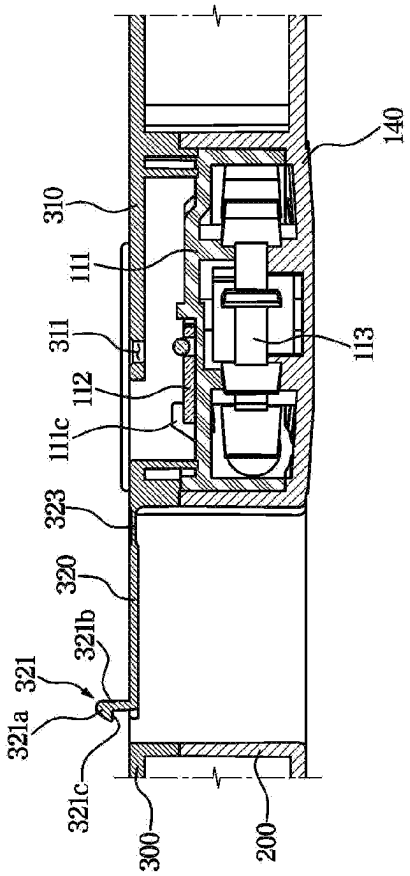
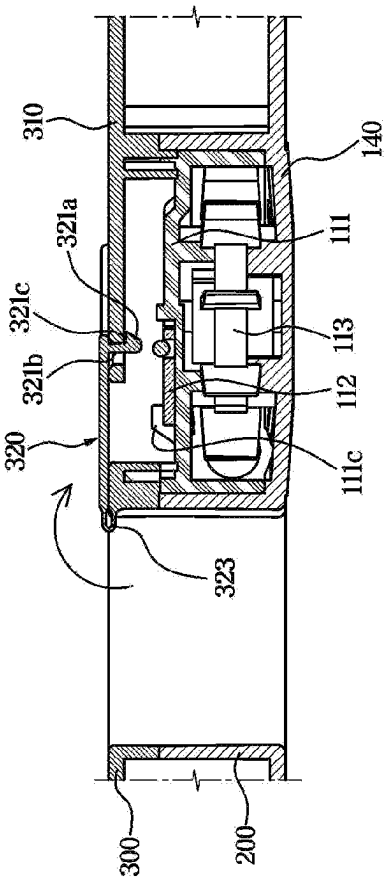


FIG. 15



DISHWASHER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of International Application PCT/KR2021/007811, filed Jun. 22, 2021, and claims foreign priority to Korean application 10-2020-0090728, filed Jul. 22 2020, the disclosures of which are incorporated herein by reference in their entireties.

BACKGROUND

1. Field

The present disclosure relates to a dishwasher, and more particularly, to a dishwasher including an improved water tank structure.

2. Description of Related Art

In general, a dishwasher is a device for washing and drying stored dishes by spraying washing water at a high pressure. The dishwasher operates such that washing water is sprayed at high pressure into a washing tub in which the dishes are stored, and the sprayed washing water comes into contact with the dishes to wash foreign substances such as food waste on a surface of the dishes.

Particularly, the dishwasher includes a tub in which a washing tub is formed and a sump mounted on a bottom of the tub to store washing water. Washing water is moved to a spray nozzle by a pumping action of a sump pump mounted inside the sump, and the washing water moved to the spray nozzle is sprayed at a high pressure through a spray hole formed at an end of the spray nozzle. The washing water sprayed at a high pressure hits a surface of the dishes, and foreign substances, such as food waste, on the dishes falls to a bottom of the tub.

The dishwasher is provided with a water tank that delivers the supplied washing water to the sump. The water tank may previously store water used for washing and set cold water of a water supply to a temperature corresponding to the room temperature. Accordingly, it is possible to reduce energy used to heat the washing water.

However, when the dishwasher is laid down during the after-sales service, the washing water stored in the water tank may flow out into an outside air inlet formed in the water tank to maintain an internal pressure.

In general, a flow meter configured to detect a flow rate of water supplied to the water tank and a printed circuit board (PCB) coupled to the flow meter are accommodated in the water tank such that the flow meter, the PCB and the water tank are fused integrally with each other so as not to be separated from each other. Accordingly, if a defect occurs in the PCB, the entire water tank may need to be replaced.

SUMMARY

One aspect of the present disclosure provides a dishwasher including a tub forming a washing chamber, a water tank mounted on an outer circumferential surface of the tub and including a reservoir in which washing water is storable, and an inclined rib configured to, with washing water stored in the reservoir, have an inclination with respect to a water surface of the washing water to allow an air pocket to be formed under the inclined rib. The dishwasher may further include a sump configured to receive washing water stored in the reservoir and to supply the received washing water to the tub.

The water tank may further include a partition wall forming a side of the reservoir. The inclined rib may include an extension connected to the partition wall, and a free end at one end of the extension to allow washing water in the reservoir to flow to an upper portion of the inclined rib.

The inclined rib may be inclined to allow the extension to be positioned higher than the free end.

The partition wall, the extension, and the water surface of the washing water may form a closed space, thereby forming the air pocket.

The water tank may further include a first flow path along which washing water is suppliable to the water tank from an outside. The partition wall may form a portion of a flow path wall forming the first flow path.

The water tank may further include a tub connection port formed to communicate with the tub, an outside air inlet, and a second flow path connecting the reservoir, the tub connection port, and the outside air inlet to allow air to flow.

The inclined rib may be provided to trap a portion of the washing water stored in the reservoir in response to the water tank being rotated.

The water tank may further include a water overflow prevention rib extending along a periphery of the tub connection port so as to interfere with a flow of washing water, which overflows from the reservoir, along the second flow path due to the rotation of the water tank.

The water tank may further include a water collecting rib formed between the tub connection port and the outside air inlet so as to collect the washing water in response to the rotation of the water tank.

The water collecting rib may include a first wall extending from the tub connection port to a lateral side of the water tank, a second wall connected to the first wall and extending upward, and a third wall connected to the second wall and extending to an upper side of the tub connection port.

The water tank may further include a plurality of leakage prevention ribs formed between the water collecting rib and the outside air inlet so as to prevent water, which is not collected by the water collecting rib, from leaking to the outside air inlet in response to the rotation of the water tank.

The water tank may further include a flow meter configured to detect a flow rate of washing water supplied to the water tank, a first case in which the flow meter is accommodated, and a second case corresponding to the first case and provided to cover a portion of the flow meter.

The second case may include a folding flange provided to be foldable and including a hook formed on one end of the folding flange. The hook may be coupled to the cover to allow the folding flange to cover the flow meter.

The flow meter may include a body including an impeller, and a printed circuit board (PCB) detachably mounted to the body so as to be connected to a wire. The second case may include a wire hanger formed to be cut so as to guide the wire.

The second case may further include a guard protruding from an outer surface of the second case to prevent moisture from penetrating into the PCB.

Another aspect of the present disclosure provides a dishwasher including a tub forming a washing chamber, and a water tank mounted on an outer circumferential surface of the tub so as to receive washing water from an external water source. The water tank includes a flow meter including a sensor configured to detect a flow rate of supplied washing water, a first case in which the flow meter is accommodated,

and a second case coupled to the first case and including a folding flange provided to cover the flow meter.

The second case may include a cover provided to cover a portion of the flow meter. The folding flange may be formed integrally with the second case so as to be foldable, and a hook coupled to the cover may be formed on one end of the folding flange.

The flow meter may include a body including an impeller, and a printed circuit board (PCB) detachably mounted to the body so as to be connected to a wire. The second case may include a wire hanger formed to be cut so as to guide the wire.

Another aspect of the present disclosure provides a dishwasher including a tub forming a washing chamber and a water tank mounted on an outer circumferential surface of the tub to communicate with the tub. The water tank includes a reservoir provided to store washing water and including a washing water outlet, a partition wall forming one side surface of the reservoir, an outside air inlet provided to maintain an internal pressure, a flow path connecting the reservoir to the outside air inlet, and an inclined rib having an inclination with respect to a water surface of the washing water in the reservoir and provided to form an air pocket. The inclined rib includes an extension connected to the partition wall, and a free end provided at one end of the extension to form the washing water outlet.

The free end may be positioned to be lower than the extension.

Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the presented embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

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

FIG. **1** is a perspective view of a dishwasher according to one embodiment of the present disclosure.

FIG. **2** is a schematic side cross-sectional view of the dishwasher according to one embodiment of the present disclosure.

FIG. **3** is a view illustrating a state in which a water tank of the dishwasher according to an embodiment of the present disclosure is mounted on a tub.

FIG. **4** is an exploded view illustrating a configuration of the water tank of the dishwasher according to an embodiment of the present disclosure.

FIG. **5** is a view illustrating a state in which the water tank of the dishwasher according to an embodiment of the present disclosure is rotated.

FIG. **6** is an enlarged view of a part A of FIG. **4**.

FIG. **7** is a view illustrating a portion of a flow path of the dishwasher according to one embodiment of the present disclosure.

FIG. **8** is an enlarged view of a part C of FIG. **5**.

FIG. **9** is an enlarged view of a part B of FIG. **4**.

FIG. **10** is an enlarged view illustrating a state in which a flow meter is mounted on a part D of FIG. **4**.

FIG. **11** is an exploded view of the flow meter of FIG. **10**.

FIG. **12** is a view illustrating a state in which a folding flange is not folded in the water tank of the dishwasher according to one embodiment of the present disclosure.

FIG. **13** is a view illustrating a state in which the folding flange of FIG. **12** is folded.

FIG. **14** is a cross-sectional view taken along line A-A' of FIG. **13**, illustrating a state in which the folding flange is not folded.

FIG. **15** is a view illustrating a state in which the folding flange of FIG. **14** is folded.

DETAILED DESCRIPTION

Embodiments described in the disclosure and configurations shown in the drawings are merely examples of the embodiments of the disclosure, and may be modified in various different ways at the time of filing of the present application to replace the embodiments and drawings of the disclosure.

In addition, the same reference numerals or signs shown in the drawings of the disclosure indicate elements or components performing substantially the same function. Shapes and sizes of elements in the drawings may be exaggerated for clear description.

Also, the terms used herein are used to describe the embodiments and are not intended to limit and/or restrict the disclosure. The singular forms "a," "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. In this disclosure, the terms "including", "having", and the like are used to specify features, numbers, steps, operations, elements, components, or combinations thereof, but do not preclude the presence or addition of one or more of the features, elements, steps, operations, elements, components, or combinations thereof.

It will be understood that, although the terms first, second, third, etc., may be used herein to describe various elements, but elements are not limited by these terms. These terms are only used to distinguish one element from another element. For example, without departing from the scope of the disclosure, a first element may be termed as a second element, and a second element may be termed as a first element. The term of "and/or" includes a plurality of combinations of relevant items or any one item among a plurality of relevant items.

According to various embodiments of the present disclosure, a dishwasher includes an improved structure to prevent washing water from leaking to an outside even when a water tank is rotated during an after-sales service.

According to various embodiments of the present disclosure, a dishwasher includes an improved structure to allow only a printed circuit board (PCB) sensor inside a water tank to be replaced.

According to various embodiments of the present disclosure, an inclined rib is provided to form an air pocket, and thus when a water tank is tilted, it is possible to minimize an amount of washing water overflowing out of a reservoir by using an air pressure.

According to various embodiments of the present disclosure, even when washing water overflows out of a reservoir, it is possible to prevent the washing water from leaking to an outside through an outside air inlet.

According to various embodiments of the present disclosure, it is possible to separate and replace only a printed circuit board (PCB) from an outside of a dishwasher because a folding flange is provided. Accordingly, it is possible to reduce production and repair costs.

The disclosure will be described more fully hereinafter with reference to the accompanying drawings.

FIG. **1** is a perspective view of a dishwasher according to one embodiment of the present disclosure. FIG. **2** is a schematic side cross-sectional view of the dishwasher according to one embodiment of the present disclosure.

As illustrated in FIGS. **1** and **2**, a dishwasher **1** may include a main body **10** forming an exterior.

The dishwasher **1** may include a tub **12** provided inside the main body **10**. The tub **12** may be provided in a substantially box shape. One surface of the tub **12** may be open. That is, the tub **12** may include an opening **12***a*. As an example, a front surface of the tub **12** may be opened.

The dishwasher **1** may further include a door **11** configured to open and close the opening **12***a* of the tub **12**. The door **11** may be installed in the main body **10** to open and close the opening **12***a* of the tub **12**. The door **11** may be rotatably installed in the main body **10**.

The dishwasher **1** may further include a storage container provided inside the tub **12** to accommodate dishes.

The storage container may include a plurality of baskets **51**, **52**, and **53**. Dishes having a relatively large volume may be accommodated in the plurality of baskets **51**, **52**, and **53**. However, the types of dishes accommodated in the plurality of baskets **51**, **52** and **53** are not limited to relatively large-volume dishes. That is, in the plurality of baskets **51**, **52**, and **53**, not only large-volume dishes but also relatively small-volume dishes may be accommodated.

The storage container may include an intermediate basket **52** positioned in a middle portion with respect to a height direction of the dishwasher **1**, and a lower basket **51** positioned in a lower portion with respect to the height direction of the dishwasher **1**. The intermediate basket **52** may be provided to be supported by an intermediate guide rack **13***a*, and the lower basket **51** may be provided to be supported by a lower guide rack **13***b*. The intermediate guide rack **13***a* and the lower guide rack **13***b* may be installed on a side surface **12***d* of the tub **12** so as to be slidable toward the opening **12***a* of the tub **12**. Particularly, the intermediate guide rack **13***a* and the lower guide rack **13***b* may be installed on an inner surface of the side surface **12***d* of the tub **12**.

The storage container may include an upper basket **53** positioned in an upper portion with respect to the height direction of the dishwasher **1**. The upper basket **53** may be formed in a rack assembly type to accommodate relatively small-volume dishes. It is appropriate that the upper basket **53** may accommodate a cooking utensil such as a ladle, a knife, or a turner, or cutlery. In addition, the rack assembly may accommodate a small cup such as an espresso cup. However, the kind of dishes accommodated in the upper basket **53** is not limited to the above example.

In addition, the shape of the storage container is not limited to the shape shown in FIGS. **1** to **3**. For example, the upper basket **53** may be removed according to the size of the tub **12**. Therefore, the storage container may be implemented only with the intermediate basket **52** and the lower basket **51**.

The dishwasher **1** may include a sump **70** provided to store washing water. The dishwasher **1** may include a washing chamber C formed inside the tub **12**. The washing chamber C may be defined as an inner space of the tub **12**. The sump **70** may be configured to supply washing water to the tub **12**.

The dishwasher **1** may further include a plurality of spray units **41**, **42**, and **43** configured to spray washing water. The spray unit may include a first spray unit **41** arranged below the lower basket **51** with respect to the height direction of the dishwasher **1**, a second spray unit **42** arranged below the intermediate basket **52** with respect to the height direction of the dishwasher **1**, and a third spray unit **43** arranged above the upper basket **53** with respect to the height direction of the dishwasher **1**.

The first spray unit **41** may be configured to be rotated about a first rotating shaft **41***a*, and the second spray unit **42** may be configured to be rotated about a second rotating shaft **42***a*, and the third spray unit **43** may be configured to be rotated about a third rotating shaft **43***a*.

However, the disclosure is not limited thereto. The first spray unit **41** may be fixed to one side of a lower surface **12***b* unlike the second spray unit **42** and the third spray unit **43**. In this case, the first spray unit **41** may be configured to spray washing water in a substantially horizontal direction by a fixed nozzle, and the washing water sprayed in the horizontal direction from the nozzle of the first spray unit **41** may be directed to the upper side because a direction of the sprayed water is changed by a switching assembly. The switching assembly may be installed on a rail by a holder, and translated along the rail.

The third spray unit **43** may spray the washing water toward the dishes stored in the upper basket **53**, the intermediate basket **52**, and the lower basket **51**. The second spray unit **42** may spray the washing water toward the dishes stored in the intermediate basket **52** and the upper basket **53**.

The first spray unit **41** may be arranged on the lower surface **12***b* of the tub **12**, unlike the second spray unit **42** and the third spray unit **43**. Particularly, the first spray unit **41** may be arranged to be fixed to the sump **70**.

The dishwasher **1** may include a circulation pump **30** configured to pump water stored in the sump **70** toward the spray unit. The washing water pumped by the circulation pump **30** may be supplied to the first spray unit **41** through an alternating device **80** connected to the circulation pump **30**. Alternatively, the washing water pumped by the circulation pump **30** may be moved upward by a duct **90** and then supplied to the second spray unit **42** or the third spray unit **43**.

As mentioned above, the washing water stored in the sump **70** or washing water introduced into the dishwasher **1** from the outside may flow to the alternating device **80** by the circulation pump **30**.

The alternating device **80** may supply the washing water to the first spray unit **41** through a connector **81** connected to the first spray unit **41**, and may supply the washing water to the duct **90** through a flow path **62** connected to the duct **90**.

The alternating device **80** may selectively supply the washing water to at least one of the connector **81** and the duct **90**.

The dishwasher **1** may include a machine room L arranged below the tub **12**. At least a portion of the connector **81**, and the flow path **62** may be arranged in the machine room L arranged below the washing chamber C. That is, at least a portion of the connector **81** and the flow path **62** may be arranged lower than the lower surface **12***b* of the tub **12** with respect to the height direction of the dishwasher **1**.

Through the connector **81** and the flow path **62**, the washing water may flow to the first spray unit **41** and the duct **90** arranged inside the washing chamber C. The washing water may flow to the second spray unit **42** and the third spray unit **43** through the duct **90**.

The above-described circulation pump **30**, sump **70**, and alternating device **80** may be arranged in the machine room L and further a water supply hose (not shown) and a drain hose (not shown) may be arranged in the machine room L.

The tub **12** may include a connection hole **12***e* formed in the side surface **12***d*. The connection hole **12***e* may be provided to communicate with a tub connection port **240** of a water tank **100** to be described later.

FIG. **3** is a view illustrating a state in which a water tank of the dishwasher according to an embodiment of the present disclosure is mounted on the tub **12**. FIG. **4** is an exploded view illustrating a configuration of the water tank of the dishwasher according to an embodiment of the present disclosure. FIG. **5** is a view illustrating a state in which the water tank of the dishwasher according to an embodiment of the present disclosure is rotated. FIG. **6** is an enlarged view of a part A of FIG. **4**. FIG. **7** is a view illustrating a portion of a flow path of the dishwasher according to one embodiment of the present disclosure. FIG. **8** is an enlarged view of a part C of FIG. **5**. FIG. **9** is an enlarged view of a part B of FIG. **4**.

As illustrated in FIG. **3**, the dishwasher **1** may include the water tank **100**. The water tank **100** may be mounted on an outer circumferential surface of the tub **12**. Particularly, the water tank **100** may be mounted on the side surface **12***d* of the tub **12**. The water tank **100** may be connected to the sump **70** to supply washing water to the sump **70**. However, a specific connection related thereto is not shown in FIG. **3**.

The water tank **100** may typically include a flow meter **110** configured to detect an amount of washing water supplied to the inside of the dishwasher **1**. In addition, a folding flange **320** configured to be folded may be formed on the outer circumferential surface of the water tank **100**. Details related to this will be described later.

In recent years, more functions have been added to the water tank **100** due to an energy saving issue. The water tank **100** may previously store the washing water used for washing, so as to allow cold water of a water supply to be a temperature at the same as the room temperature.

The washing water may be stored in a reservoir **210** of the water tank **100** for a predetermined period of time, and accordingly, a temperature of the washing water (about 15° C.) is similar to the room temperature (about 23° C.). Therefore, it is possible to reduce an amount of energy that is used to increase the temperature of the washing water.

Accordingly, it is possible to reduce the energy required to heat the washing water used for washing.

Referring to FIG. **4**, the water tank **100** may include a plurality of cases **200** and **300**. The water tank **100** may include a first case **200** and a second case **300**. The first case **200** and the second case **300** may be coupled to each other. Particularly, the first case **200** and the second case **300** may be fused to each other.

The first case **200** and the second case **300** may be coupled to each other to form the water tank **100**. The first case **200** may be provided to correspond to the second case **300** to form a plurality of flow paths **231**, **232**, **233**, and **234** and the reservoir **210** in the water tank **100**.

Accordingly, unless otherwise described, structures of an inner surface of the first case **200** and the second case **300** facing each other may be formed to be mostly the same. Hereinafter the first case **200** will be described, but the second case **300** may also include the same structure and be given the same reference numerals.

The first case **200** is provided to be coupled to the tub **12**. The first case **200** is provided to be coupled to the side surface **12***d* of the tub **12**. The second case **300** may be coupled to the first case **200** to be arranged outside the tub **12** more than the first case **200**.

The first case **200** may include an outside air inlet **250** provided to discharge air to the outside or introduce air from the outside. Alternatively, the outside air inlet **250** may be formed in the second case **300**.

The first case **200** may include the tub connection port **240** provided to introduce air into the tub **12** or provided to discharge air from the tub **12**. The tub connection port **240** may be connected to the connection hole **12***e* formed in the side surface **12***d* of the tub **12**.

The water tank **100** may include a cap member **180** connecting the water tank **100** and the side surface **12***d* of the tub **12** without the leakage. The cap member **180** may be mounted on the tub connection port **240** of the water tank **100** and the connection hole **12***e* of the tub **12** to maintain the sealing.

A tub fixer **120** configured to couple the water tank **100** to the side surface **12***d* of the tub **12** may be provided in the first case **200**. One or more tub fixer **120** may be provided. The water tank **100** may be fixed to the side surface **12***d* of the tub **12** through the tub fixer **120**.

The tub fixer **120** may include a first tub fixer **121**, a second tub fixer **122**, a third tub fixer **123**, and a fourth tub fixer **124**.

The first tub fixer **121** to the fourth tub fixer **124** may be arranged to be spaced apart from each other. In the embodiment of the present disclosure, the four tub fixers including the first tub fixer **121** to the fourth tub fixer **124** are illustrated as being spaced apart from each other in the water tank **100**, but the present disclosure is limited thereto. For example, the number of tub fixers **120** may vary according to the size of the first case **200** and the size and shape of the tub **12**.

The water tank **100** may include a coupling member **190**. The coupling member **190** may be inserted into the first tub fixer **120** formed in the first case **200** and the second case **300** of the water tank **100** so as to assist the coupling between the tub **12** and the water tank **100**.

The water tank **100** may include the reservoir **210**. Washing water that is softened may be introduced into the reservoir **210** through a water supplier **131** to be described later. As the washing water introduced into the reservoir **210** is stored inside the reservoir **210** and maintained at the room temperature, it is possible to reduce energy required for heating the washing water.

The water tank **100** may include the water supplier **131** formed on a lower end **281***b* of the first case **200** and configured to receive water from the outside. The water tank **100** may include a water softener connector **133** provided to allow water introduced from the water supplier **131** to be moved to a water softener (not shown).

In addition, the water tank **100** may include a soft water inlet **134** formed at the lower end **281***b* and provided to allow water, which is softened, to be introduced from the water softer (not shown) to the reservoir **210**, and a sump connector **135** provided to allow washing water stored in the reservoir **210** to be discharged to the sump **70**.

The water tank **100** may include a sump drain connector **136** connected to the sump **70** to allow washing water, which is after use, to be discharged to the outside by a drain pump (not shown), and a drain hose connector **137** provided to allow water, which is introduced into the sump drain connector **136**, to be discharged to the outside.

In addition, the water tank **100** may include a regeneration water inlet **132** through which washing water flows from the reservoir **210** for ion exchange of the water softer (not shown) that is separately provided.

The water tank **100** may include the flow meter **110**. The flow meter **110** may be configured to detect the flow rate of the washing water supplied from the water supplier **131**. A detailed configuration of the flow meter **110** will be described later.

The water tank **100** may include a plurality of ribs **150**. Particularly, the plurality of ribs **150** may be formed in the

reservoir **210** of the water tank **100**. The plurality of ribs **150** may guide the flow of washing water introduced from the water supplier **131** to the reservoir **210**. Particularly, the plurality of ribs **150** may be provided to allow the washing water to be uniformly moved in various directions and supplied to the reservoir **210**.

Accordingly, a pressure applied to the water tank **100** by the washing water may be uniformly formed, thereby preventing the bulging of the water tank **100**.

As shown in FIG. **5**, the water tank **100** may be laid down when the after-sales service is performed. Particularly, the water tank **100** may be rotated such that a position of the outside air inlet **250** provided at the lower left is located at the lower right. That is, the water tank **100** may be rotated counterclockwise, and at this time, a washing water flow hole **212** to be described later may be located above the outside air inlet **250**.

Referring to FIGS. **4** and **5**, the water tank **100** may include a plurality of flow paths **62**. Particularly, the water tank **100** may include a first flow path **231**, a second flow path **232**, a third flow path **233**, and a fourth flow path **237**.

Hereinafter an original state in which the water tank **100** is erected is referred to as a first state, and a state in which the water tank **100** is rotated and laid down as shown in FIG. **5** for the after-sales service is referred to as a second state.

The water tank **100** may include the first flow path **231** provided to allow washing water to be supplied from the outside and to flow in the first state. The first flow path **231** is provided to allow washing water to be introduced from the water supplier **131** and to be discharged to the water softener connector **133**. A flow path wall **236** may be provided to form the first flow path **231**.

The flow meter **110** may be installed in the first flow path **231** so as to detect the amount of washing water introduced from the water supplier **131**.

At least a portion of the first flow path **231** of the water tank **100** may be bent inside the water tank **100** to have a predetermined curvature. The first flow path **231** includes at least one bent member in order to secure a flow stability of the introduced water.

An air break hole **160** may be formed on the first flow path **231** of the water tank **100**. Particularly, the air break hole **160** may be formed in the flow path wall **236** forming the first flow path **231**. Details related thereto will be described later.

Washing water discharged to the water softener connector **133** is introduced into the reservoir **210** through the soft water inlet **134** after passing through a softening process in the water softer. The water softener (not shown) may include a water softening tank (not shown) equipped with an ionization resin filter, and a regeneration tank (not shown) containing substances such as salt to purify the ionization resin filter mounted on the water softening tank. Washing water that is softened by the water softer and introduced into the water tank **100** may be stored in the reservoir **210**.

The water tank **100** may include the plurality of ribs **150** provided to guide the movement of the washing water so as to allow the washing water to be smoothly moved through the soft water inlet **134** and the sump connector **135** in the first state of the water tank **100**. The plurality of ribs **150** may be formed in the reservoir **210**. Each of the ribs may include a first rib **151** disposed diagonally and a second rib **152** disposed in a direction substantially perpendicular to the first rib **151**. A plurality of first ribs **151** and second ribs **152** may be disposed to be spaced apart from each other. The plurality of ribs **150** may be provided to guide the water to be smoothly moved in the reservoir **210** inside the water tank **100**.

In the first state, the reservoir **210** may be filled with the introduced washing water until the washing water comes into contact with an inclined rib **220**. At this time, the inclined rib **220** may be formed to allow an air pocket (P) to be formed under the inclined rib **220**. The inclined rib **220** may be provided to have an inclination with respect to a water surface of the washing water. Details related to the inclined rib **220** will be described later.

The water tank **100** may include the second flow path **232**. The second flow path **232** may be provided to allow washing water overflowing from the reservoir **210** to be moved. The washing water flow hole **212** may be provided at one side of the inclined rib **220** to allow washing water to be moved from the reservoir **210** to an upper portion of the inclined rib **220**. The washing water may be introduced into the tub **12** through the tub connection port **240** from the reservoir **210** along the second flow path **232**.

Further, the second flow path **232** may be provided to allow air to be moved. The second flow path **232** may be provided to connect the reservoir **210**, the tub connection port **240**, and the outside air inlet **250**. Accordingly, an internal pressure of the tub **12** and an internal pressure of the water tank **100** may be maintained at atmospheric pressure. Therefore, because a closed space is not filled with the washing water, washing water may be easily supplied into the water tank **100** without resistance.

The water tank **100** may include the third flow path **233**. The third flow path **233** is provided to regenerate the water softer (not shown) by using washing water stored in the reservoir **210**. The third flow path **233** may be provided to connect the reservoir **210** to the regeneration water inlet **132**. The washing water stored in the reservoir **210** is moved to the third flow path **233** through a second water flow wall **235**.

The water tank **100** may include the fourth flow path **237**. The fourth flow path **237** may be provided as a drain flow path **62**. The fourth flow path **237** may be provided to connect the sump drain connector **136** to the drain hose connector **137**. The fourth flow path **237** may be provided to allow the washing water, which is after use, to be discharged to the outside by the drain pump (not shown).

In the embodiment, the outside air inlet **250** may be provided to be located at the lower left side of the water tank **100**, and the washing water flow hole **212** may be located at the upper right side of the water tank **100** based on the first state. However, the position of the outside air inlet **250** may vary according to the position of the washing water flow hole **212**. For example, when the washing water flow hole **212** is provided to be located at the upper left side of the water tank **100**, the outside air inlet **250** may be located at the lower right side of the water tank **100**.

In the second state of the water tank **100**, the washing water stored in the reservoir **210** may flow into the second flow path **232** through the washing water flow hole **212**. As the washing water flow hole **212** and the outside air inlet **250** are arranged in a substantially diagonal direction in the water tank **100**, a flow path of the washing water overflowing through the washing water flow hole **212** may be increased. Accordingly, a plurality of structures may be formed on the second flow path **232** to prevent the washing water from leaking into the outside air inlet **250**.

Referring to FIGS. **4** to **6**, the water tank **100** may include the inclined rib **220**. The inclined rib **220** may be formed above the reservoir **210**.

The water tank **100** may include a partition wall **211**. The partition wall **211** may be provided to form the side surface **12***d* of the reservoir **210**. The partition wall **211** may be provided to form a portion of the flow path wall **236** forming the first flow path **231**. Particularly, the partition wall **211** may be provided to form a left side surface of the reservoir **210**.

The inclined rib **220** may include an extension **221** and a free end **222**. The inclined rib **220** may be provided to be connected to the partition wall **211**. The extension **221** is a portion, connected to the partition wall **211**, in the inclined rib **220**. The free end **222** may be formed at one end of the extension **221**. The washing water flow hole **212** may be formed on a lateral side of the free end **222**. The washing water stored in the reservoir **210** may be moved to the upper portion of the inclined rib **220** through the washing water flow hole **212**.

The washing water introduced into the reservoir **210** may rise until the washing water comes into contact with an inclined rib **220**. A water level, when the water surface of the washing water is in contact with the inclined rib **220**, is referred to as a full water level of reservoir F.

The inclined rib **220** may be provided to have an inclination with respect to the water surface of the washing water. Particularly, the inclined rib **220** may have an inclination to allow the extension **221** to be positioned higher than the free end **222**. In this case, when the washing water rises and reaches the full water level of reservoir F, the extension **221** and the partition wall **211** of the inclined rib **220**, and the water surface of the washing water may form a closed space. The air pocket P may be formed in the closed space.

Therefore, by the air pocket P, washing water under the inclined rib **220** may not rise above the full water level of reservoir F.

Washing water, which is additionally supplied after reaching the full water level of reservoir F, may be moved to the upper portion of the inclined rib **220** through the washing water flow hole **212**. The washing water flow hole **212** may form the second flow path **232** so as to connect the reservoir **210** and the tub connection port **240**.

An inclination angle θ of the inclined rib **220** may be provided to be 10 degrees or less. When the inclined rib **220** has a relatively large inclination angle θ, an area of the air pocket P formed among the partition wall **211**, the inclined rib **220** and the water surface may be slightly large and it is difficult to secure a predetermined amount of washing water, stored in the reservoir **210**, or more. That is, according to the embodiment, the inclination angle θ of the inclined rib **220** may be provided to be 10 degrees or less in order to secure the predetermined amount of the washing water, or more.

When the water tank **100** is rotated from the first state to the second state, the above-described air pocket P formed under the inclined rib **220** may prevent washing water stored in the reservoir **210** from passing through the washing water flow hole **212** to a certain extent. In other words, even when the water tank **100** is tilted at the full water level, the outflow of the washing water from the reservoir **210** may be interfered with the pressure of the air pocket P, thereby minimizing the overflow of the washing water. Accordingly, it is possible to reduce a risk of leaking the washing water to the outside air inlet **250** along the second flow path.

Referring to FIGS. **4**, **5**, and **7**, the air break hole **160** of the water tank **100** may be formed on the first flow path **231**. The air break hole **160** may be formed in the flow path wall **236** forming the first flow path **231**. Particularly, the air break hole **160** may be formed in a bent member positioned at an upper portion of the bent member of the flow path wall **236**.

The water tank **100** may include a flow rate increasing member **170**. The flow rate increasing member **170** is installed in the first flow path **231** to increase the flow rate. The flow rate increasing member **170** may be coupled to the flow path wall **236** so as to reduce a cross-sectional area of the first flow path **231**, thereby increasing the flow rate.

The water tank **100** may include a plurality of guide **161** and **162**. The plurality of guides **161** and **162** may be provided to guide the washing water flowing out through the air brake hole **160**.

The plurality of guides **161** and **162** may include a first guide **161** and a second guide **162**. The first guide **161** is formed on the flow path wall **236** forming the first flow path **231** and has a first inclination. The first inclination may be provided at an angle substantially perpendicular to the ground. The second guide **162** may be formed to be spaced apart from the first guide **161**, and have a second inclination to guide water to the second flow path **232**. The second guide **162** may be disposed below the first guide **161**. The second guide **162** may be located under the air brake hole **160**.

In addition, the water tank **100** may include a first water flow wall **234** forming the second flow path **232** to guide water, which overflows from the reservoir **210**, to the tub **12**. In accordance with a position of the first water flow wall **234**, a portion of the flow path wall **236** forming the first flow path **231** may be cut to form the second flow path **232**. The flow path wall **236** may include a flow groove **236***a* that is cut by a height of the first water flow wall **234**.

The first water flow wall **234** may be formed by recessing at least a portion of the first case **200** to a rear side. The rear side is a direction toward the tub **12** from the first case **200**.

Washing water may flow on the second flow path **232** through the first water flow wall **234** and the flow groove **236***a*. Particularly, washing water overflowing from the reservoir **210** may flow to the upper portion of the inclined rib through the washing water flow hole **212** as described above, and may be moved to the lateral side of the water tank **100** through the first water flow wall **234** and the flow groove **236***a*. The washing water flowing to the lateral side may be discharged from the water tank **100** to the tub connection port **240** by gravity.

Hereinafter a structure for preventing the leakage of the washing water when the water tank **100** is rotated to the second state for the after-sales service of the dishwasher **1** will be described.

Referring to FIGS. **5** and **8**, the water tank **100** may be rotated for the after-sales service. As shown in FIG. **5**, the state in which the washing water flow hole **212** is located at the upper portion and the outside air inlet **250** is located at the lower portion may be referred to as the second state. For the after-sales service of the dishwasher **1**, the water tank **100** may be rotated in various directions. However, when the water tank **100** is rotated in a direction, in which the door **11** of the dishwasher **1** is located on the floor, opposite to that shown in FIG. **5**, the outside air inlet **250** is located at the upper portion of the water tank **100** and thus the leakage of the washing water may not occur. Therefore, the second state in which the water tank **100** is laid down such that the outside air inlet **250** is located at the lower right side of the water tank **100** as shown in FIG. **5**, for the after-sales service will be described.

When the water tank **100** is rotated to the second state, the leakage of the washing water stored in the reservoir **210**, to the outside air inlet **250** may be primarily prevented by the inclined rib **220**.

Particularly, because the inclined rib **220** is provided to form the side surface **12***d* of the reservoir **210**, the inclined rib **220** may serve to confine a portion of the washing water stored in the reservoir **210** during rotation of the water tank.

In addition, when the water tank **100** is rotated, the air pocket P shown in FIG. **6** may be moved along the water surface of the washing water, thereby preventing the washing water from leaking into the washing water flow hole **212** to a certain extent. By the pressure of the air pocket P, it is possible to prevent the primary outflow of the washing water flowing through the second flow path **232**.

However, due to the washing water flow hole **212**, it is impossible to completely prevent the washing water from leaking into the second flow path **232**. Accordingly, various structures may be formed to prevent the washing water, which flows along the second flow path **232**, from leaking into the outside air inlet **250**.

The water tank **100** may include a water overflow prevention rib **260**. The water overflow prevention rib **260** may be formed at the end **281***b* of the second flow path **232**. The water overflow prevention rib **260** may guide the washing water to the tub connection port **240** in the first state of the water tank **100**. However, in the second state of the water tank **100**, the water overflow prevention rib **260** may interfere with the flow of the washing water along the second flow path **232** so as to prevent the washing water from overflowing to a side adjacent to the outside air inlet **250**. The water overflow prevention rib **260** may extend along a periphery of the tub connection port **240**. Particularly, the water overflow prevention rib **260** may extend in a direction, which is opposite to gravity based on the second state of the water tank **100**, to interfere with the flow of washing water.

The water tank **100** may include a water collecting rib **270**. The water collecting rib **270** may be formed between the tub connection port **240** and the outside air inlet **250**. The water collecting rib **270** may be provided to collect the washing water overflowing from the water overflow prevention rib **260** in the second state of the water tank **100**.

The water collecting rib **270** may include a first wall **271**, a second wall **272**, and a third wall **273**. The first wall **271** may extend from the tub connection port **240** to the lateral side of the water tank **100**. The second wall **272** may be connected to the first wall **271** and extend upward based on the first state of the water tank **100**. The third wall **273** may be connected to the second wall **272** to extend upwards of the tub connection port **240** based on the first state of the water tank **100**. Accordingly, a water collecting space may be formed between the first wall **271**, the second wall **272**, and the third wall **273**, so as to collect the washing water.

The water tank **100** may include a plurality of leakage prevention ribs **281**, **282**, and **283**. The plurality of leakage prevention ribs **281**, **282**, and **283** may be provided between the water collecting rib **270** and the outside air inlet **250**. The plurality of leakage prevention ribs **281**, **282**, and **283** may prevent water, which is not collected by the water collecting rib **270** and overflows from the water collecting rib **270**, from leaking to the outside air inlet **250** when the water tank **100** is rotated.

Each of the leak prevention ribs **281**, **282**, **283** may include a connector **281***a* and an end **281***b*. The connector **281***a* may be connected to an inner wall **201** of the water tank **100** or spaced apart from the inner wall **201** of the water tank **100**. The end **281***b* may be formed at one end of the connector **281***a* to allow air to pass therethrough.

The adjacent leakage prevention ribs **281**, **282**, and **283** may allow the flow path **62**, through which the air flows, to be a zigzag pattern and thus it is difficult for the washing water to pass through the flow path **62** while the air easily passes through the flow path **62**. Particularly, each of the leak prevention ribs **281**, **282**, and **283** may be inclined to allow the end **281***b* to be higher than the connector **281***b* based on the first state of the water tank **100**.

Referring to FIGS. **4** and **9**, the water tank **100** may include the second water flow wall **235**. The second water flow wall **235** may be formed by being recessed to the rear of the water tank **100**. The second water flow wall **235** may be provided to allow the washing water stored in the reservoir **210** to flow into the third flow path **233**.

The water softener (not shown) is configured to adsorb and remove heavy metals and metallic ions contained in the washing water flowing into the water supplier **131**. The water softener (not shown) changes washing water into soft water with excellent cleaning power. However, as an ion exchange resin adsorbs the metallic ions contained in the washing water, a volume of the ion exchange resin inside the water softener (not shown) is increased, and thus a capacity of the ion exchange resin for adsorbing the metallic ions may be reduced.

Therefore, by supplying water to the regeneration water inlet **132** for the ion exchange, it is possible to regenerate the ion exchange resin of the water softener (not shown) to restore the water softening ability. Regeneration of the ion exchange resin is a process of removing metallic ions contained in the ion exchange resin. Accordingly, the ions in the ion exchange resin, which are depleted as the softening reaction continues, may be reduced by the ion exchange reaction.

Therefore, through the second water flow wall **235**, it is possible to store and supply the washing water required for regeneration of the water softener (not shown).

As in the above-described embodiment of the present disclosure, the inner surfaces of the first case **200** and the second case **300** are not limited to being provided to partition the above-described respective structures. For example, the above-described structure may be provided only on the inner surface of the first case **200**, and the inner surface of the second case **300** may be provided with a flat surface to cover the first case **200**, thereby providing a closed space inside the water tank **100**. Alternatively, the above-described structure may be provided only on the inner surface of the second case **300**, and the inner surface of the first case **200** may be provided with a flat surface to cover the second case **300**, thereby providing a closed space inside the water tank **100**.

Even when the water tank **100** is rotated as the dishwasher **1** is rotated upon performing the after-sales service, the washing water stored in the water tank **100** may not leak to the outside by the above-mentioned structure. Accordingly, it is possible not to affect products around the dishwasher **1**, and thus the service satisfaction of the consumer may be increased.

FIG. **10** is an enlarged view illustrating a state in which a flow meter is mounted on a part D of FIG. **4**. FIG. **11** is an exploded view of the flow meter of FIG. **10**.

Referring to FIGS. **10** and **11**, the water tank **100** may include the flow meter **110**. The flow meter **110** may be mounted on a flow meter installation member **140** of the first case **200**. The flow meter installation member **140** may include an accommodation space **142** to accommodate the

flow meter **110**. The flow meter **110** is installed on the first flow path **231** to detect the flow rate of the washing water supplied from the water supplier **131**.

The flow meter **110** may include an impeller **113**, a body **111**, and a printed circuit board (PCB) **112**.

The body **111** may include a flow path hole **111***a* forming the flow path **231** and provided to allow washing water to be supplied from the water supplier and to flow. The body **111** may include a PCB mounting member **111***b* on which the PCB **112** is mounted. In addition, the body **111** may include a PCB fixing protrusion **111***c* provided to fix a position of the PCB **112**. Accordingly, the PCB **112** may be detachably mounted on the body **111**.

The PCB mounting member **111***b* may be formed on an upper surface of the body **111**. The PCB **112** may be mounted on the upper surface of the body **111** such that a portion of the PCB **112** is exposed to the outside of the water tank **100**. The PCB **112** may be connected to a wire for receiving power from the outside and sending and receiving signals.

The impeller **113** may be accommodated in the body **111**. The impeller **113** may be mounted on an impeller mounting member **141** of the first case **200**. The impeller **113** may include a magnet seating member **113***a*. The impeller **113** may be rotated by the supplied washing water. Through a magnet (not shown) mounted on the impeller **113**, a signal regarding a rotation speed of the impeller **113** may be transmitted to the PCB **112** so as to detect the flow rate.

FIG. **12** is a view illustrating a state in which a folding flange is not folded in the water tank of the dishwasher according to one embodiment of the present disclosure. FIG. **13** is a view illustrating a state in which the folding flange of FIG. **12** is folded.

Referring to FIGS. **10** to **13**, the second case **300** may cover the flow meter **110** mounted on the first case **200**. The second case **300** may be provided to fix the position of the flow meter **110** accommodated in the first case **200**. Particularly, the second case **300** may include a cover **310** provided to cover a portion of the flow meter **110**.

The second case **300** may include a folding flange **320**. The folding flange **320** is provided to be foldable. The folding flange **320** may be integrally formed with the second case **300**.

The folding flange **320** may include a hook **321**. The hook **321** may be formed at one end of the folding flange **320**. The hook **321** may be coupled to the cover **310** to allow the folding flange **320** to cover the flowmeter **110**.

The folding flange **320** may include a protector **322** extending in the same direction as the hook **321**. When the folding flange **320** is folded, the extension **221** may cover a portion of a space between the PCB **112** and the second case **300** so as to protect the PCB **112**.

The folding flange **320** may include a folding member **323**. The folding member **323** may be formed to be deformable to allow the folding flange **320** to be folded.

The cover **310** may include a hook insertion hole **311**. When the folding flange **320** is in a folded state, the hook **321** may be inserted into the hook insertion hole **311**.

The second case **300** may include an opening **330** provided adjacent to the cover **310**. The opening **330** may be formed by cutting a portion of the second case **300**. Through the opening **330**, the PCB **112** of the flow meter **110** may be exposed to the outside. Accordingly, the PCB **112** exposed through the opening **330** may be connected to a wire.

As illustrated in FIGS. **3**, **12** and **13**, the second case **300** may include a wire hanger **340** connected to the opening **330**. The wire hanger **340** may be formed by cutting a portion of the second case **300**. The wire hanger **340** may be cut from the opening **330** toward the lower portion of the water tank **100**.

A wire groove **350** may be formed between the opening **330** and the wire hanger **340**. The wire groove **350** may be formed by cutting a portion of the second case **300** to the rear side. A position of the wire connected to the PCB **112** may be temporarily fixed through the wire groove **350**. Accordingly, the wire hanger **340** may be formed to guide the wire connected to the PCB **112**.

The second case **300** may include a guard **360**. The guard **360** may protrude from an outer surface of the second case **300** to prevent moisture from penetrating into the PCB **112**.

FIG. **14** is a cross-sectional view taken along line A-A' of FIG. **13**, illustrating a state in which the folding flange is not folded. FIG. **15** is a view illustrating a state in which the folding flange of FIG. **14** is folded.

Referring to FIGS. **14** and **15**, the hook **321** of the folding flange **320** may include a connector **321***b* and a locker **321***a*. The connector **321***b* may extend to the outside of the folding flange **320** by approximately a thickness of the second case **300**. The locker **321***a* may be formed at one end of the connector **321***b*. In the folded state of the folding flange **320**, the locker **321***a* passes through the hook insertion hole **311** of the cover **310** and is caught by the cover **310**.

The hook **321** may further include a flat member **321***c*. The flat member **321***c* may be provided on the locker **321***a*. The water tank **100** according to the present disclosure is generally formed by injection molding. Because the hook **321** includes the flat member **321***c*, a mold for injection molding the hook **321** may be provided in a vertical separation structure. In other words, a separate slide core is not required and the mold is formed by separating only upper and lower parts of the mold. Accordingly, it is possible to reduce a mold manufacturing cost.

The PCB **112** of the flow meter **110** is typically fused together inside the water tank **100**. Accordingly, when a defect or malfunction occurs, it is impossible to only replace the PCB **112**, but it is required to replace the entire water tank **100**.

However, according to the present disclosure, because the folding flange **320** is formed in the water tank **100**, a user or an engineer can selectively release the coupling between the folding flange **320** and the cover **310**.

Accordingly, when a user removes the hook **321** of the folding flange **320** from the cover **310** by using a simple tool on the outside of the dishwasher **1**, the user can access the PCB **112**. Accordingly, it is possible to easily replace only the PCB **112** and thus it is possible to reduce a repair cost and a service cost.

While the present disclosure has been particularly described with reference to exemplary embodiments, it should be understood by those of skilled in the art that various changes in form and details may be made without departing from the spirit and scope of the present disclosure.

What is claimed is:

1. A dishwasher, comprising:

a tub forming a washing chamber;

a water tank mounted on an outer circumferential surface of the tub and including:

a reservoir in which washing water is storable, and

an inclined rib including a free end, wherein, with the dishwasher in an erect position, the inclined rib is inclined downward toward the free end to allow washing water stored in the reservoir to flow to an upper portion of the inclined rib, and the inclined rib is configured to, with the dishwasher in the erect

position and washing water stored in the reservoir at a full water level, have an inclination with respect to a water surface of the washing water so that an air pocket is formed under the inclined rib and so that, when the dishwasher is rotated from the erect position with the washing water stored in the reservoir at the full water level and the air pocket formed under the inclined rib, at least a portion of the washing water stored in the reservoir is trapped by the air pocket; and

a sump configured to receive washing water stored in the reservoir and to supply the received washing water to the tub.

2. The dishwasher of claim **1**, wherein

the water tank further includes a partition wall forming a side of the reservoir, and

the inclined rib includes:

an extension connected to the partition wall, and

the free end is at one end of the extension.

3. The dishwasher of claim **2**, wherein the inclined rib is inclined so that the extension is higher than the free end when the dishwasher is in the erect position.

4. The dishwasher of claim **3**, wherein the partition wall, the extension, and the water surface of the washing water form a closed space in which the air pocket is formed when the dishwasher is in the erect position.

5. The dishwasher of claim **2**, wherein

the water tank further includes a first flow path along which washing water is suppliable to the water tank from an outside, and

the partition wall forms a portion of a flow path wall forming the first flow path.

6. The dishwasher of claim **5**, wherein the water tank further includes:

a tub connection port formed to communicate with the tub,

an outside air inlet, and

a second flow path connecting the reservoir, the tub connection port, and the outside air inlet to allow air to flow.

7. The dishwasher of claim **6**, wherein the water tank further includes a water overflow prevention rib extending along a periphery of the tub connection port so as to interfere with a flow of washing water, which overflows from the reservoir, along the second flow path due to the rotation of the dishwasher.

8. The dishwasher of claim **6**, wherein the water tank further includes a water collecting rib formed between the tub connection port and the outside air inlet so as to collect the washing water in response to the rotation of the dishwasher.

9. The dishwasher of claim **8**, wherein the water collecting rib includes:

a first wall extending from the tub connection port to a lateral side of the water tank,

a second wall connected to the first wall and extending upward, and

a third wall connected to the second wall and extending to an upper side of the tub connection port.

10. The dishwasher of claim **8**, wherein the water tank further includes a plurality of leakage prevention ribs formed between the water collecting rib and the outside air inlet so as to prevent water, which is not collected by the water collecting rib, from leaking to the outside air inlet in response to the rotation of the dishwasher.

11. The dishwasher of claim **1**, wherein the water tank further includes:

a flow meter configured to detect a flow rate of washing water supplied to the water tank,

a first case in which the flow meter is accommodated, and

a second case corresponding to the first case and including a cover provided to cover a portion of the flow meter.

12. The dishwasher of claim **11**, wherein

the second case includes a folding flange provided to be foldable and including a hook formed on one end of the folding flange, and

the hook is coupled to the cover to allow the folding flange to cover the flow meter.

13. The dishwasher of claim **11**, wherein

the flow meter includes:

a body comprising an impeller, and

a printed circuit board (PCB) detachably mounted to the body so as to be connected to a wire, and

the second case includes a wire hanger formed to be cut so as to guide the wire.

14. The dishwasher of claim **13**, wherein the second case further includes a guard protruding from an outer surface of the second case to prevent moisture from penetrating into the PCB.

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