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(54) **DISHWASHER**

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(57) **ABSTRACT**

A dish washer is provided. The dish washer includes a washing bath in which a dish is received, a sump for storing washing water supplied into the washing bath, and a washing pump disposed in the sump to generate a suction force for circulating the washing water. The washing pump includes a washing motor for generating a driving force, an impeller disposed under the washing motor, the impeller being rotatable by the driving force, and a heating space disposed under the impeller to define a space in which the washing water is heated by a heater.

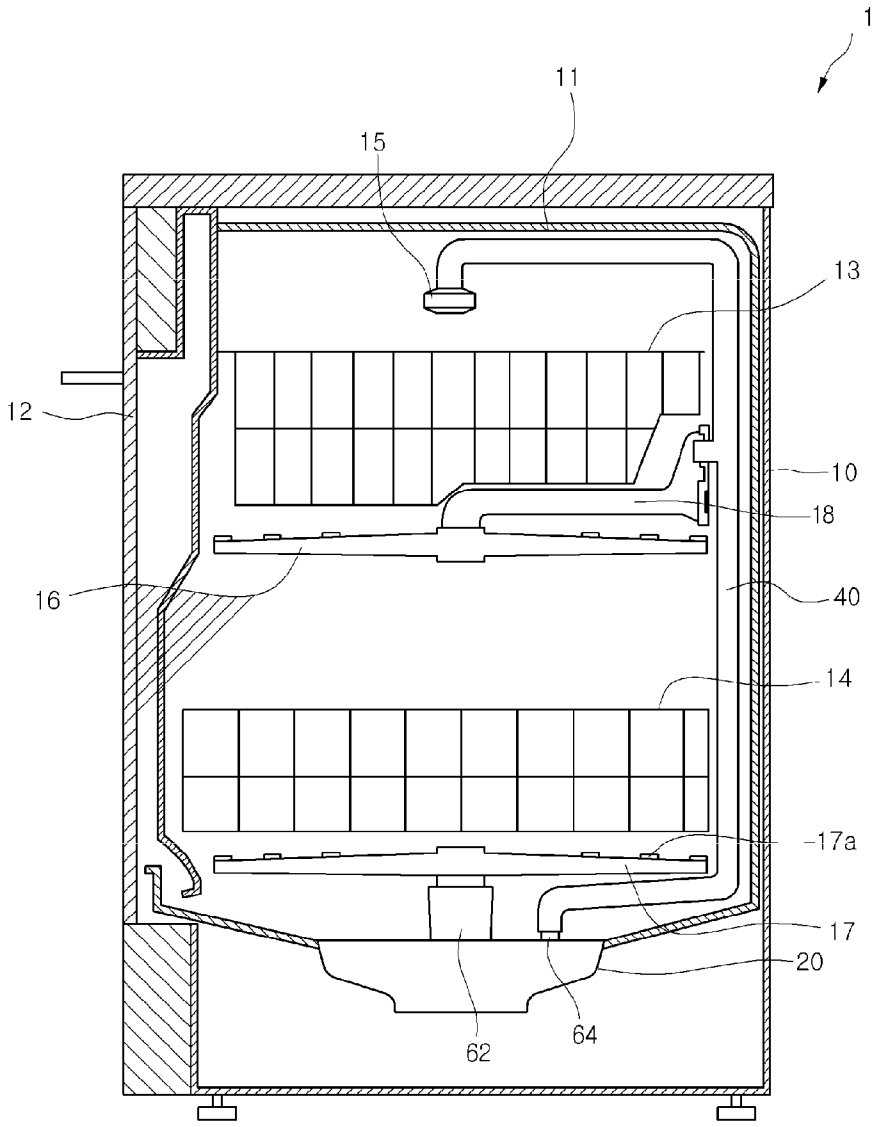


Fig. 1

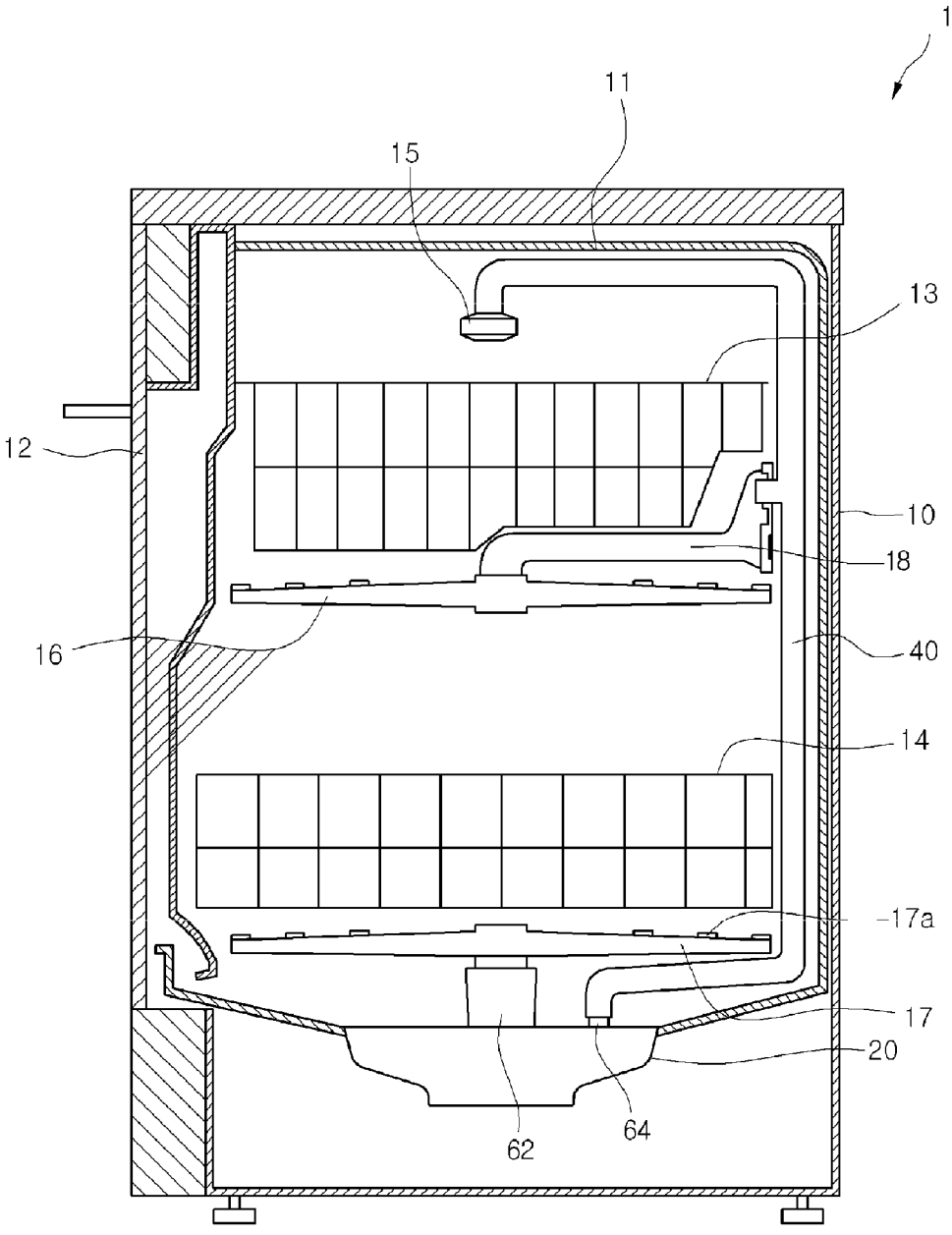


Fig. 2

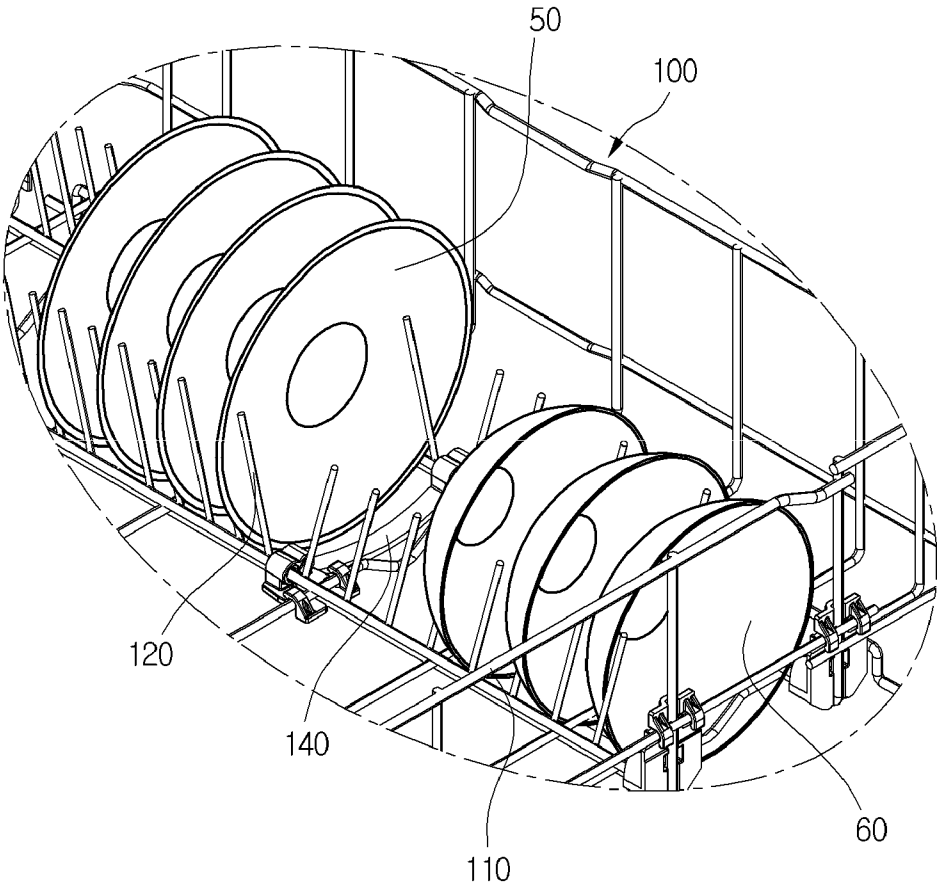


Fig. 3

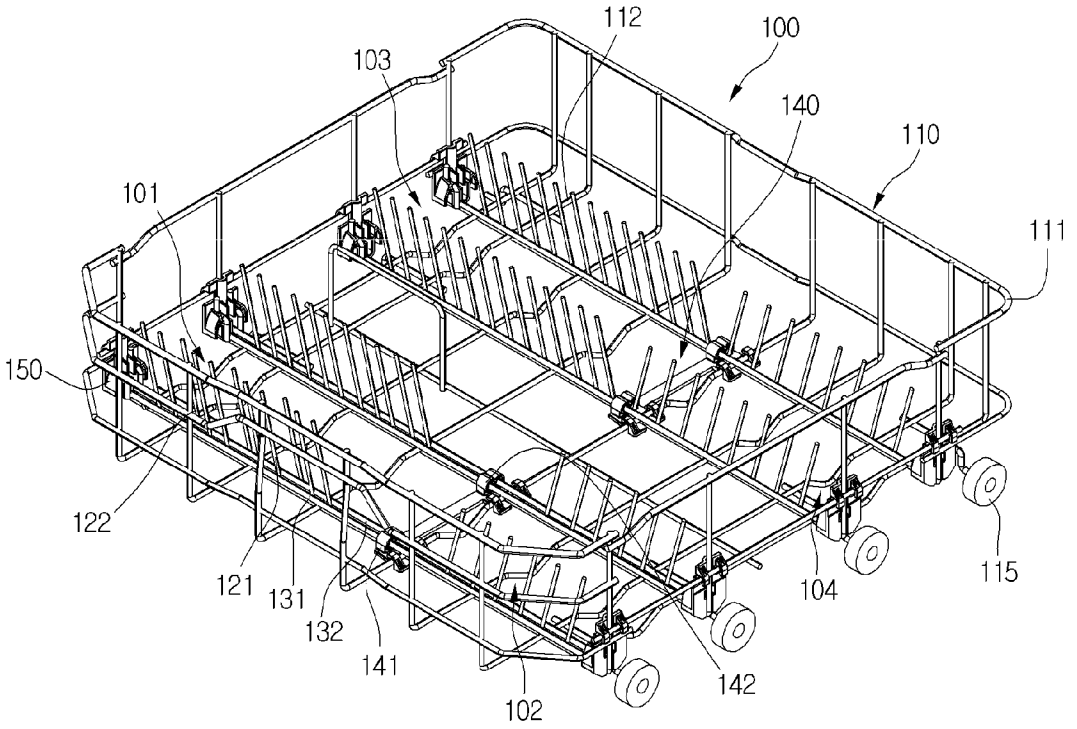

112
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110
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131
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115

Fig. 4

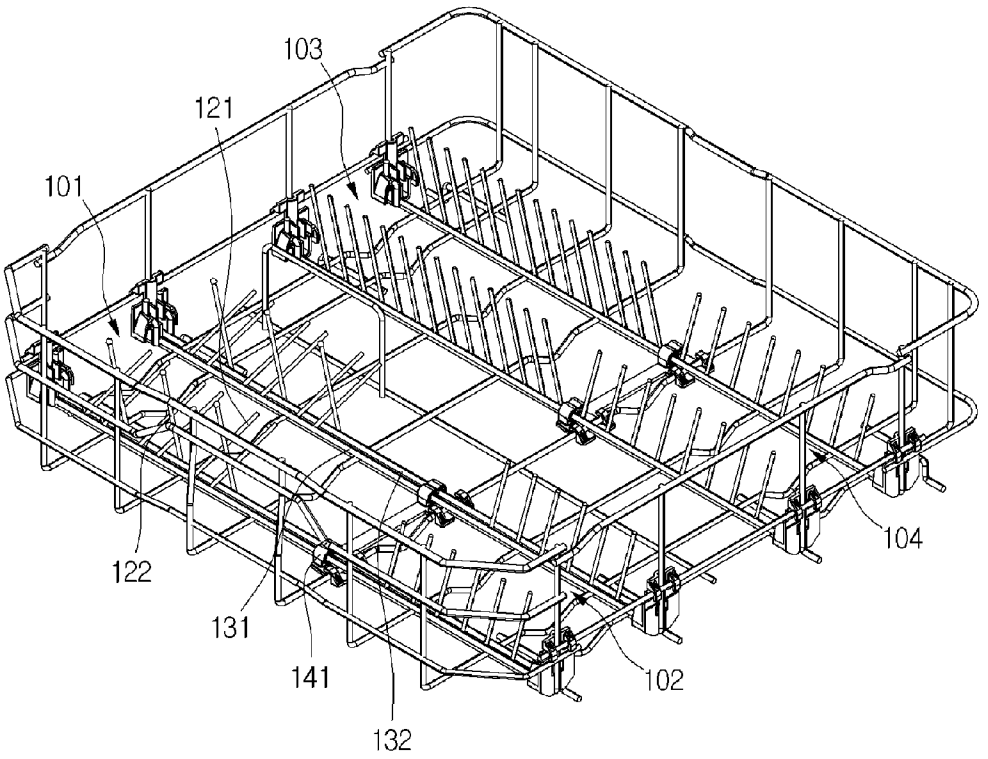


Fig. 5

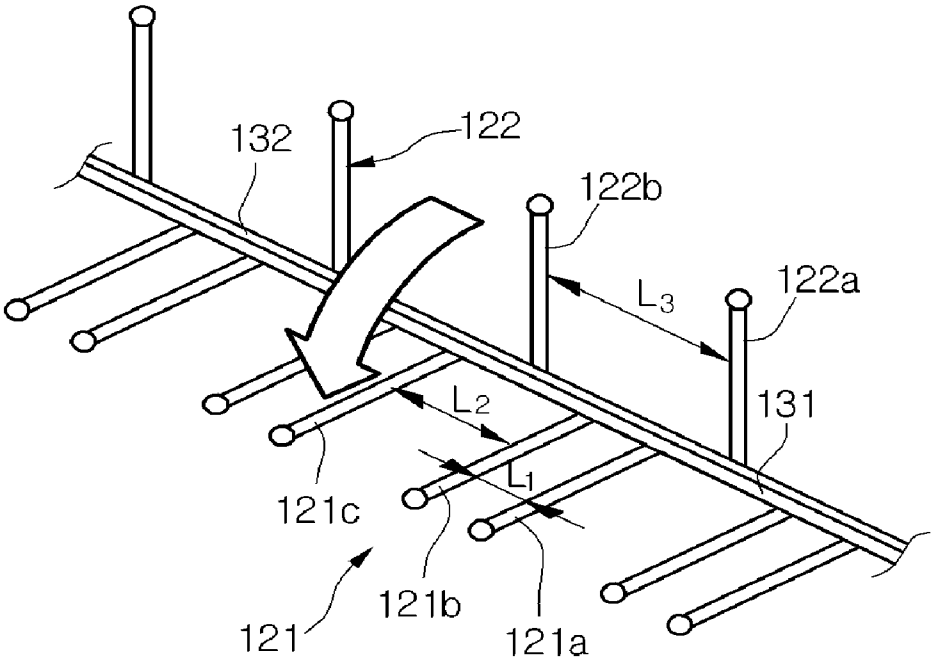


Fig. 6

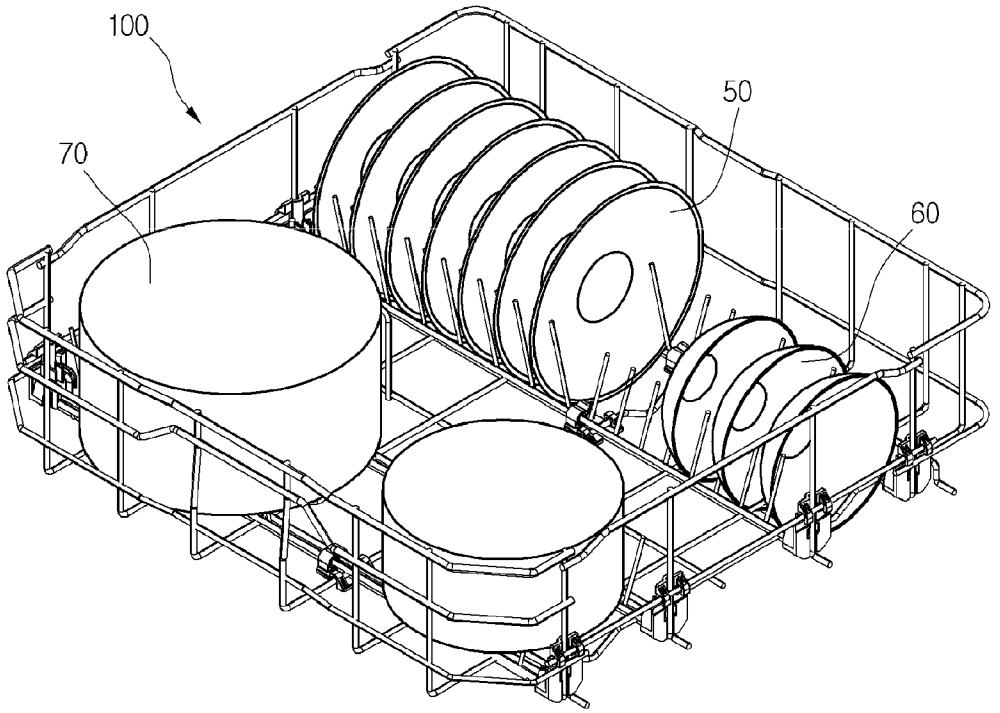


Fig. 7

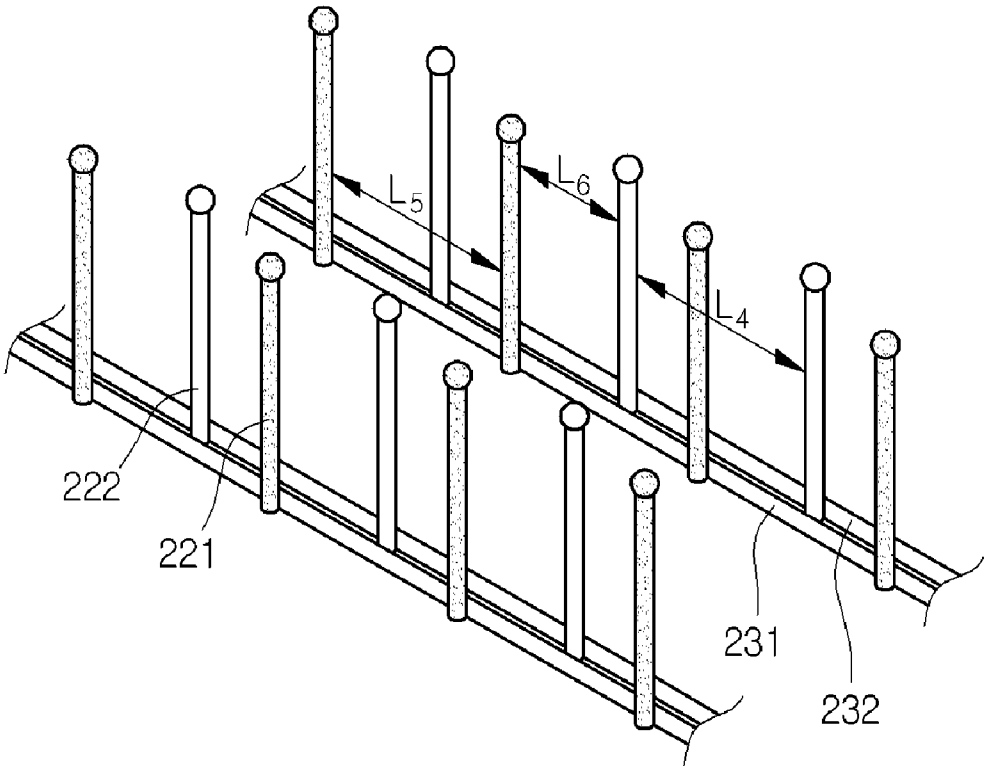
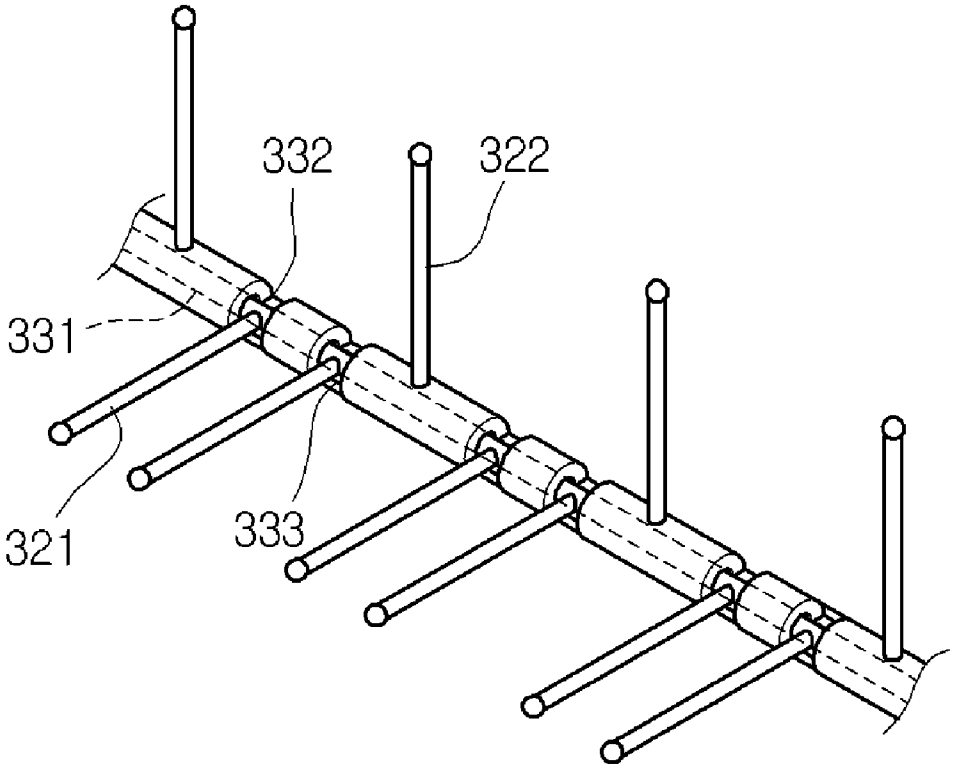


Fig. 8



DISHWASHER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority under 35 U.S.C. 119 and 35 U.S.C. 365 to Korean Patent Application No. 10-2010-0086015 filed on Sep. 2, 2010, which is hereby incorporated by reference in its entirety.

BACKGROUND

[0002] The present disclosure relates to a dish washer.

[0003] In general, dish washers are appliances that spray washing water onto dishes on which food or garbage is stained to wash the dishes.

[0004] In detail, according to such a dish washer, clean washing water is supplied using a sump disposed at a side of a washing bath, and then a washing water spraying mechanism sprays the washing water onto dishes within the washing bath to wash the dishes. The washing water used for washing the dishes is recovered into the sump, and then, the recovered washing water is supplied again into the washing water spraying mechanism through a filtering device disposed within the sump.

[0005] When the dishes are washed through the above-described processes, the washing water existing in the washing bath and the sump is discharged to the outside. Here, the foreign substances filtered by the filtering device may be discharged together with the washing water to the outside of the dish washer.

[0006] A reception structure in which dishes are received is applied to the washing bath. The reception structure may include a support structure for stably supporting the dishes.

[0007] In a dish washer according to a related art, there is a limitation that it is difficult to receive dishes having various sizes into the washing bath having a limited size.

[0008] That is, the washing bath according to the related art may be partitioned into predetermined spaces. Thin tableware such as dishes may be received in one space of the washing bath, and thick tableware such as bowl may be received in the other space.

[0009] According to kinds of tableware used by a user, as necessary, the thin dishes should be washed or the thick bowls should be washed.

[0010] However, the washing bath according to the related art may be limited to its receiving space according to a kind of dishes. Thus, there is a limitation that the spatial utilization of the washing bath is not effective. As a result, satisfaction of the product by the user may be reduced.

SUMMARY

[0011] Embodiments provide a dish washer which provides receiving spaces having various sizes according to kinds of dishes to be washed.

[0012] In one embodiment, a dish washer includes: a washing bath defining a washing space; and a rack device disposed in the washing bath to receive a dish, where the rack device includes: a receiving frame defining a receiving space; a plurality of support parts extending upward from a lower portion of the receiving frame, the plurality of support parts being rotatably disposed; a plurality of rotational central portions providing a rotation center with respect to the plurality of support parts; and an accumulation part accumulating the plurality of rotational central portions at the same time, wherein the plurality of support parts include a plurality of extension parts supporting the dish and spaced with distances different from each other.

[0013] In another embodiment, a dish washer includes: a washing bath defining a washing space; a receiving frame disposed within the washing bath to provide a dish seat part; and a support part assembly coupled to the receiving frame to support a seated dish, wherein the support part assembly includes: a first support part including a plurality of one extension parts disposed with a first distance; a second support part including a plurality of the other extension parts disposed with a second distance; and a plurality of rotational central portions providing rotation centers of the first and second support parts, wherein the first and second support part are rotated to define dish receiving spaces having sizes different from each other.

[0014] The details of one or more embodiments are set forth in the accompanying drawings and the description below. Other features will be apparent from the description and drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. **1** is a sectional view of a dish washer according to a first embodiment.

[0016] FIG. **2** is a perspective view illustrating a state in which dishes are received into a rack device according to the first embodiment.

[0017] FIG. **3** is a perspective view illustrating one example of a manipulation state of a support part in the rack device according to the first embodiment.

[0018] FIG. **4** is a perspective view illustrating the other example of a manipulation state of the support part in the rack device.

[0019] FIG. **5** is a partially enlarged view illustrating a rotation state of the support part in the rack device according to the first embodiment.

[0020] FIG. **6** is a perspective view illustrating a state in which dishes having various sizes are received in the rack device according to the first embodiment.

[0021] FIG. **7** is a view of a support part assembly in a rack device according to a second embodiment.

[0022] FIG. **8** is a view of a support part in a rack device according to a third embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0023] Reference will now be made in detail to the embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as being limited to the embodiments set forth herein; rather, that alternate embodiments included in other retrogressive inventions or falling within the spirit and scope of the present disclosure will fully convey the concept of the invention to those skilled in the art.

[0024] FIG. **1** is a sectional view of a dish washer according to a first embodiment.

[0025] Referring to FIG. **1**, a dish washer **1** according to an embodiment includes a case **10** defining an outer appearance, a tub **11** received within the case **10** to define a washing bath, a door **12** disposed on a front surface of the tub **11** to open or close the washing bath, and a sump **20** disposed in a lower side of the tub **11** to store washing water.

[0026] An upper rack **13** and a lower rack **14** in which dishes are received are disposed within the tub **11**. The upper rack **13** may be spaced a predetermined distance from an upper portion of the lower rack **14**. The upper and lower racks **13** and **14** may be guided by a guide rail (not shown) disposed on an inner surface of the tub **11** to take out in a front direction of the tub **11**.

[0027] A top nozzle **15**, an upper nozzle, and a lower nozzle **17** for spraying washing water supplied from the sump **20** into the washing bath are disposed above the sump **20**.

[0028] In detail, the lower nozzle **17** is coupled to an upper surface of the sump **20** to spray the washing water onto a lower side of the washing bath. Here, the washing water may be sprayed toward the dishes mounted in the lower rack **14**. A lower nozzle coupling part **62** coupled to the lower nozzle **17** is disposed on the sump **20**.

[0029] A plurality of lower spray holes **17***a* for spraying the washing water are defined in the lower nozzle **17**. The lower spray holes **17***a* may be formed in both sides of the nozzle coupling part **62**.

[0030] The upper nozzle **16** may be disposed at a central portion of the washing bath to spray the washing water toward the upper rack **13**. The top nozzle **15** may be disposed on a ceiling portion of the tub **11** to spray the washing water downward.

[0031] A nozzle holder **18** is disposed between the upper nozzle **16** and a washing water guide **40**. The nozzle holder **18** may extend from the washing water guide **40** toward a center direction of the tub **11** and be coupled to an approximately central portion of the upper nozzle **16**.

[0032] A plurality of upper spray holes **16***a* for spraying the washing water are defined in the upper nozzle **16**. The upper spray holes **17***a* may be formed in both sides of a portion to which the nozzle holder **18** is coupled.

[0033] The washing water guide **40** for moving the washing water supplied from a washing water pump is disposed above the sump **20**. The washing water moved through the washing water guide **40** may be sprayed onto the upper rack **13** through the top nozzle **15** or the upper nozzle **16**. A guide connection part **64** coupled to the washing water guide **40** is disposed on the sump **20**.

[0034] Hereinafter, a structure of a rack device will be described with reference to the accompanying drawings. A rack device **100** that will be described below may be applied to the upper rack **16** or the lower rack **17**.

[0035] FIG. **2** is a perspective view illustrating a state in which a dish is received in a rack device according to the first embodiment.

[0036] Referring to FIG. **2**, the rack device **100** according to the first embodiment includes a receiving frame **110** defining a receiving space and a support part **120** for supporting a dish inside the receiving frame **110**. Here, the rack device **100** may be called a "receiving device" in that the rack device **100** receives the dish.

[0037] The support part **120** extends upward from a bottom surface of the receiving frame **110** to support at least one side of the dish. The support part **120** may be movable with respect to a center of a rotation shaft. Also, the support part **120** may be provided in plurality on the rotation shaft.

[0038] The support parts **120** may be spaced from each other in a plurality of rows. The plurality of support parts **120** aligned in two rows among the support parts disposed in the plurality of rows may be manipulated to receive the dish. That is, to stably receive the dish, the support parts **120** spaced from each other in the two rows may support one side and the other side of the dish. That is to say, the dish may be disposed between the support parts **120** aligned in the two rows.

[0039] The rack device **100** includes a support coupling part **140** for coupling the plurality of support parts **120** aligned in the two rows to each other. In detail, the support coupling part **140** may be coupled to a rotation center of each of the support parts **120** disposed in the two rows. The support coupling part **140** may be provided in plurality. The plurality of support coupling parts **140** may be spaced from each other in one row (see FIGS. **4** and **5**).

[0040] The dish receivable into the rack device **100** may include a first container **50** having a flat shape and a second container **60** having a thick shape. For example, the first container **50** may be a dish, and the second container **60** may be a bowl. Although the first and second containers **50** and **60** include the dish and bowl in the drawings, the first and second containers **50** and **60** may include containers having various shapes, i.e., a pot and a frying-fan.

[0041] FIG. **3** is a perspective view illustrating one example of a manipulated state of a support part in the rack device according to the first embodiment. FIG. **4** is a perspective view illustrating the other example of a manipulation state of the support part in the rack device. FIG. **5** is a partially enlarged view illustrating a rotation state of the support part in the rack device according to the first embodiment. FIG. **6** is a perspective view illustrating a state in which dishes having various sizes are received in the rack device according to the first embodiment.

[0042] Referring to FIGS. **3** to **6**, the rack device **100** according to the first embodiment includes a receiving frame **110** defining an outer appearance, a support part **120** disposed inside the receiving frame **110** to support a dish, and rotational central portions **131** and **132** providing rotation centers so that the support part **120** is movable.

[0043] A plurality of wire frames may be coupled to each other with a predetermined distance to form the receiving frame **110**. The receiving frame **110** may include a side frame **111** having a predetermined height and a lower frame **112** for providing a dish seat part.

[0044] A plurality of receiving parts are disposed in a receiving space defined by the receiving frame **110**. The plurality of receiving parts include a first receiving part **101** defined in a side of a lower portion of the receiving space, a second receiving part **102** defined in the other side of the lower portion of the receiving space, a third receiving part defined in a side of an upper portion of the receiving space, and a fourth receiving part **104** defined in the other side of the upper portion of the receiving space.

[0045] The first, second, third, and fourth receiving parts **101**, **102**, **103**, and **104** may be disposed on both sides with respect to the support coupling part **140**, i.e., first and second accommodation parts **141** and **142** that will be described below, respectively, and thus be classified according to their positions.

[0046] The plurality of receiving parts **101**, **102**, **103**, and **104** may be classified according to a kind of dish to be received. In detail, when the support part **120** is manipulated, i.e., when the support part **120** stands up or is laid down, a dish having a large width may be received into the first receiving part **101**, and a bowl having a large width may be received into the second receiving part **102**. Also, a dish having a large width such as a pot may be received into the third or fourth receiving part **103** or **104**.

[0047] For example, when all of the support parts stand up, a dish having a large width may be received. Also, when a portion of the support parts **120** is laid down, a bowl having a slightly large width may be received. When all of the supports **120** are lied down, a dish having a very large width such as a pot may be received (see FIG. **6**). Hereinafter, an operation of a structure for supporting a dish will be described in detail.

[0048] In the current embodiment, the first reception part **101** will be described as an example. That is, the current embodiment may be applied to the other receiving parts **102**, **103**, and **104**.

[0049] The first receiving part **101** includes a plurality of support parts **121** and **122** aligned in two rows and a plurality of rotation shafts defining a rotation center of each of the support parts **121** and **122**.

[0050] Here, the plurality of support parts **121** and **122** disposed in the two rows may be called "support part assemblies". In summary, the support part assemblies **121** and **122** may be understood that a plurality of support parts constituting one row are disposed in two rows. Although the support part assemblies include the support part **121** and **122** disposed in the two rows in FIG. **3**, the support part assemblies may include the support parts **121** and **122** disposed in the two or more rows.

[0051] The plurality of support parts **121** and **122** constituting one row (hereinafter, referred to as a "first row") include the first and second support parts **121** and **122**. The first and second support parts **121** and **122** may be constituted by a plurality of extension parts extending upward from the lower frame **112**.

[0052] For example, the first support part **121** includes a plurality of extension parts **121***a*, **121***b*, and **121***c* (see FIG. **5**). The plurality of extension parts **121***a*, **121***b*, and **121***c* are spaced a predetermined distance from each other. For example, the second support part **122** includes a plurality of extension parts **122***a* and **122***b* (see FIG. **5**). The plurality of extension parts **122***a* and **122***b* are spaced a predetermined distance from each other.

[0053] A first rotational central portion **131** defining a rotation center of the first support part **121** is disposed under the first support part **121**. The first rotational central portion **131** may be rotated together with the first support part **121** in a clockwise or counter-clockwise direction.

[0054] Also, a second rotational central portion **132** defining a rotation center of the second support part **122** is disposed under the second support part **122**. The second rotational central portion **132** may be rotated together with the second support part **122** in a clockwise or counter-clockwise direction.

[0055] The first and second rotational central portions **131** and **132** may extend adjacent to each other in parallel or side by side.

[0056] The support coupling part **40** may include the first accumulation part **141** for accumulating the first and second rotational central portions **131** and **132** at the same time. The first and second rotational central portions **131** and **132** may be rotated in a state where they are received into the first accumulation part **141**.

[0057] The first and second rotational central portions **131** and **132** coupled to the first accumulation part **141** and the first and second support parts **121** and **122** rotated around the first and second rotational central portions **131** and **132** as rotation centers may constitute one row (hereinafter, referred to as a "first row").

[0058] The first and second rotational central portions **131** and **132** may be rotatably coupled to a support part holder **150**. That is, ends of sides of the first and second rotational central portions **131** and **132** may be coupled to the first accumulation part **141**, and ends of the other sides may be coupled to the support part holder **150**.

[0059] An insertion hole (not shown) in which the first or second rotational central portion **131** or **132** is inserted may be defined in the support part holder **150**. When the first or second rotational central portion **131** and **132** is inserted, at least one portion of the support part holder **150** may be elastically deformed.

[0060] The support coupling part **140** includes a second accumulation part **142**. The first accumulation part **141** is disposed on one side of the support coupling part **140**, and the second accumulation part **142** is disposed on the other side of the support coupling part **140**. The second accumulation part **142** may be coupled to the first and second rotational central portions **131** and **132** constituting the other row (hereinafter, referred to as a "second row").

[0061] That is, the first and second rotational central portions **131** and **132** coupled to the second accumulation part **142** and the first and second support parts **121** and **122** rotated with respect to the first and second rotational central portions **131** and **132** as rotation centers may constitute the second row.

[0062] The support parts and rotational central portions provided on the second receiving part **102** may be separately operated with respect to the support parts **121** and **122** and the rotational central portions **131** and **132** of the first receiving part **101**.

[0063] The rotational central portion of the second receiving part **102** is coupled to the first accumulation part **141** in a state where the second receiving part **102** is separated from the rotational central portions **131** and **132**. Thus, the rotational central portions **131** and **132** of the first receiving part **101** and the rotational central portions of the second receiving part **102** may be independently operated (rotated) with respect to each other.

[0064] The rack device **100** includes a guide roller **115** for guiding the movement of the rack device **100**. The rack device **100** may be easily withdrawn to the outside of the tub **11** by the guide roller **115**.

[0065] FIG. **3** illustrates a state in which the first and second support parts **121** and **122** disposed on the first receiving part **101** stand up, i.e., a state in which the first and second support parts **121** and **122** extend upward from the lower frame **112**. On the other hand, FIG. **4** illustrates a state in which the first support part **121** is folded, i.e., a state in which the first support part **121** is rotated toward the lower frame **112** and the second support part **122** stands up.

[0066] Referring to FIG. **5**, structures and operations of the first and second support parts **121** and **122** will be described in detail.

[0067] The first support part **121** includes the plurality of extension parts **121***a*, **121***b*, and **121***c* extending upward from the first rotation central portion **131**. The extension parts include a first extension part **121***a*, a second extension part **121***b*, and a third extension part **121***c* which are spaced from each other. Here, the plurality of extension parts **121***a*, **121***b*, and **121***c* may be called a "first support extension part".

[0068] In detail, the first extension part **121***a* and the second extension part **121***b* may parallelly extend spaced a distance (interval) L**1** from each other, and the second extension part

121*b* and the third extension part **121***c* may parallely extend a distance L**2** from each other. The first, second, and third extension parts **121***a*, **121***b*, and **121***c* may be repeatedly provided in plurality.

[0069] The distance L**2** may be twice as large as the distance L**1**. A dish may be received into a space between the extension parts having the distances L**1** and L**2** therebetween.

[0070] The second support part **122** includes the plurality of extension parts **122***a* and **122***b* extending upward from the second rotation central portion **132**. The extension parts may include a fourth extension part **122***a* and a fifth extension part **122***b* which are spaced from each other. Here, the plurality of extension parts **122***a*, and **122***b* may be called a "first support extension part".

[0071] In detail, the fourth and fifth extension parts **122***a* and **122***b* may be spaced a distance L**2** from each other and extend parallel to each other. The fourth and fifth extension parts **122***a* and **122***b* may be repeatedly provided in plurality.

[0072] The distance L**3** may be twice as large as the distance L**1**. A dish may be received into a space between the extension parts having the distance L**3** therebetween. Here, the received dish may be a dish having a somewhat large width. The distances L**1**, L**2**, and L**3** may be called a "first distance", a "second distance", and a "third distance" for convenience, respectively.

[0073] The first support part **121** may be rotated with respect to the first rotational central portion **131** in one direction (clockwise direction) or in the other direction (counter clockwise direction). Although the first support part **121** is folded while being rotated with respect to the first rotational central portion **131** in the counter-clockwise direction in FIG. **5**, the first support part **121** may be folded while being rotated with respect to the first rotational central portion **131** in the clockwise direction.

[0074] When the first and second support parts **121** and **122** stand up, the first and second extension parts **121***a* and **121***b* may be disposed between the fourth extension **122***a* and the fifth extension part **122***b*. Also, the distance L**3** between the fourth extension part **122***a* and the fifth extension part **122***b* may be divided into three receiving spaces (dish support spaces) having a distance L**1** by the first and second extension parts **121***a* and **121***b*.

[0075] The distance L**2** between the second extension part **121***b* and the third extension part **121***c* may be divided into two receiving spaces (dish support spaces) having a distance L**1** by the fifth extension part **122***b*.

[0076] As described above, when the first and second support parts stand up, a dish having a somewhat small width may be received in the receiving space having the distance L**1**.

[0077] As shown in FIG. **5**, when the first support part **121** is folded and the second support part **122** stands up, a dish having a somewhat large width, e.g., a bowl may be received into the receiving space of the second support part **122** having the distance L**3**.

[0078] On the other hand, when the first support part **121** stands up and the second support part **122** is folded, two kinds of dishes different from each other may be received into the receiving space having the distances L**1** and L**2**. That is, a dish having a first width may be received into the receiving space having the distance L**1**, and a dish having a second width greater than the first width may be received into the receiving space having the distance L**2**.

[0079] As described above, dishes having sizes different from each other may be received according to manipulation positions of the first and second support parts **121** and **122**.

[0080] That is to say, various dishes may be received according to whether the first and second support parts **121** and **122** stand up (are disposed on a first position) or are folded (are disposed on a second position).

[0081] Thus, according to dishes to be washed, a user may selectively adjust a size of the receiving space (storing space) so that the first and second support parts **121** and **122** are disposed on adequate positions.

[0082] Since the first and second rotational central portions **131** and **132** extend parallel to each other, when the first support part **121** is folded, the first support part may not interfere with the second support part **122** and be smoothly rotated until the first support part **121** reaches a position at which the first support part is folded. Similarly, the second support part **122** may not interfere with the first support part **121** and be rotated until the second support part **122** is folded.

[0083] FIG. **6** illustrate a state in which containers **50**, **60**, and **70** having various sizes are received into the rack device **100** through above-described manipulations. As shown in FIG. **6**, the first container **50** having the smallest width (thickness) may be received into the third receiving part **103**, and the second container **60** having a width greater than that of the first container **50** may be received into the fourth receiving part **104**. Also, the third container having a width greater than those of the first and second containers **50** and **60** may be received into the first receiving part **101**.

[0084] However, the present disclosure is not limited to the above-described receiving configuration. The received positions of the first, second, and third containers **50**, **60**, and **70** may be varied according to the manipulation positions of the support parts **121** and **122**.

[0085] Another embodiment will now be described.

[0086] In third and fourth receiving parts according to the current embodiment, one rotational central portion is received into a receiving part, and a support part is coupled to the one rotational central portion.

[0087] According to the above-described structure, when the support part stands up, a dish having a narrow width such as a plate may be supported. When the support part is folded, a dish having a wide width such as a bowl may be supported.

[0088] However, on the other hand, each of the third and fourth receiving parts **103** and **104** may have the same structure as that of the first receiving part **101** described above. That is, in the third and fourth receiving parts **103** and **104**, a plurality of rotational central portions may be coupled to an accumulation part, and support parts different from each other may be rotatably coupled to each of the rotational central portions.

[0089] Hereinafter, second and third embodiments will be described. The current embodiments are equal to the first embodiment except for a structure of a support part. Thus, different points therebetween will be mainly described and descriptions of the same parts will be quoted from descriptions and reference numerals of the first embodiment.

[0090] FIG. **7** is a view of a support assembly in a rack device according to a second embodiment.

[0091] Referring to FIG. **7**, a rack device **100** according to a second embodiment includes a plurality of support parts **221** and **222** and a plurality of rotational central portions **231** and **232** respectively coupled to the plurality of support parts

221 and 222. The plurality of rotational central portions 231 and 232 may be received first and second accumulation parts 141 and 142, respectively.

[0092] The plurality of support parts 221 and 222 may include a first support part 221 and a second support part 222 which include extension parts extending with the same distance as each other.

[0093] In detail, the first support part 221 includes a plurality of extension parts extending with the same distance L4 as each other. Here, the extension parts will be quoted from the descriptions of the first embodiment. Also, the second support part 222 includes a plurality of extension parts extending with the same distance L5 as each other.

[0094] When the first and second support parts 221 and 222 stand up, the extension parts (first support extension parts) constituting the first support part 221 and the extension parts (second support extension parts) constituting the second support part 222 may be alternately disposed.

[0095] A distance L6 spaced between the first support extension part and the second support extension part may be about half of the distance L4 or L5. When all of the first support part 221 and the second support part 222 stand up, a dish having a size receivable into the distance L6 may be supported.

[0096] On the other hand, when one of the first and second support parts 221 and 222 is folded, a dish having a size receivable into the distance L4 or L5 may be supported. As described above, dishes different from each other may be selectively received according to the manipulation positions of the first and second support parts 221 and 222.

[0097] FIG. 8 is a view of a support part in a rack device according to a third embodiment.

[0098] Referring to FIG. 8, a rack device 100 according to a third embodiment includes a first support part 321 rotatably disposed with respect to a first rotational central portion 331 as a rotation center and a second support part 322 rotatably disposed with respect to a second rotational central portion 332 as a rotation center.

[0099] The first and second rotational central portions 331 and 332 may be rotatably coupled to first and second accumulation parts 141 and 142.

[0100] The first rotational central portion 331 may be inserted into the second rotational central portion 332. That is, the first rotational central portion 331 is received into the second rotational central portion 332.

[0101] In detail, the second rotational central portion 332 has a guide hole 333 for guiding the rotation of the first support part 321.

[0102] The guide hole 333 may be a cut portion formed by cutting an outer surface of the second rotational central portion 332 in a radius direction. When the first support part 321 is rotated, the guide hole 333 may prevent the first support part 321 from interfering with the second rotational central portion 332.

[0103] Thus, the first and second support parts 321 and 322 may be independently operated without interfering with each other. Also, according to the manipulation positions of the first and second support parts 321 and 322, dishes having various sizes may be received.

[0104] In the dish washer according to the embodiments, the plurality of support parts may be rotatably disposed to define the receiving spaces having various sizes. Thus, as necessary, tableware having sizes different from each other may be received.

[0105] Also, the plurality of rotation shafts that are used as rotation centers with respect to the plurality of support parts may be provided. Thus, the plurality of support parts may not interfere with each other and may be easily rotated in a state where the plurality of rotation shafts are received into one shaft accumulation part.

[0106] Also, the plurality of rotation shafts that are used as rotation centers with respect to the plurality of support parts may be provided. Thus, the plurality of support parts may not interfere with each other and may be easily rotated in a state where one rotation shaft is received into the other rotation shaft.

[0107] Therefore, since the user may manipulate the plurality of support parts into various shapes according to the tableware to be washed, the satisfaction of the product may be improved.

[0108] According to the embodiments, since the receiving part of the rack device can receive dishes having various size, industrial applicability may be significantly high.

[0109] Although embodiments have been described with reference to a number of illustrative embodiments thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this disclosure. More particularly, various variations and modifications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the disclosure, the drawings and the appended claims. In addition to variations and modifications in the component parts and/or arrangements, alternative uses will also be apparent to those skilled in the art.

What is claimed is:

1. A dish washer comprising:

a washing bath defining a washing space; and

a rack device disposed in the washing bath to receive a dish,

wherein the rack device comprises:

a receiving frame defining a receiving space;

a plurality of support parts extending upward from a lower portion of the receiving frame, the plurality of support parts being rotatably disposed;

a plurality of rotational central portions providing a rotation center with respect to the plurality of support parts; and

an accumulation part accumulating the plurality of rotational central portions together,

wherein the plurality of support parts comprise a plurality of extension parts supporting the dish and spaced with distances different from each other.

2. The dish washer according to claim 1, wherein the receiving space is partitioned into a plurality of receiving parts for receiving dishes having sizes different from each other.

3. The dish washer according to claim 2, wherein the plurality of receiving parts are disposed on both sides of the accumulation part, respectively.

4. The dish washer according to claim 1, wherein the accumulation part comprises:

a first accumulation part coupled to the plurality of rotational central portions constituting a first row; and

a second accumulation part coupled to the plurality of rotational central portions constituting a second row.

5. The dish washer according to claim **1**, wherein the plurality of support part comprises:

a first support part having first support extension parts disposed with one distance; and

a second support part having second support extension parts disposed with the other distance.

6. The dish washer according to claim **5**, wherein the first support extension parts are disposed between the second support extension parts to partition the other distance.

7. The dish washer according to claim **5**, wherein the other distance is greater than the one distance.

8. The dish washer according to claim **6**, wherein the receiving space comprises:

a first receiving part in which a container having a width corresponding to the one distance is received;

a second receiving part in which a container having a width corresponding to the other distance is received; and

a third receiving part in which a container having a width corresponding to the other distance partitioned by the first support extension parts.

9. The dish washer according to claim **5**, wherein the plurality of rotational central portions comprise:

a first rotation central portion coupled to the first support part; and

a second rotation central portion coupled to the second support part,

wherein the first rotational central portion and the second rotational central portion are independently rotated with respect to each other.

10. The dish washer according to claim **9**, wherein the first and second rotational central portions are parallelly disposed adjacent to each other.

11. The dish washer according to claim **9**, wherein the first or second rotational central portion is rotatable in a clockwise or counter-clockwise direction.

12. The dish washer according to claim **9**, wherein a dish receivable in case where at least one of the first and second support parts is disposed on a first position has a width less than that of a dish receivable in case where the at least one support is disposed on a second position.

13. The dish washer according to claim **12**, wherein the first position is a position at which the at least one support part stands up, and the second position is a position at which the at least one support part is folded.

14. The dish washer according to claim **1**, wherein the plurality of rotational central portions comprise:

a second rotational central portion; and

a first rotational central portion inserted into the second rotational central portion.

15. The dish washer according to claim **14**, wherein the second rotational central portion has a guide hole for guiding rotation of the first rotational central portion.

16. A dish washer comprising:

a washing bath defining a washing space;

a receiving frame disposed within the washing bath to provide a dish seat part; and

a support part assembly coupled to the receiving frame to support a seated dish,

wherein the support part assembly comprises:

a first support part comprising a plurality of one extension parts disposed with a first distance;

a second support part comprising a plurality of the other extension parts disposed with a second distance; and

a plurality of rotational central portions providing rotation centers of the first and second support parts,

wherein the first and second support part are rotated to define dish receiving spaces having sizes different from each other.

17. The dish washer according to claim **16**, wherein each of the first and second support parts is provided in at least two, and

the two first and second support parts support one side and the other side of the dish.

18. The dish washer according to claim **16**, wherein the first or second support part stands up or is folded with respect to the receiving frame.

19. The dish washer according to claim **18**, wherein, when the first and second support parts stand up with respect to the receiving frame, each of the one extension parts partitions a second distance of each of the other extension parts.

20. The dish washer according to claim **18**, wherein, when the first and second support parts stand up with respect to the receiving frame, a space in which a dish is received is defined by the first distance.

21. The dish washer according to claim **16**, wherein the plurality of rotational central portions extend parallel to each other, and

when one rotation shaft is rotated, the one rotation shaft does not interfere with the other rotation shaft.

22. The dish washer according to claim **16**, further comprising a support coupling part coupled to the plurality of rotational central portions, and

the dish receiving spaces having the sizes different from each other are partitioned with respect to the support coupling part.

23. The dish washer according to claim **22**, wherein the support coupling part is provided in plurality, and

the plurality of support coupling parts are disposed in a row.

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