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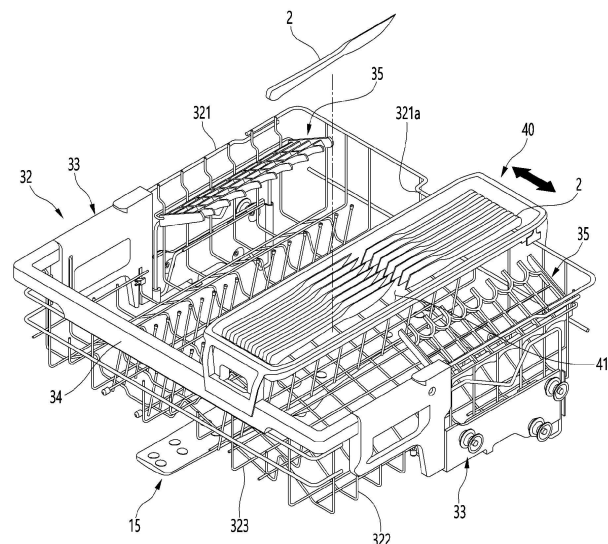
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(54) **DISHWASHER**

(57) The present disclosure relates to a dishwasher. The dishwasher includes a main body forming a washing space having an open front surface, a door opening and closing the washing space, a rack provided to be drawable out and insertable in a front-rear direction in the washing space, and an accessory seated on an upper end of the rack and on which

dishes for washing are seated. The accessory includes a frame forming a periphery of an accommodating portion in which the dishes are accommodated, and a supporter extending downward from the frame and coupled to the rack. The supporter extends such that a lower end of the frame is positioned above an upper end of the rack.

[Fig. 2]



EP 4 825 300 A2

Description

TECHNICAL FIELD

[0001] The present disclosure relates to a dishwasher. 5

BACKGROUND ART

[0002] A dishwasher is one of kitchen appliances that washes dishes by spraying high-pressure washing water through washing nozzles in order to remove food residues or contaminants remaining on the dishes. 10

[0003] In general, the dishwasher may have a configuration including a dishwasher main body providing a space in which dishes are washed, a sump provided below the main body and in which washing water is stored and supplied to the washing space, and washing nozzles provided inside the main body and spraying high-pressure washing water into the washing space. 15 20

[0004] In addition, a rack in which dishes to be washed are accommodated may be provided inside the tub. The rack may generally be formed in a structure such as a drawer or a mesh structure to facilitate accommodation of dishes, and may be formed of a wire material such that accommodated dishes are washed by washing water sprayed in upper and lower directions. 25

[0005] The rack may have a structure configured to be drawn out and inserted like a drawer for user convenience. In addition, a plurality of racks may be arranged vertically, and dishes having appropriate sizes may be accommodated in the respective racks. Further, an accessory such as a dedicated rack for accommodating silverware such as spoons, forks, and knives may be additionally provided in the rack as necessary. 30 35

[0006] However, in a conventional dishwasher, when an additional accessory is disposed in the rack, there is a problem in that an accommodating space of the rack is reduced by a space occupied by the accessory. 40

[0007] In addition, when interference occurs between dishes accommodated in the rack and the accessory, the accessory may fail to be seated at an accurate position and may move or be separated, thereby causing silverware such as spoons, forks, and knives for washing to spill out. 45

DISCLOSURE

TECHNICAL PROBLEM

[0008] An embodiment of the present disclosure is directed to providing a dishwasher capable of securing an accommodating space of a rack even when an accessory is mounted. 50

[0009] An embodiment of the present disclosure is directed to providing a dishwasher capable of minimizing interference with dishes accommodated in a rack 55

when an accessory is mounted.

[0010] An embodiment of the present disclosure is directed to providing a dishwasher in which stable mounting of an accessory is ensured.

TECHNICAL SOLUTION

[0011] A dishwasher according to an embodiment of the present disclosure may include a main body forming a washing space having an open front surface, a door opening and closing the washing space, a rack provided to be drawable out and insertable in a front-rear direction in the washing space, and an accessory seated on an upper end of the rack and on which dishes for washing are seated, wherein the accessory may include a frame forming a periphery of an accommodating portion in which the dishes are accommodated, and a supporter extending downward from the frame and coupled to the rack, and the supporter may extend such that a lower end of the frame is positioned above an upper end of the rack. 10 15 20

[0012] The rack may include a main wire disposed along the upper end of the rack, and a plurality of longitudinal wires and transverse wires disposed between the main wires and bent multiple times to form a space in which dishes are accommodated, and a seating groove into which the main wire is inserted may be formed at a lower end of the supporter. 25

[0013] A front cover may be provided at an upper front end of the rack so as to surround the main wire and be formed thicker than the main wire, the seating groove may be formed to have a size corresponding to allow the front cover to be inserted therein, and the supporter may be formed at a front end and a rear end of the frame such that one supporter may be seated on the front cover and the other supporter may be seated on the main wire. 30 35

[0014] The accommodating portion may connect sides of the frame and may include a plurality of ribs crossing each other, and a lower end of the accommodating portion may be positioned below a lower end of the frame and may be positioned above an upper end of the rack by a predetermined distance. 40

[0015] The ribs may extend parallel to the frame, and both ends of the ribs may be bent upward and connected to an inner surface of the frame. 45

[0016] The frame may include a pair of first side parts disposed on left and right sides of the accommodating portion and forming both side surfaces, and a pair of second side parts disposed at front and rear sides of the accommodating portion and forming front and rear surfaces, and the supporter may extend downward from the second side parts. 50

[0017] The frame may further include a corner part connecting between an end of the first side part and an end of the second side part and formed to be inclined or rounded. 55

[0018] The first side part may include an inner part

forming an inner surface of the frame facing the accommodating portion, and an outer part disposed outside the inner part and forming an outer surface of the frame.

[0019] The accommodating portion may be connected to the inner part, and a lower end of the accommodating portion may be positioned below a lower end of the inner part.

[0020] The outer part may be formed such that a lower end of the outer part is positioned above a lower end of the inner part.

[0021] The supporter may include an outer supporter forming an outer surface of the supporter and passing outside the upper end of the rack, and an inner supporter provided on a rear surface of the outer supporter and passing inside the upper end of the rack, and a seating groove into which the upper end of the rack is inserted may be formed at lower ends of the outer supporter and the inner supporter.

[0022] The outer supporter may include an extension part extending from the frame, and a seating part connecting lower ends of the extension part and seated on the upper end of the rack, an opening may be formed between an end of the frame and the extension part and the seating part, and the opening may be formed such that a contact state between the seating part and the rack is exposed.

[0023] The extension part may include an upper extension part extending from an end of the frame, and a lower extension part extending from a lower end of the upper extension part toward the upper end of the rack, and the upper extension part may have an inclined surface becoming farther from the frame as the upper extension part extends downward.

[0024] The inner supporter may include a lower part extending to the same height as a lower end of the outer supporter, and a recessed part recessed between the lower part and the outer supporter and forming the seating groove.

[0025] The inner supporter may extend downward from the accommodating portion, and a drain part communicating between the accommodating portion and a lower side of the supporter may be formed through the inner supporter.

ADVANTAGEOUS EFFECTS

[0026] The dishwasher according to the proposed embodiment can provide the following effects.

[0027] In the dishwasher according to an embodiment of the present disclosure, in a state in which the accessory is mounted on the rack, the supporter may extend such that the accommodating portion and the frame are positioned above the upper end, thereby securing an accommodating space of the rack.

[0028] In addition, the accommodating portion may be positioned above the upper end of the rack, and thus, even in a state in which dishes protruding above

the rack are accommodated, the accessory may slide along the upper end of the rack, and interference with the accommodated dishes can be prevented.

[0029] Further, a lower end of the outer part forming the outer surface of the frame may be formed to be positioned above the inner part. Accordingly, interference between the frame and dishes accommodated on both sides of the accessory can be minimized, and thus accommodating performance of the rack can be improved.

[0030] In addition, the upper end of the rack may be supported in a surrounding manner by the inner supporter and the outer supporter of the supporter, and thus more stable mounting of the accessory can be ensured.

[0031] In addition, a seated state between the supporter and the rack may be exposed through the opening of the supporter, thereby inducing accurate mounting of the accessory.

[0032] Further, a pair of inner supporters support an inner side of the rack, and the seating part is in surface contact with an outer side of the rack, thereby preventing movement of the accessory and preventing separation of the accessory during washing.

[0033] In addition, corners of the supporter and corners of the frame may be formed to be inclined or rounded, and thus, even when contact occurs during a process of drawing out or inserting the rack or during accommodation of dishes, the accessory may move left and right without being separated, thereby ensuring smooth drawing-out and inserting operations of the rack.

DESCRIPTION OF DRAWINGS

[0034]

FIG. 1 is a perspective view illustrating a state in which a door of a dishwasher according to an embodiment of the present disclosure is opened.

FIG. 2 is a perspective view illustrating a state in which an accessory is mounted on a rack according to an embodiment of the present disclosure.

FIG. 3 is a perspective view of the accessory.

FIG. 4 is an enlarged view of portion A of FIG. 2.

FIG. 5 is a cross-sectional view taken along line 5-5 of FIG. 3.

FIG. 6 is a partial side view of the accessory.

FIG. 7 is a cross-sectional view taken along line 7-7 of FIG. 3.

FIG. 8 is a partial bottom view of the accessory.

FIG. 9 is a cross-sectional view illustrating a state in which the accessory is separated from the rack.

FIG. 10 is a cross-sectional view illustrating a state in which one end of the accessory is mounted on the rack.

FIG. 11 is a cross-sectional view illustrating a state in which mounting of the accessory on the rack is

completed.

FIG. 12 is a cutaway perspective view illustrating a state in which the accessory is mounted on the rack.

FIG. 13 is a cross-sectional view illustrating an arrangement of the accessory and dishes seated on the rack.

FIG. 14 is a view illustrating an inserted state of the rack on which the accessory is mounted.

FIG. 15 is a cross-sectional view illustrating a state in which an accessory is mounted on a rack according to another embodiment of the present disclosure.

FIG. 16 is a partial side view of an accessory according to still another embodiment of the present disclosure.

MODE FOR INVENTION

[0035] Hereinafter, specific embodiments of the present disclosure will be described in detail with reference to the accompanying drawings. However, the present disclosure is not limited to the embodiments in which the spirit of the present disclosure is presented, and other embodiments falling within the scope and spirit of the present disclosure may be readily proposed through addition, modification, deletion, or the like of other constituent elements.

[0036] Prior to the description, directions will be defined. In the embodiments of the present disclosure, with reference to a center portion of a washing space of the dishwasher shown in FIG. 1, a direction toward the door may be defined as a front direction, a direction toward the main body with reference to a front surface of the door may be defined as a rear direction, a direction toward an upper surface with reference to a center portion of the main body may be defined as an upward direction, and a direction toward a lower surface with reference to the center portion of the main body may be defined as a downward direction.

[0037] FIG. 1 is a perspective view illustrating a state in which a door of a dishwasher according to an embodiment of the present disclosure is opened.

[0038] As illustrated in the drawings, an exterior appearance of a dishwasher 1 according to an embodiment of the present disclosure may be formed by a main body 10 and a door 20. The main body 10 may include a tub 11 in which a washing space for washing dishes is formed. In addition, the main body 10 may form the exterior appearance of the dishwasher 1 and may have different configurations depending on an installation state, such as a freestanding type or a built-in type.

[0039] The door 20 may open and close the tub 11 having an open front surface. A lower end of the door 20 may be rotatably coupled to a front surface of the main body 10 so as to open and close the tub 11.

[0040] The tub 11 forms a washing space 110 in

which dishes are washed and may be formed in a box shape having an open front surface, and may occupy most of an interior region of the main body 10.

[0041] The tub 11 may be formed of a stainless-steel material, and racks 31 and 32 in which dishes are accommodated may be disposed therein so as to be drawable out and insertable. The racks 31 and 32 may be configured in a basket form in which a plurality of wires cross one another, thereby facilitating washing of accommodated dishes. The racks 31 and 32 may have various shapes, and a plurality of racks 31 and 32 may be vertically arranged. For example, the racks 31 and 32 may include a lower rack 31 and an upper rack 32.

[0042] Rails 12 may be provided on left and right side surfaces of the tub 11, and the rails 12 may be connected to the upper rack 32 or the lower rack 31 so that the upper rack 32 and the lower rack 31 are drawable out and insertable. For example, the upper rack 32 may be drawn out and inserted along the rails 12, and the lower rack 31 may be drawn out and inserted along a rear surface of the door 20.

[0043] A plurality of nozzles 14 and 15 for spraying water for washing dishes may be disposed inside the tub 11. For example, the nozzles 14 and 15 may be disposed at an upper surface and a lower surface of the tub 11 and between the vertically arranged racks 31 and 32. Accordingly, dishes accommodated in the racks 31 and 32 may be washed by washing water sprayed upward and downward from the plurality of nozzles 14 and 15.

[0044] A sump 13 may be provided at a bottom of the tub 11. The sump 13 may be disposed in a lower portion of the main body 10, that is, in a space below the tub 11, and an opening of the sump 13 may be positioned at the bottom of the tub 11 such that water falling from the tub 11 is introduced thereinto.

[0045] In addition, a circulation pump for circulating washing water may be provided in the sump 13. The circulation pump may suck water in the sump 13 and discharge the water toward the nozzles 14 and 15. Accordingly, through operation of the circulation pump, water in the sump 13 may be continuously supplied to the nozzles 14 and 15, thereby enabling circulation and spraying of the washing water. In addition, a drain part through which water in the sump 13 is drained may be provided at another side of the sump 13. Accordingly, the washing water may be drained through the drain part during a washing operation or upon completion of the washing operation. For this purpose, a flow path for washing water flow may be formed between the sump 13, the circulation pump, the nozzles 14 and 15, and the drain part. In addition, a heat pump or a heater may be provided in the main body 10 to heat the washing water and the tub.

[0046] Hereinafter, a structure of the rack 32 and the accessory 40 will be described in detail with reference to the drawings. Although the accessory 40 may be mounted on both the upper rack 32 and the lower rack

31, for convenience of description, a case in which the accessory 40 is mounted on the upper rack 32 will be described as an example. In the following description, the upper rack 32 may simply be referred to as the rack 32.

[0047] FIG. 2 is a perspective view illustrating a state in which an accessory is mounted on a rack according to an embodiment of the present disclosure.

[0048] As illustrated, the rack 32 may have a mesh-shaped basket structure formed by a plurality of wires. For example, the wires may be formed of a metal material, and may be formed of a stainless-steel material.

[0049] The wires may include a main wire 321 forming a periphery of an upper end of the rack 32. In addition, a plurality of transverse wires 322 and longitudinal wires 323 may be provided so as to extend across the main wire 321. The transverse wires 322 and the longitudinal wires 323 may be continuously arranged and spaced apart from one another to form a lattice-shaped mesh structure. In addition, both ends of the transverse wires 322 and the longitudinal wires 323 may be bent upward and connected to the main wire 321, thereby forming a basket-like shape. Further, the transverse wires 322 and the longitudinal wires 323 may be bent into various shapes suitable for a type and shape of dishes accommodated in the rack 32. The wires may alternatively be in the form of thick rods or bars.

[0050] Guide members 33 may be formed on left and right sides of the rack 32. The guide members 33 may be molded from a plastic material and coupled to the main wire 321, and may be exposed on outer side surfaces of the left and right sides of the rack 32.

[0051] The guide members 33 may be coupled to the rails 12 so that the rack 32 moves in a front-rear direction. For this purpose, a plurality of rollers may be provided on the guide members 33. In addition, the guide members 33 may move vertically while being coupled to the rack 32, thereby adjusting a distance from the lower rack 31 or a space above the rack 32.

[0052] Cup support members 35 may be provided on left and right sides of the rack 32. The cup support members 35 may be rotatably mounted on the left and right sides of the rack 32. The cup support members 35 may be unfolded from side surfaces of the rack 32 by rotation and may provide spaces on which dishes 3 such as cups are seated.

[0053] A front cover 34 may be provided at a front end of the rack 32. The front cover 34 may be formed along the main wire 321 forming the front end of the rack 32. In addition, both ends of the front cover 34 may extend toward a rear end and may be connected to the guide members 33.

[0054] The front cover 34 may be formed of a plastic material and may be formed to surround the main wire 321. Accordingly, an upper front end of the rack 32 at which the front cover 34 is formed may be thicker than the main wire 321, and may be used as a handle when a user draws out and inserts the rack 32.

[0055] In addition, a middle nozzle 15 drawn out and inserted together with the rack 32 may be provided below the rack 32, and water sprayed upward from the middle nozzle 15 may pass through the rack 32 and wash dishes accommodated in the rack 32.

[0056] Meanwhile, an accessory 40 may be seated on the rack 32. The accessory 40 may accommodate small dishes 2 such as silverware, such as spoons, forks, and knives, may be seated on an upper portion of the rack 32, and may be moved in left and right directions to be mounted at a desired position. For example, the accessory 40 may have a structure suitable for accommodating the knife, and thus the accessory 40 may be referred to as a knife rack.

[0057] In addition, the accessory 40 may be mounted on the main wire 321. A front end and a rear end of the accessory 40 may be seated on the main wire 321 forming an upper front end and an upper rear end of the rack 32. For this purpose, a length of the accessory 40 in a front-rear direction may be equal to or somewhat greater than a length of the rack 32 in the front-rear direction.

[0058] An accommodating portion 410 on which small dishes 2 such as silverware, such as spoons, forks, and knives, may be disposed may be formed on an upper surface of the accessory 40. The accommodating portion 410 may form a recessed space and may provide a space in which the dishes 2 may be disposed. For example, the accommodating portion 410 may be open in a lattice shape so that water sprayed from below may pass therethrough.

[0059] A front end and a rear end of the accessory 40 may extend in an upper-lower direction so that the accommodating portion 410 is sufficiently spaced apart from an upper end of the rack 32. Accordingly, when mounted, the accessory 40 may have a structure and shape capable of securing a space in which dishes may be disposed in the rack 32 and minimizing interference with dishes disposed in the rack 32.

[0060] For example, the accessory 40 may be injection-molded from a plastic material to realize a three-dimensional shape.

[0061] Hereinafter, the structure of the accessory 40 will be described in more detail with reference to the drawings.

[0062] FIG. 3 is a perspective view of the accessory. In addition, FIG. 4 is an enlarged view of portion A of FIG. 2. In addition, FIG. 5 is a cross-sectional view taken along line 5-5 of FIG. 3. In addition, FIG. 6 is a partial side view of the accessory. In addition, FIG. 7 is a cross-sectional view taken along line 7-7 of FIG. 3. In addition, FIG. 8 is a partial bottom view of the accessory.

[0063] As illustrated, the accessory 40 may include a frame 41 in which the accommodating portion 410 is formed, and supporters 42 extending downward from a front end and a rear end of the frame 41.

[0064] The frame 41 may form an upper portion of

the accessory 40 and may form a space in which dishes 2 such as the silverware are disposed. The frame 41 may form a periphery of the accommodating portion 410. In addition, the frame 41 may protrude upward further than the accommodating portion 410. The frame 41 may be formed in a rectangular frame shape when viewed from above. For example, the frame 41 may include a pair of first side parts 411 forming left and right exterior appearances and extending in the front-rear direction, and a pair of second side parts 412 forming front and rear exterior appearances and connecting front ends and rear ends of the pair of first side parts 411. The first side part 411 may be referred to as a side part, and the second side part 412 may be referred to as a front part and a rear part.

[0065] A length of the accessory 40 may be determined by the first side part 411 and may correspond to a length of the rack 32 in the front-rear direction. In addition, a width of the accessory 40 may be determined by the second side part 412 and may have a width smaller than the length of the accessory 40. For example, the width of the accessory 40 may be smaller than half of a length of the rack 32 in the left-right direction. Accordingly, even when the accessory 40 is positioned at any position in the left-right direction of the rack 32, the accessory 40 may avoid interference by dishes disposed in the rack 32.

[0066] Meanwhile, the frame 41 may further include a corner part 413. The corner part 413 may connect an end of the first side part 411 and an end of the second side part 412 and may be formed in an inclined or rounded shape. Accordingly, corners of the frame 41 may have an inclined or rounded shape.

[0067] A shape of the corner part 413 can prevent catching or interference between the accessory 40 and another component. For example, due to the shape of the corner part 413, when the accessory 40 contacts the main body or another component at the corner part 413 during a process of drawing out and inserting the rack 32, the accessory 40 may move and naturally repositioned.

[0068] In addition, the accommodating portion 410 in which dishes 2 such as silverware are accommodated may be formed in an inner region of the frame 41. The accommodating portion 410 may include a plurality of longitudinal ribs 44 and transverse ribs 45. The longitudinal ribs 44 and the transverse ribs 45 may be disposed to cross each other so that a bottom of the accommodating portion 410 has a plurality of lattice shapes.

[0069] At this time, the longitudinal ribs 44 may be disposed parallel to the first side part 411, and a plurality of longitudinal ribs 44 may be formed at regular intervals in the left-right lateral direction. In addition, both ends of the longitudinal ribs 44 may be connected to the second side parts 412.

[0070] The transverse ribs 45 may be disposed parallel to the second side parts 412 and may be formed at

regular intervals in the front-rear direction. In addition, the transverse ribs 45 may extend to cross the longitudinal ribs 44. Accordingly, the overall lattice shape of the accommodating portion 410 may be formed by the transverse ribs 45 and the longitudinal ribs 44. In addition, both ends of the transverse ribs 45 may be connected to the first side parts 411.

[0071] In addition, a plurality of arranging parts 451 protruding upward may be formed on the transverse ribs 45. The arranging parts 451 divide the dishes 2 disposed in the accommodating portion 410 so that the dishes 2 may be separately disposed, and a plurality of arranging parts 451 may be formed along the transverse ribs 45. In addition, the arranging parts 451 may protrude from the respective transverse ribs 45 to different heights. For example, the arranging parts 451 may be formed in various shapes, such as inclined ribs, saw teeth, and protrusions.

[0072] Both ends of the longitudinal ribs 44 and the transverse ribs 45 may be bent upward. Accordingly, the accommodating portion 410 may be positioned below the frame 41. That is, the frame 41 may serve as a rim protruding upward along a periphery of the accommodating portion 410 so that the dishes 2 disposed in the accommodating portion 410 do not fall and maintain a stable seated state.

[0073] Meanwhile, the first side part 411 may include an inner part 411a forming an inner surface of the frame 41, and an outer part 411b forming an outer surface of the frame 41. The inner part 411a and the outer part 411b may be spaced apart from each other. In addition, the first side part 411 may include a connecting part 411c connecting upper ends of the inner part 411a and the outer part 411b. The connecting part 411c may form an upper end of the frame 41 and may have a rounded shape. A distance between the inner part 411a and the outer part 411b may increase from an upper side toward a lower side.

[0074] The inner part 411a may extend downward further than the outer part 411b. In addition, the transverse ribs 45 may be connected to a lower end of the inner part 411a. At this time, the inner part 411a may be formed to be inclined outward as the inner part 411a extends upward. Accordingly, a space above the accommodating portion 410 may be expanded, and an accommodating space for the dishes 2 disposed in the accommodating portion 410 may be sufficiently secured.

[0075] With reference to a lower end of the accessory 40, a height H1 of a lower end of the accommodating portion 410 may be formed lower than a height H2 of a lower end of the inner part 411a. In addition, a height H3 of a lower end of the outer part 411b may be formed higher than the height H2 of the lower end of the inner part 411a. In addition, the outer part 411b may extend in a spaced state further outward than the inner part 411a. Accordingly, when viewed from a side, the inner part 411a and the lower end of the accommodating

portion 410 may be exposed in a state of protruding further downward than the lower end of the outer part 411b.

[0076] Specifically, as illustrated in FIG. 5, the lower end of the accommodating portion 410 positioned at an innermost side may be positioned at a lowest height, the lower end of the inner part 411a outside the accommodating portion 410 may be positioned at a height higher than the accommodating portion 410, and the lower end of the outer part 411b outside the inner part 411a may be positioned at a height higher than the lower end of the inner part 411a. Accordingly, a height may increase in order of the accommodating portion 410, the inner part 411a, and the outer part 411b from the inner side toward the outer side. In addition, when viewed from the front, an extension line connecting the lower ends of the accommodating portion 410, the inner part 411a, and the outer part 411b may have an inclined arrangement structure.

[0077] Due to such a structure, spaces may be secured on both sides of the accessory 40, that is, lower portions of left and right sides of the frame 41. Accordingly, interference between dishes disposed in the rack 32 and the accessory 40 can be avoided.

[0078] Meanwhile, the supporter 42 may form a front surface and a rear surface of the accessory 40. In addition, the supporter 42 may be mounted on the rack 32. The supporter 42 may extend downward from a front end and a rear end of the frame 41. At this time, the pair of supporters 42 may be formed to have the same shape. That is, the accessory 40 may be formed to be symmetrical with respect to a center in the front-rear direction.

[0079] The supporter 42 may extend downward from the second side part 412. The supporter 42 may also be formed integrally with the second side part 412. That is, an upper end of the supporter 42 may form the second side part 412, and in this case, the supporter 42 may be a part of the frame 41.

[0080] In addition, the supporter 42 may extend in the upper-lower direction so that the accommodating portion 410 may be positioned above the rack 32 by a predetermined distance. In addition, a lower end of the supporter 42 may be seated on an upper end of the rack 32. For example, the front supporter 42 may be seated on the front cover 34, and the rear supporter 42 may be seated on the main wire 321.

[0081] For example, the supporter 42 may include an outer supporter 426 and an inner supporter 43. The outer supporter 426 may form a front surface and a rear surface of the supporter 42 and the accessory 40. The outer supporter 426 may include extension parts 420 extending downward from left and right sides of a front end of the frame 41. The extension part 420 may include an upper extension part 421 and a lower extension part 422.

[0082] The upper extension part 421 may extend downward from the frame 41 and may be formed to be

inclined outward as the upper extension part 421 extends downward. That is, the upper extension part 421 may be formed such that a lower end protrudes further than an upper end. In addition, the upper extension part 421 may be formed to be inclined or rounded.

[0083] The upper extension part 421 may be connected to the corner part 413. In addition, a corner portion formed by a front surface and a side surface of the accessory 40 may be formed to be entirely inclined or rounded by the corner part 413 and the upper extension part 421. Accordingly, catching or impact with other components during movement of the rack 32 or the accessory 40 can be prevented.

[0084] The lower extension part 422 may extend downward from a lower end of the upper extension part 421. The lower extension part 422 may extend downward in a direction perpendicular to the frame 41. In addition, the lower extension part 422 may extend with a smaller inclination than the upper extension part 421. The lower extension part 422 may extend to a position contacting the upper end of the rack 32.

[0085] In addition, the extension part 420 may be formed to protrude further than a front end or a rear end of the frame 41. That is, the extension part 420 may protrude further than an outer surface of the second side part 412.

[0086] The outer supporter 426 may further include a seating part 423. The seating part 423 may provide a surface seated on the upper end of the rack 32 and may connect between lower ends of the extension parts 420 on both sides. In addition, the seating part 423 may form a lower end of the outer supporter 426.

[0087] The seating part 423 may extend parallel to a front end or a rear end of the frame 41. In addition, the seating part 423 may include a first part 423a and a second part 423b. The first part 423a may form an upper surface of the seating part 423 and may connect between lower ends of the extension parts 420. In addition, when the accessory 40 is mounted on the rack 32, the first part 423a may be supported on the upper end of the rack 32.

[0088] The second part 423b may extend downward from an end of the first part 423a and may form an outer surface of the seating part 423. In addition, a lower end of the second part 423b may form a lower end of the seating part 423 and a lower end of the supporter 42, and may form a lowermost end of the accessory 40. When the accessory 40 is mounted on the rack 32, the lower end of the second part 423b may extend further downward than the upper end of the rack 32. Accordingly, the second part 423b restrains the upper end of the rack 32 from an outer side of the rack 32 so that the accessory 40 is not separated from the rack 32.

[0089] The first part 423a and the second part 423b may cross each other. In addition, the seating part 423 formed by the first part 423a and the second part 423b may be formed in a shape corresponding to an outer surface of the front cover 34. Accordingly, when the

accessory 40 is mounted on the rack 32, the first part 423a and the second part 423b may be in surface contact so as to surround the outer surface of the front cover 34.

[0090] Meanwhile, an opening 425 may be formed between an end of the frame 41 and the extension part 420 and the seating part 423. A contact state between the seating part 423 and an upper end of the rack 32 may be exposed through the opening 425. In addition, the opening 425 may be formed to have a size sufficient for a user's finger to enter and may also serve as a handle for gripping front and rear ends of the accessory 40. The opening 425 may be defined by the extension part 420, the second side part 412, and the seating part 423.

[0091] The supporter 42 may include an outer surface part 424 connecting the frame 41, the extension parts 420 on the left and right sides, and the seating part 423. The outer surface part 424 may connect respective components of the supporter 42 and may be formed in a stepped shape with respect to the seating part 423 and the extension part 420 to reinforce strength of the supporter 42.

[0092] In addition, the opening 425 may be formed in the outer surface part 424. A lower end of the opening 425 may be formed by the seating part 423. Accordingly, a support state between the supporter 42 and the rack 32, that is, an accurate mounted state of the accessory 40, can be checked through the opening 425.

[0093] The supporter 42 may further include the inner supporter 43. A pair of inner supporters 43 may be provided on left and right sides of the supporter 42, and may extend in the upper-lower direction at positions closer to a center of the frame 41 than the outer supporter 426.

[0094] The inner supporter 43 may extend to the same height H as a height between the height H1 of the lower end of the accommodating portion 410 and a height H0 of the seating part 423. The inner supporter 43 may form a lower end of the supporter 42 together with the seating part 423. When the accessory 40 is separated from the rack 32 and independently placed, the inner supporter 43 may contact the ground together with the lower end of the outer supporter 426. Accordingly, the inner supporter 43 may also be referred to as a leg.

[0095] In addition, a seating groove 435 may be formed at a lower end of the inner supporter 43 so that an upper end of the rack 32 may be inserted and seated. When the accessory 40 is mounted, the upper end of the rack 32 may be received in the seating groove 435, and stable mounting and fixing of the accessory 40 can be ensured.

[0096] Specifically, the inner supporter 43 may be provided between the opening 425 and the extension part 420. In addition, the inner supporter 43 may protrude from a rear surface of the outer surface part 424 in a direction away from the outer surface part 424.

That is, the inner supporter 43 may be formed integrally with the outer supporter 426.

[0097] The inner supporter 43 may extend from the accommodating portion 410 to the lower end of the supporter 42. In addition, the inner supporter 43 may be formed to have a predetermined length in the front-rear direction and a predetermined width in the left-right direction, thereby ensuring stable mounting of the accessory 40 on the upper end of the rack 32. In addition, a drain part 430 through which water of the accommodating portion 410 is drained may be formed in the inner supporter 43.

[0098] For example, the inner supporter 43 may include side walls 431 spaced apart from each other and a connecting wall 432 connecting ends of the side walls 431. One end of each side wall 431 may be connected by the outer surface part 424, and the other end thereof may be connected by the connecting wall 432.

[0099] A spaced distance between the side walls 431 may correspond to a distance between the longitudinal ribs 44, and a position of the connecting wall 432 may correspond to the transverse rib 45. Accordingly, the inner supporter 43 may be formed by the pair of side walls 431, the connecting wall 432, and the outer surface part 424. In addition, upper and lower surfaces of the inner supporter 43 may be open to form the drain part 430 communicating in the upper-lower direction. At this time, an upper surface of the drain part 430, that is, an open upper surface of the inner supporter 43, may coincide with one lattice formed by the longitudinal ribs 44 and the transverse ribs 45. Accordingly, water of the accommodating portion 410 may smoothly drain downward through the drain part 430.

[0100] In addition, a lower end of the inner supporter 43 may be formed to be stepped to form the seating groove 435. Specifically, the lower end of the inner supporter 43 may include a lower part 434 extending to the same height as an end of the seating part 423, and a recessed part 433 formed to be stepped from the lower part 434 and forming the seating groove 435.

[0101] The recessed part 433 may be formed to be at least larger than a diameter of the main wire 321 so that the main wire 321 may be completely received inside the seating groove 435. In addition, the recessed part 433 may be formed to have a size into which the front cover 34 may be inserted. Specifically, the seating groove 435 in which the upper end of the rack 32 is received may be formed by the seating part 423, the recessed part 433, and the lower part of the supporter 42.

[0102] In addition, the supporter 42 may be formed to extend such that a height difference from an end of the seating groove 435 to a lower end of the accommodating portion 410 becomes a predetermined height H. For example, the predetermined height H may be 30mm. Accordingly, when the accessory is mounted, a space in which dishes accommodated in the rack do not interfere with the accommodating portion 410 can be se-

cured.

[0103] In addition, a front end of the recessed part 433 or a rear surface of the outer supporter 426 may be formed to be inclined. Accordingly, when the main wire 321 is inserted into the seating groove 435, the main wire 321 may be guided to an inside of the recessed part 433.

[0104] In addition, a size of the seating groove 435 may be formed to correspond to a size of an upper end of the front cover 34 so that the front cover 34 may be inserted inside the seating groove 435 when the accessory 40 is mounted. Accordingly, the accessory 40 does not excessively move in the front-rear direction in a state mounted on the rack 32.

[0105] Hereinafter, an operation of the dishwasher 1 having the above-described structure will be described.

[0106] FIG. 9 is a cross-sectional view illustrating a state in which the accessory is separated from the rack. In addition, FIG. 10 is a cross-sectional view illustrating a state in which one end of the accessory is mounted on the rack. In addition, FIG. 11 is a cross-sectional view illustrating a state in which mounting of the accessory on the rack is completed.

[0107] As illustrated, the accessory 40 may be mounted on the rack 32 for effective washing of the dishes 2. In addition, the dishes 2 may be disposed on the accessory 40 and washed. The accessory 40 may be mounted on the upper end of the rack 32.

[0108] Specifically, as illustrated in FIG. 9, in order to accommodate dishes in the rack 32, dishes for washing may first be accommodated inside the rack 32 in a state in which the accessory 40 is not seated. In addition, the accessory 40 may be disposed above the rack 32 for accommodation of the dishes 2. At this time, the accessory 40 may be mounted on a rack 32 suitable for arrangement according to an accommodated state of dishes among the plurality of racks 32.

[0109] In addition, according to an arrangement of dishes accommodated in the rack 32, the accessory 40 may be slid in the left-right direction and moved to a different position. Of course, excessive movement of the accessory 40 may be restricted by a rack protrusion 321a protruding from a center portion of the main rack 32.

[0110] In addition, in order to accurately mount the accessory 40 on the rack 32, the supporter 42 at the rear end of the accessory 40 may first be seated on the main wire 321.

[0111] As illustrated in FIG. 10, when the accessory 40 is mounted, the main wire 321 at the rear end of the rack 32 is inserted into the seating groove 435 formed in the supporter 42 at the rear end of the accessory 40. At this time, since a diameter of the main wire 321 is smaller than a width of the seating groove 435, the main wire 321 may be easily seated in the seating groove 435. In addition, in a state in which the main wire 321 is seated in the seating groove 435, the accessory 40 may be moved in the front-rear direction to

finely adjust a position for seating the supporter 42 at the front end of the accessory 40. In particular, the main wire 321 may be guided to an accurate position in the seating groove 435 through an inclined portion at the lower end of the outer supporter 426.

[0112] When a position of the rear end of the accessory 40 is fixed at an accurate mounting position, the supporter 42 at the front end of the accessory 40 may be easily seated on the front end of the rack 32. In a state in which the supporter 42 at the rear end of the accessory 40 is seated on the main wire 321 at the rear end of the rack 32, the accessory 40 may be rotated so that the supporter 42 at the front end of the accessory 40 is seated on the front cover 34 at the front end of the rack 32.

[0113] As illustrated in FIG. 11, when the accessory 40 is mounted on the upper end of the rack 32, the supporters 42 at the front end and the rear end of the accessory 40 may be seated on the front cover 34 at the front end of the rack 32 and the main wire 321 at the rear end of the rack 32, respectively.

[0114] At this time, the seating part 423 at the front end of the accessory 40 surrounds an outer surface of the front cover 34. At this time, an accurate mounted state of the accessory 40 may be checked through the opening 425 as illustrated in FIG. 4. When the seating part 423 is supported on an upper surface of the front cover 34 and the seating part 423 is in contact with a front surface of the front cover 34, the accessory 40 may be in an accurate mounted state.

[0115] In addition, the front cover 34 may be inserted into the seating groove 435 and may also be in contact with the seating part 423 and the lower part 434. Accordingly, the accessory 40 may maintain a stably mounted state on the rack 32 without moving in the front-rear direction.

[0116] FIG. 12 is a cutaway perspective view illustrating a state in which the accessory is mounted on the rack.

[0117] As illustrated, in a state in which the accessory 40 is completely mounted, the accessory 40 may slide in the left-right direction. In particular, since the seating groove 435 is open in the left-right direction, the accessory 40 may move in the left-right direction and be position-adjustable according to a state of dishes accommodated in the rack 32 even in a state in which the accessory 40 is mounted on the rack 32.

[0118] In addition, since the supporter 42 maintains a stable support state by the pair of inner supporters formed on left and right sides, the accessory 40 is not tilted or separated from the rack 32 while the accessory 40 moves left and right along the rack 32.

[0119] In particular, the pair of inner supporters 43 contact an inner side of the rack 32, and the seating part 423 contacts an outer side of the rack 32, such that an end of the rack 32 has a stable support structure at three points with the supporter 42 and separation of the accessory 40 can be prevented.

[0120] In addition, in the inner supporter 43, water above the accommodating portion 410 may be more effectively discharged to a lower side of the accessory 40 by the drain part 430 opened in the upper-lower direction. Water at corners of the accommodating portion 410 may be drained downward through the opening 425 on an upper surface of the drain part 430 and may fall downward through a space formed by the side walls 431 and the connecting wall 432.

[0121] FIG. 13 is a cross-sectional view illustrating an arrangement of the accessory and dishes seated on the rack.

[0122] As illustrated, in a state in which the accessory 40 is seated on the rack 32, the lower end of the accommodating portion 410 may be spaced upward from the upper end of the rack 32 by a predetermined height H. Accordingly, even when dishes 4 such as water cups accommodated in the rack 32 protrude further upward than the upper end of the rack 32, the dishes 4 do not interfere with the lower end of the accommodating portion 410.

[0123] Accordingly, even when the accessory 40 is mounted, a limitation on disposing dishes 4 for washing in the rack 32 can be minimized. In addition, even when the dishes 4 protruding above the rack 32 are disposed, arrangement and sliding movement of the accessory 40 may be possible.

[0124] Meanwhile, the accessory 40 may be disposed to be biased toward a left side or a right side of the rack 32 and may occupy only a portion of left and right spaces among an entire upper space of the rack 32, and thus dishes having a high height may be freely disposed in the remaining space.

[0125] In addition, even when dishes 3 such as cups are disposed using the cup support member 35 and the accessory 40 is disposed on one side of the left and right sides of the rack 32, a side end of the accessory 40 and the dishes 3 do not interfere with each other.

[0126] Specifically, among the first side parts 411 forming the side end of the accessory 40, the outer part 411b is formed higher than the inner part 411a. Accordingly, even when the dishes 3 are disposed to be inclined, the accessory 40 may provide a space by a height difference between lower ends of the outer part 411b and the inner part 411a. That is, additional spaces may be formed below the left and right sides of the accessory 40 by an inclination of an extension line passing through the lower end of the outer part 411b and the lower end of the inner part 411a.

[0127] Accordingly, the accessory 40 may provide a space in which the dishes 3 may be disposed along a side direction, thereby securing accommodating performance and ensuring mounting of the accessory 40.

[0128] FIG. 14 is a view illustrating an inserted state of the rack on which the accessory is mounted.

[0129] As illustrated, in a state in which the accessory 40 is seated on the rack 32, the rack 32 may be slidably drawn out from and inserted into the washing

space of the tub 11. At this time, when the accessory 40 is positioned at an outermost end of the rack 32, an outer end of the accessory 40 may protrude further laterally than a side end of the rack 32.

[0130] When the rack 32 is inserted in such a state, a rear end of the accessory 40 comes into contact with a side wall of the main body 10. In addition, since the corner part 413 of the accessory 40 is formed to be inclined or rounded, the corner part 413 may contact the side wall of the main body 10 during insertion of the rack 32.

[0131] Accordingly, the corner part 413 may move along the side wall of the main body 10, and the accessory 40 may move in a center direction of the rack 32, that is, in an inward direction of the tub 11. Since the accessory 40 has a structure slidable along the upper end of the rack 32, even when the accessory 40 contacts the side wall of the main body 10 during insertion of the rack 32, the accessory 40 may move naturally, and smooth insertion of the rack 32 can be ensured without being separated from the rack 32 or stopping insertion of the rack 32.

[0132] Meanwhile, the present disclosure may have various other embodiments in addition to the above-described embodiment. Hereinafter, another embodiment of the present disclosure will be described in detail with reference to the drawings. In addition, since components not described below are the same as those of the above-described embodiment, detailed description and illustration thereof may be omitted to prevent redundant description, and the same reference numerals may be used for description. That is, only components different from those of the above-described embodiment will be described in detail below.

[0133] FIG. 15 is a cross-sectional view illustrating a state in which an accessory is mounted on a rack according to another embodiment of the present disclosure.

[0134] As illustrated, a dishwasher 1 according to another embodiment of the present disclosure may include a rack 32' in which dishes for washing are accommodated. An overall structure of the rack 32' is the same as that of the above-described embodiment, but the rack 32' does not include the front cover 34 of the above-described embodiment.

[0135] That is, an upper end of the rack 32' may be formed by the main wire. In addition, an upper front end and an upper rear end of the rack 32' on which the accessory 40 is seated may also be formed by the main wire 321.

[0136] The accessory 40 may be formed the same as the accessory 40 of the above-described embodiment. Accordingly, both the supporters 42 at the front end and the rear end of the accessory 40 may be seated on the main wire 321. Specifically, seating grooves 435 may be formed at lower ends of the supporters 42 at the front end and the rear end of the accessory 40, and the main wire 321 may be received in the seating

grooves 435.

[0137] At this time, the outer supporter 426 is positioned outside the main wire 321, and the inner supporter 43 is positioned inside the main wire 321 so that the accessory 40 maintains a stable mounted state. In addition, the main wire 321 may contact the seating groove 435 and support the supporter 42 from below.

[0138] As described above, the accessory 40 may be mounted on the upper end of the rack 32' regardless of whether the front cover 34 is present, and may maintain a stable mounted state.

[0139] FIG. 16 is a partial side view of an accessory according to still another embodiment of the present disclosure.

[0140] As illustrated, an accessory 40' in which the dishes 2 for washing are accommodated may be mounted on the rack 32 of a dishwasher 1 according to another embodiment of the present disclosure. The accessory 40' may have the same structure as that of the above-described embodiment, and may have a partial difference only in a structure of the inner supporter 43.

[0141] Specifically, the accessory 40' may include a frame 41 having a rectangular shape, and a plurality of transverse ribs 45 and longitudinal ribs 44 may be formed inside the frame 41 to form the accommodating portion 410. The frame 41 may include first side parts 411 forming left and right sides and second side parts 412 forming front and rear sides. In addition, the first side part 411 may include an inner part 411a and an outer part 411b.

[0142] In addition, supporters 42 extending downward may be formed at a front end and a rear end of the frame 41. The supporter 42 may include an outer supporter 426 forming an outer surface of the supporter 42, and an inner supporter 43 protruding from a rear surface of the outer supporter 426.

[0143] The outer supporter 426 may include a pair of extension parts 420 extending downward from left and right ends. The extension part 420 may include an upper extension part 421 extending downward from the frame 41 in an inclined manner, and a lower extension part 422 extending downward from a lower end of the upper extension part 421. In addition, the outer supporter 426 may include a seating part 423 connecting lower ends of the extension parts 420.

[0144] In addition, the inner supporter 43 may protrude from a rear surface of the outer supporter 426 and may extend downward from the accommodating portion 410. In addition, a lower part 434' and a recessed part 433 may be formed at a lower end of the inner supporter 43. In addition, the seating groove 435 may be formed by the lower part 434', the seating part 423, and the recessed part 433.

[0145] When the accessory 40' is mounted, the main wire 321 of the rack 32 may be received in the seating groove 435. In addition, the accessory 40' may maintain a state of being seated on the upper end of the rack 32 by the inner supporter 43 and the outer supporter 426.

ter 426.

[0146] Meanwhile, a lower end of the inner supporter 43, that is, the lower part 434', may extend further downward than a lower end of the outer supporter 426, that is, a lower end of the seating part 423. The lower end of the inner supporter 43 may extend further downward than the lower end of the outer supporter 426 by a predetermined height H4.

[0147] Accordingly, when the accessory 40' is separated from the rack 32 and placed on the ground, only the lower end of the inner supporter 43, that is, the lower part 434', contacts the ground, and the outer supporter 426 may be spaced apart from the ground. In addition, since a user can insert a hand into the opening 425 and easily grip the spaced seating part 423, movement and handling of the accessory 40' can be facilitated.

INDUSTRIAL APPLICABILITY

[0148] The dishwasher according to an embodiment of the present disclosure has improved accommodating performance and ensures stable mounting, and thus has high industrial applicability.

Claims

1. A dishwasher, comprising:

a main body forming a washing space having an open front surface;
a door opening and closing the washing space;
a rack provided to be drawable out and insertable in a front-rear direction in the washing space; and
an accessory seated on an upper end of the rack and on which dishes for washing are seated,
wherein the accessory comprises:

a frame forming a periphery of an accommodating portion in which the dishes are accommodated; and
a supporter extending downward from the frame and coupled to the rack, and
wherein the supporter extends such that a lower end of the frame is positioned above an upper end of the rack.

2. The dishwasher of claim 1, wherein the rack comprises:

a main wire disposed along the upper end of the rack; and
a plurality of longitudinal wires and transverse wires disposed between the main wires and

bent multiple times to form a space in which dishes are accommodated, and wherein a seating groove into which the main wire is inserted is formed at a lower end of the supporter.

3. The dishwasher of claim 2,

wherein a front cover formed to surround the main wire and formed thicker than the main wire is provided at an upper front end of the rack,
wherein the seating groove is formed to have a corresponding size so that the front cover can be inserted therein,
wherein the supporter is formed at a front end and a rear end of the frame, and
wherein one supporter is seated on the front cover, and the other supporter is seated on the main wire.

4. The dishwasher of claim 1,

wherein the accommodating portion connects between portions of the frame and comprises a plurality of ribs crossing each other, and
wherein a lower end of the accommodating portion is positioned below a lower end of the frame and positioned above the upper end of the rack by a predetermined distance.

5. The dishwasher of claim 4,

wherein the ribs extend parallel to the frame, and both ends of the ribs are bent upward and connected to an inner surface of the frame.

6. The dishwasher of claim 1,
wherein the frame comprises:

a pair of first side parts disposed on left and right sides of the accommodating portion and forming both side surfaces; and
a pair of second side parts disposed at front and rear sides of the accommodating portion and forming front and rear surfaces, and
wherein the supporter extends downward from the second side parts.

7. The dishwasher of claim 6, comprising a corner part connecting between an end of the first side part and an end of the second side part and formed to be inclined or rounded.

8. The dishwasher of claim 6,
wherein the first side part comprises:

an inner part forming an inner surface of the frame facing the accommodating portion; and

an outer part disposed outside the inner part and forming an outer surface of the frame.

9. The dishwasher of claim 8,

wherein the accommodating portion is connected to the inner part, and
wherein a lower end of the accommodating portion is positioned below a lower end of the inner part.

10. The dishwasher of claim 8,

wherein the outer part is formed such that a lower end of the outer part is positioned above a lower end of the inner part.

11. The dishwasher of claim 1,

wherein the supporter comprises:

an outer supporter forming an outer surface of the supporter and passing outside the upper end of the rack; and
an inner supporter provided on a rear surface of the outer supporter and passing inside the upper end of the rack, and
wherein a seating groove into which the upper end of the rack is inserted is formed at lower ends of the outer supporter and the inner supporter.

12. The dishwasher of claim 11,

wherein the outer supporter comprises:

an extension part extending from the frame; and
a seating part connecting a lower end of the extension part and seated on the upper end of the rack,
wherein an opening is formed between an end of the frame and the extension part and the seating part, and
wherein the opening is formed such that a contact state between the seating part and the rack is exposed.

13. The dishwasher of claim 12,

wherein the extension part comprises:

an upper extension part extending from an end of the frame; and
a lower extension part extending from a lower end of the upper extension part to the upper end of the rack, and
wherein the upper extension part has an inclined surface becoming farther from the frame as the upper extension part extends downward.

14. The dishwasher of claim 11,
wherein the inner supporter comprises:

a lower part extending to the same height as a
lower end of the outer supporter; and 5
a recessed part recessed between the lower
part and the outer supporter and forming the
seating groove.

15. The dishwasher of claim 11, 10

wherein the inner supporter extends down-
ward from the accommodating portion, and
wherein a drain part communicating between
the accommodating portion and a lower side 15
of the supporter is formed through the inner
supporter.

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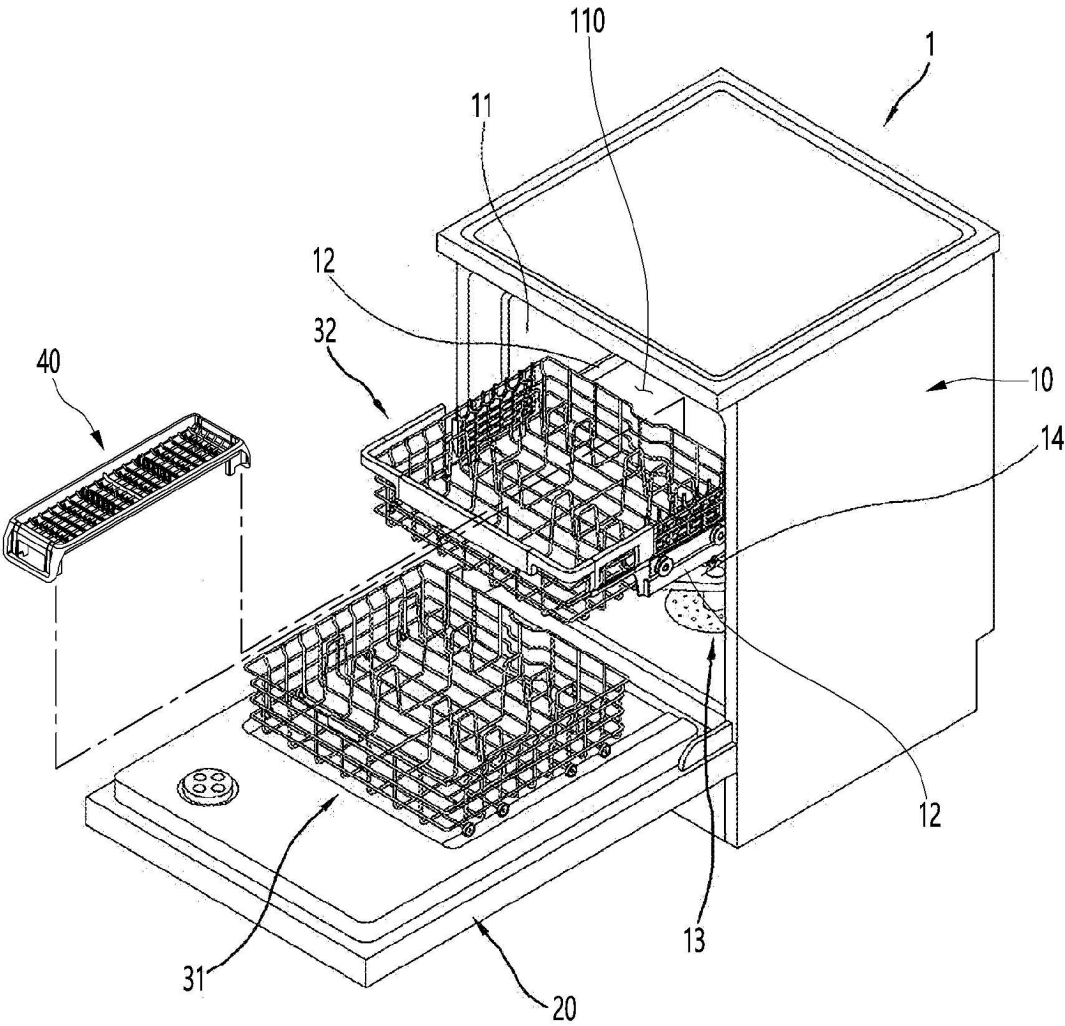
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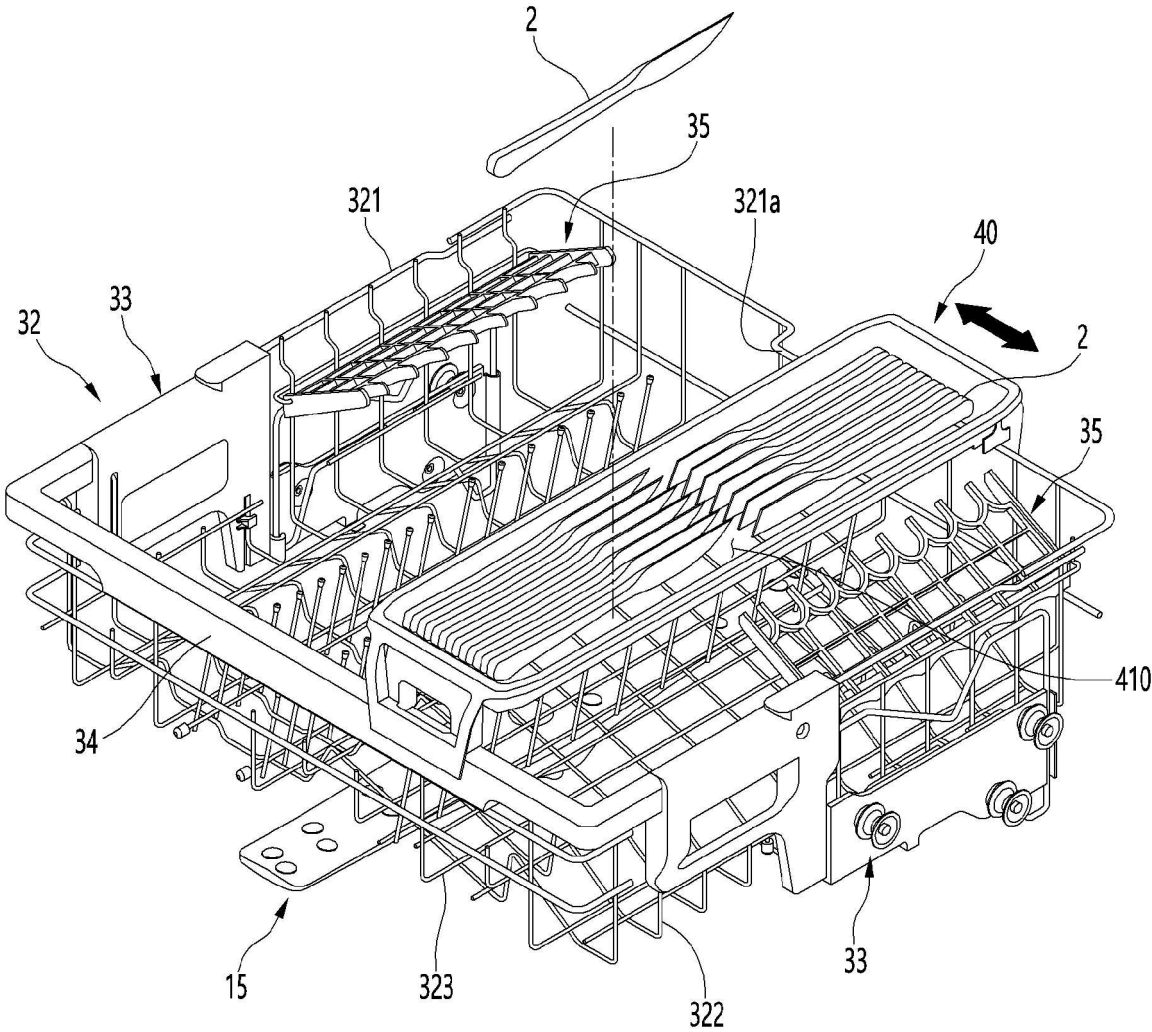
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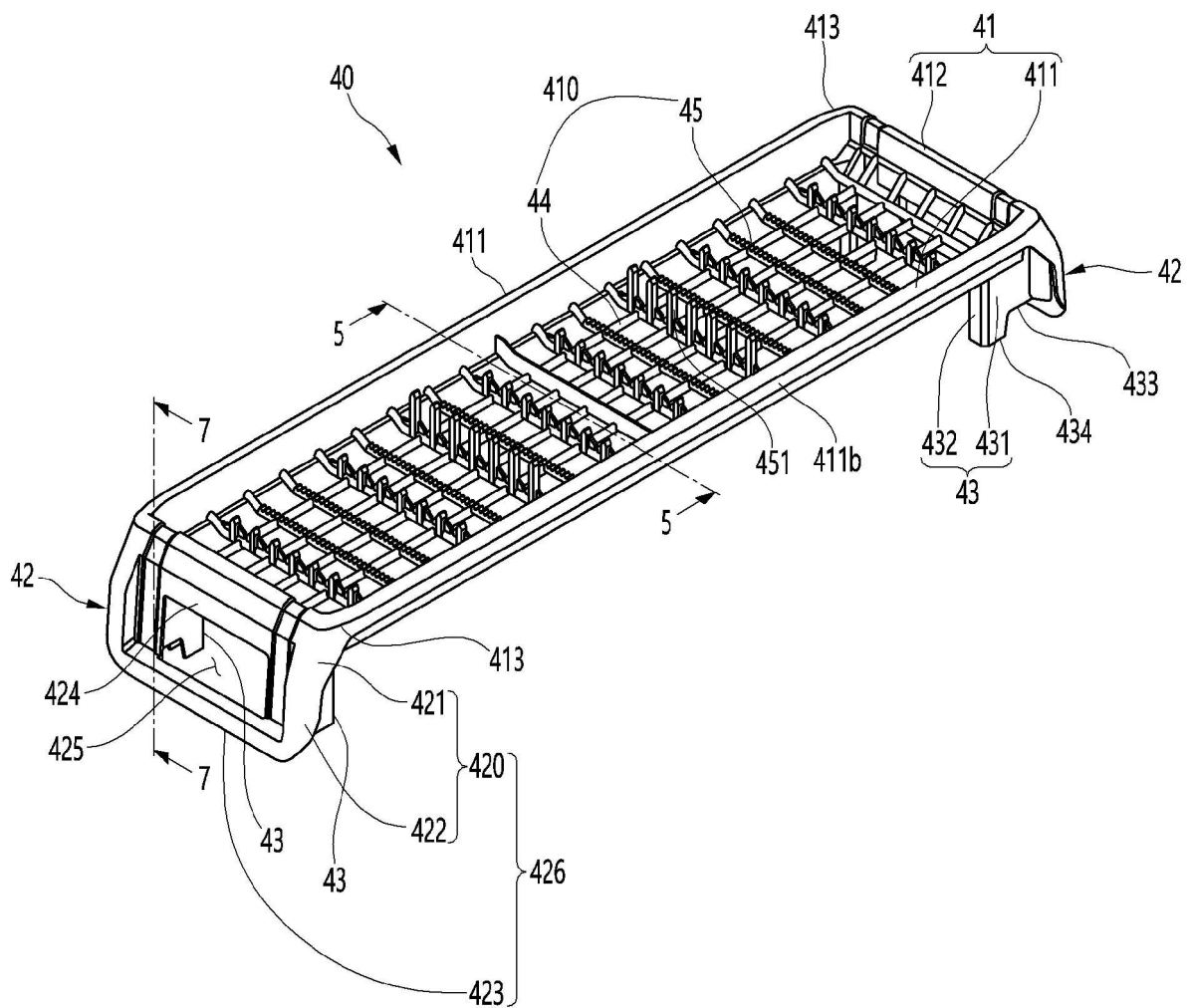
【Fig. 1】



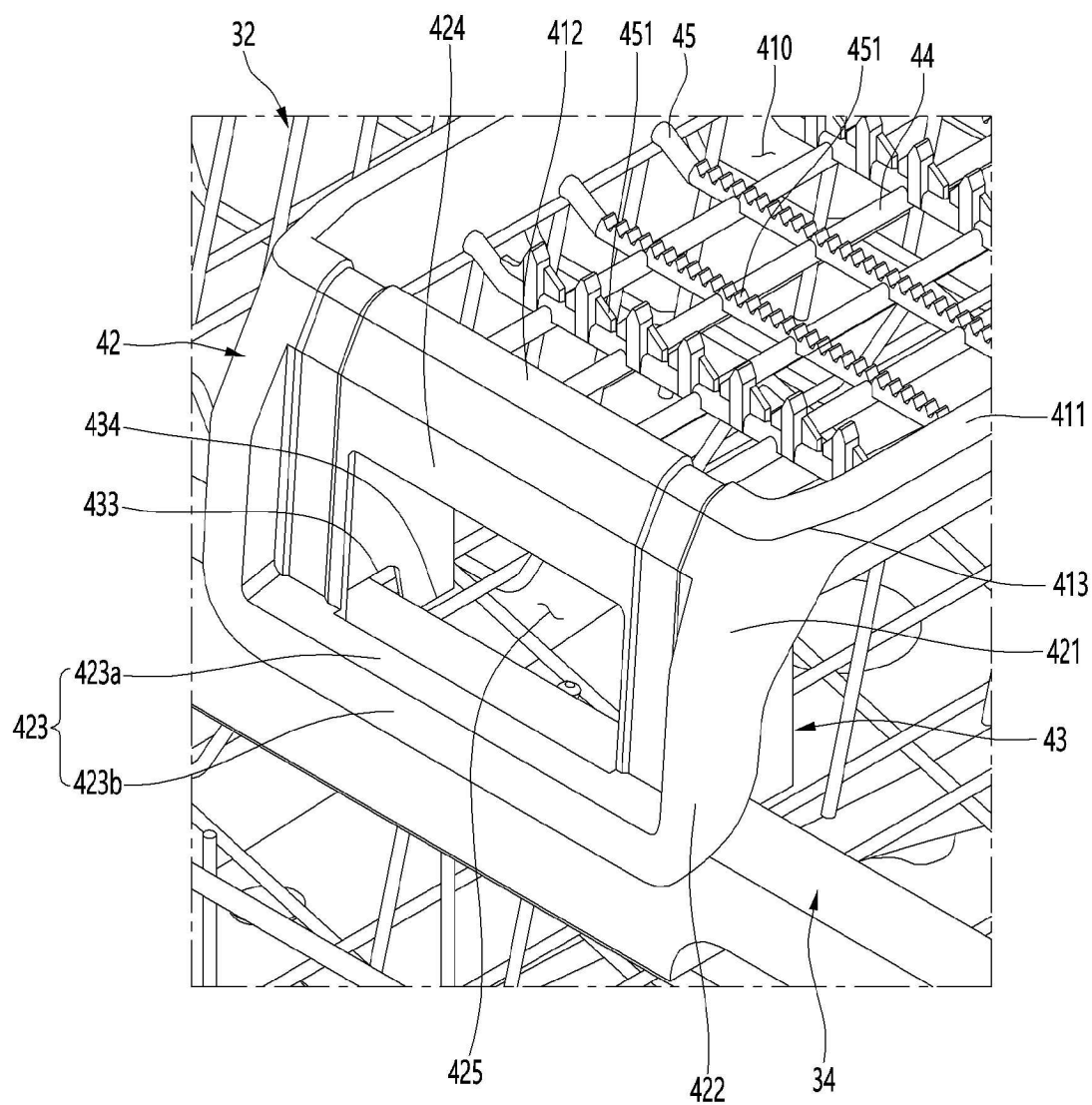
【Fig. 2】



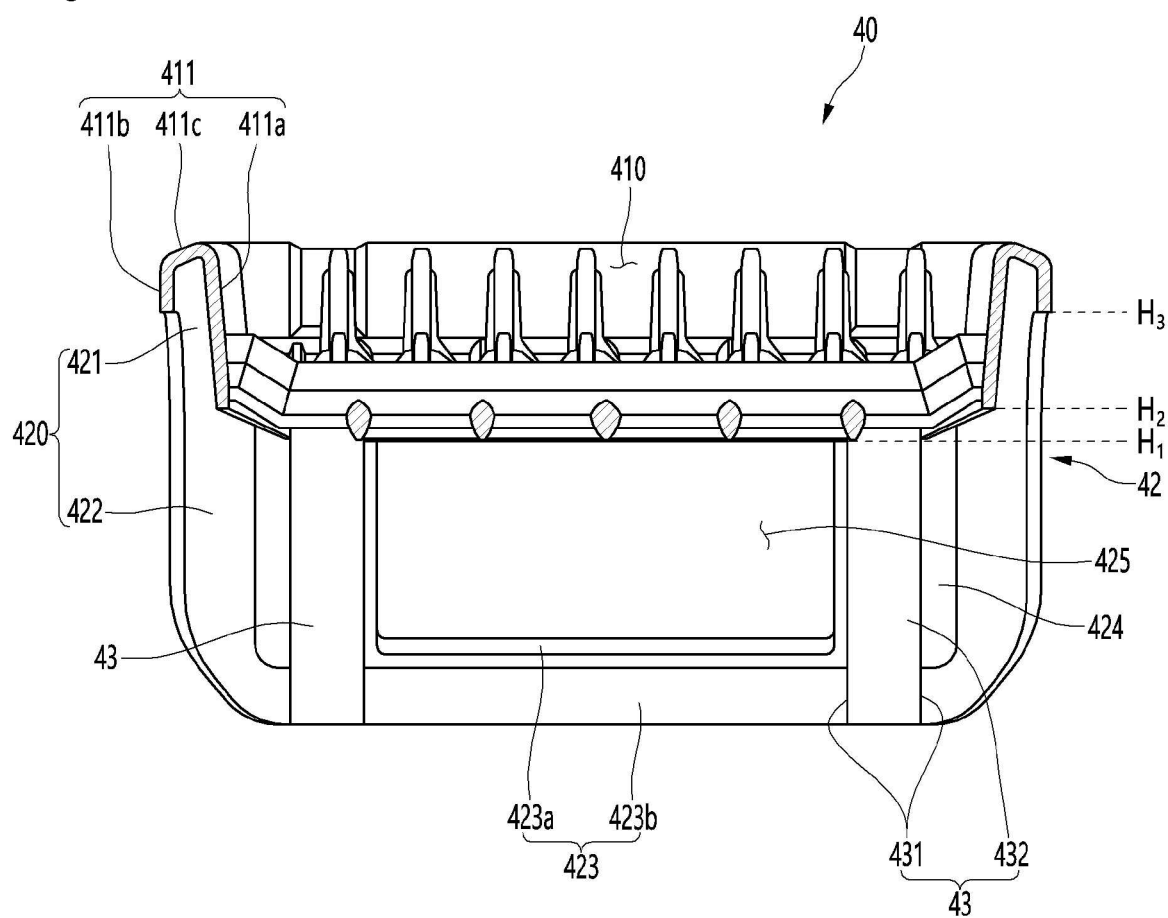
【Fig. 3】



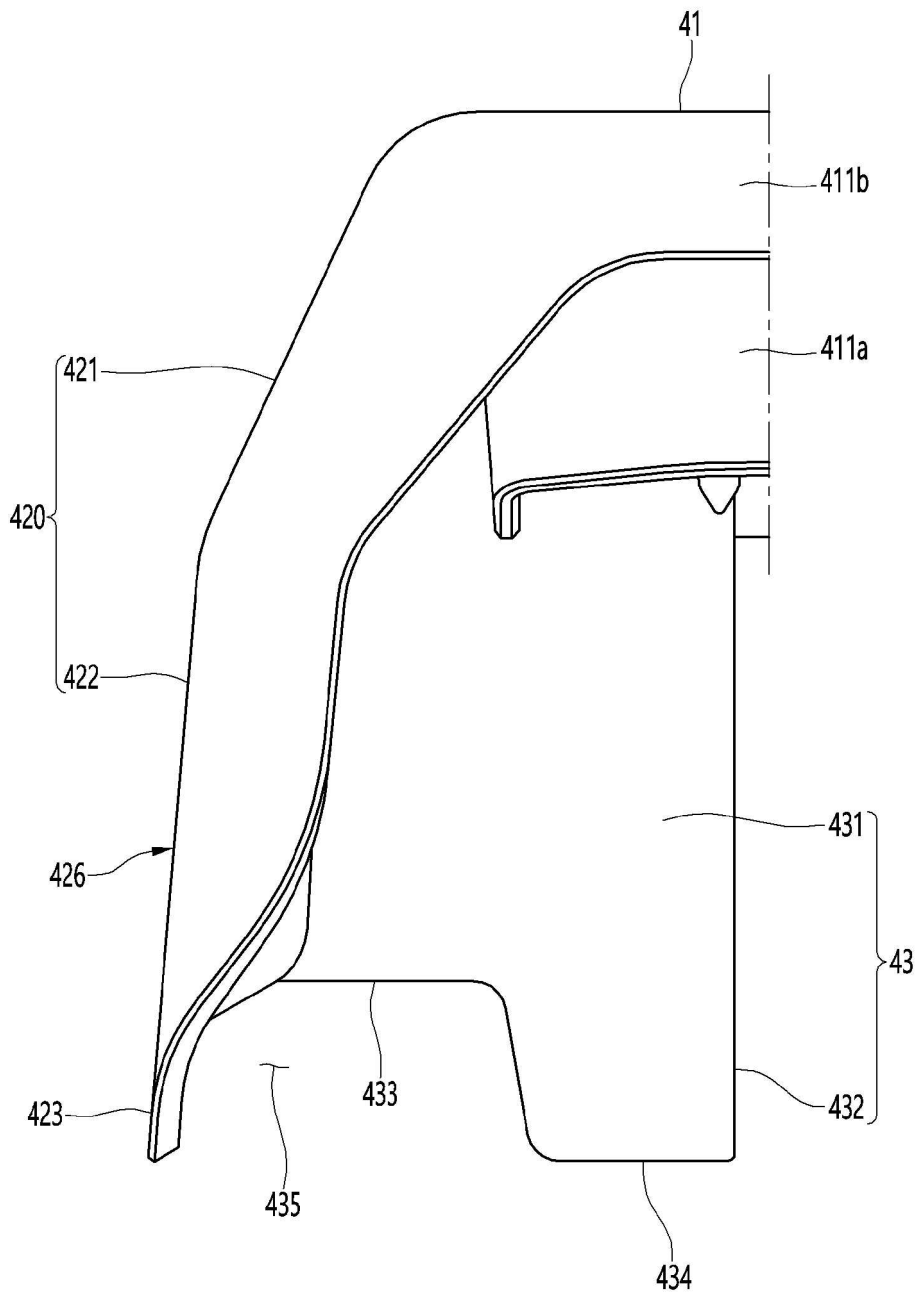
【Fig. 4】



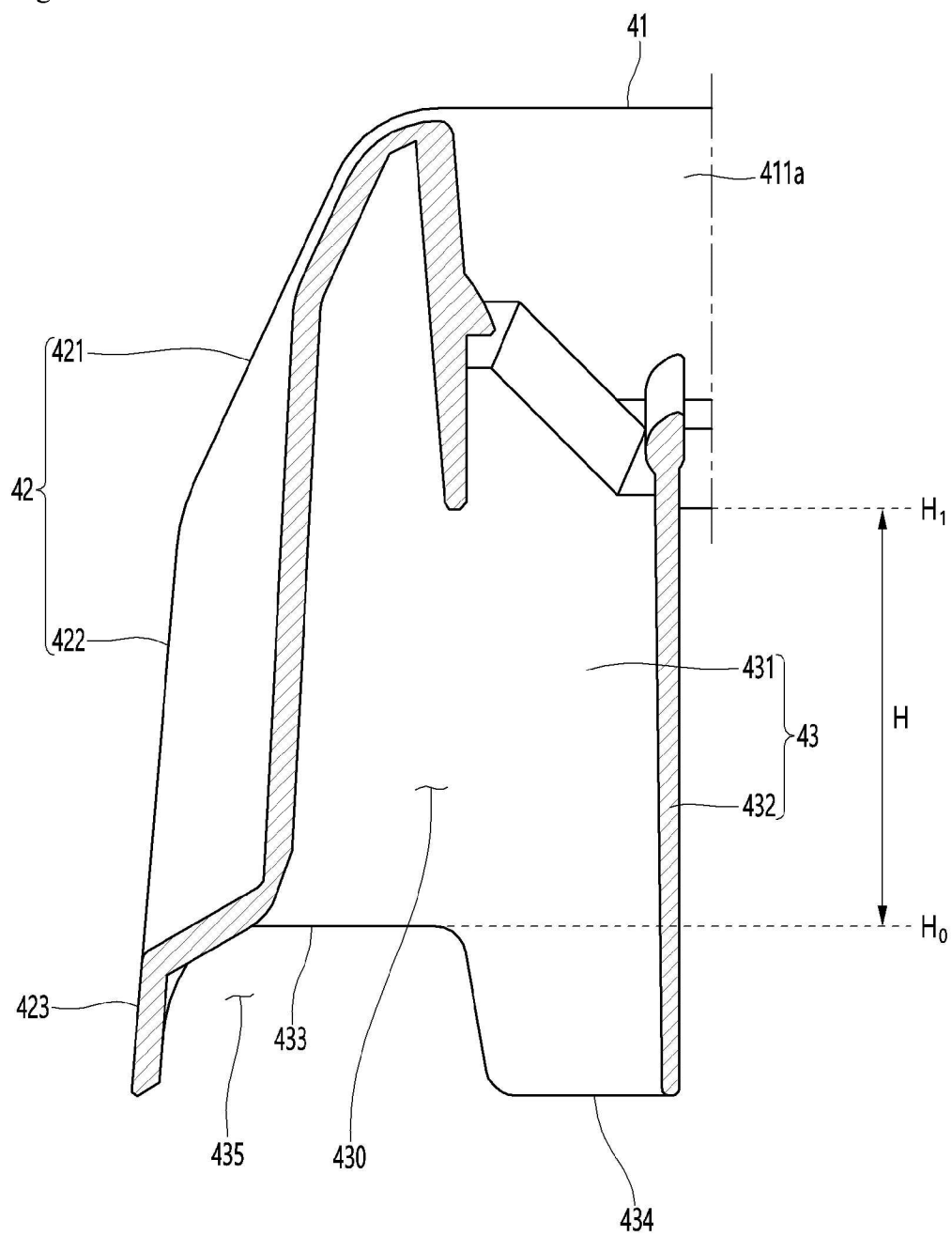
【Fig. 5】



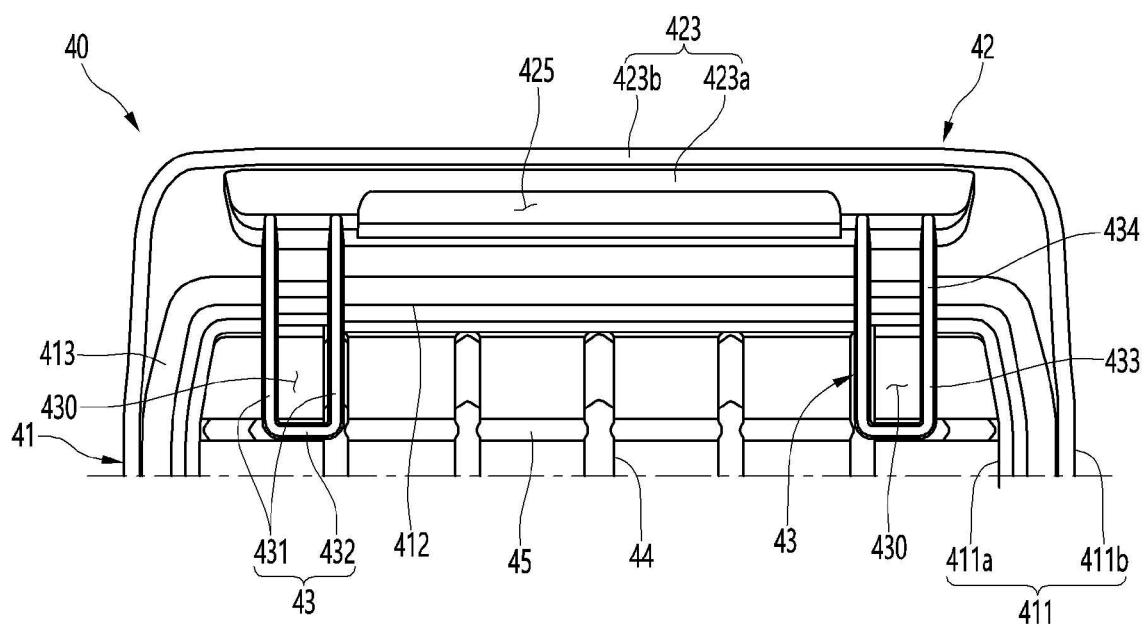
【Fig. 6】



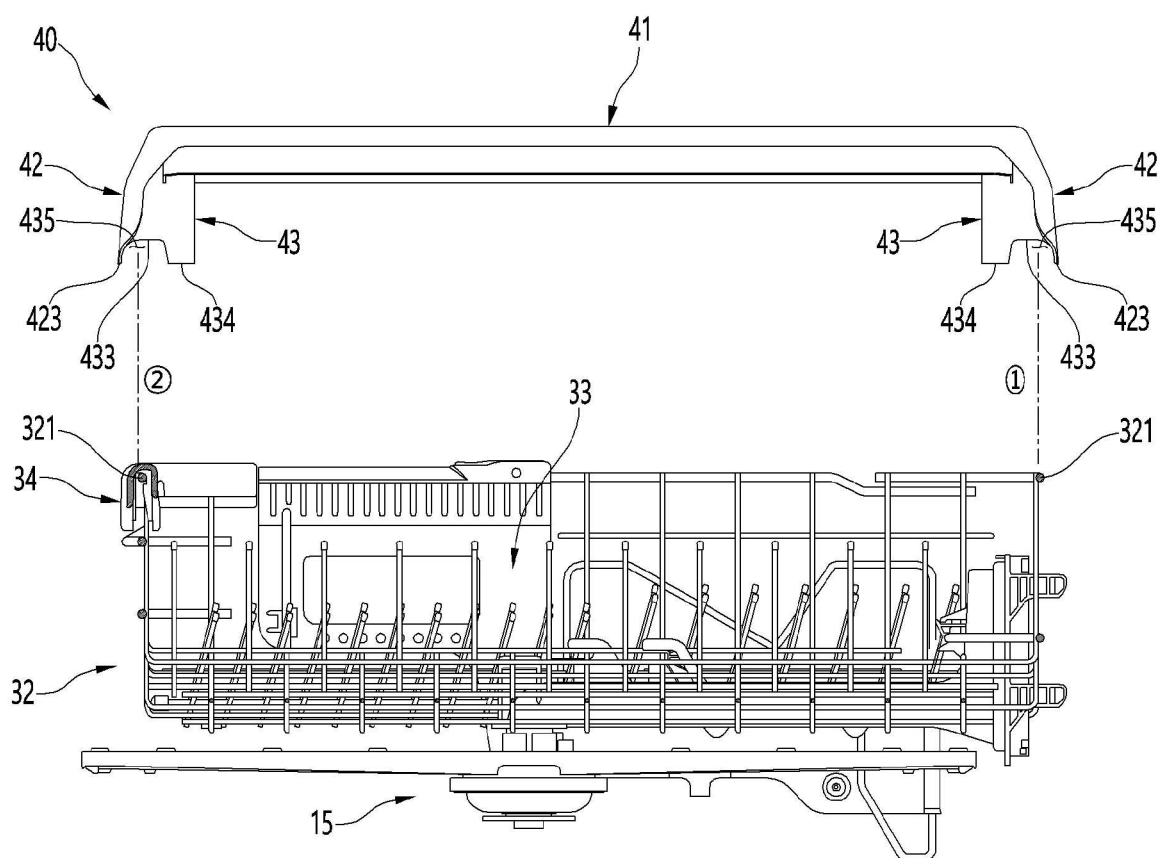
【Fig. 7】



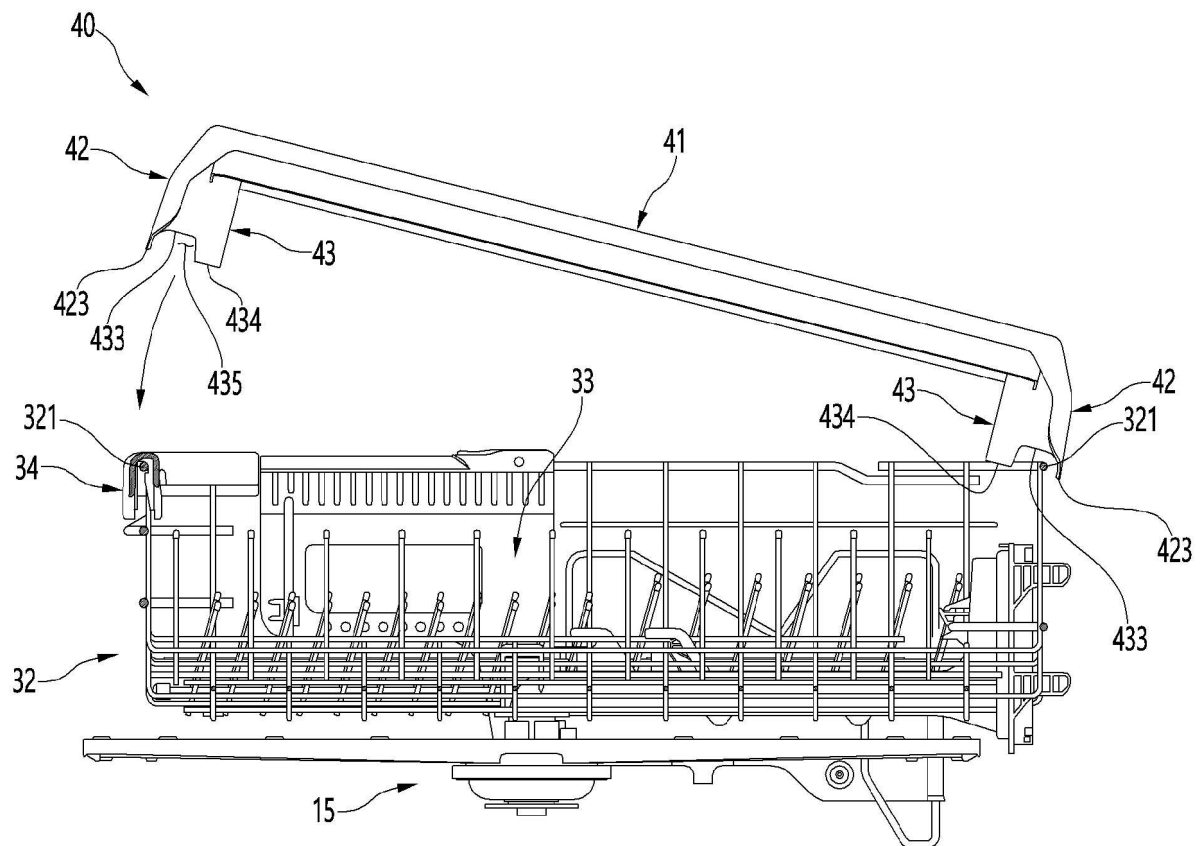
【Fig. 8】



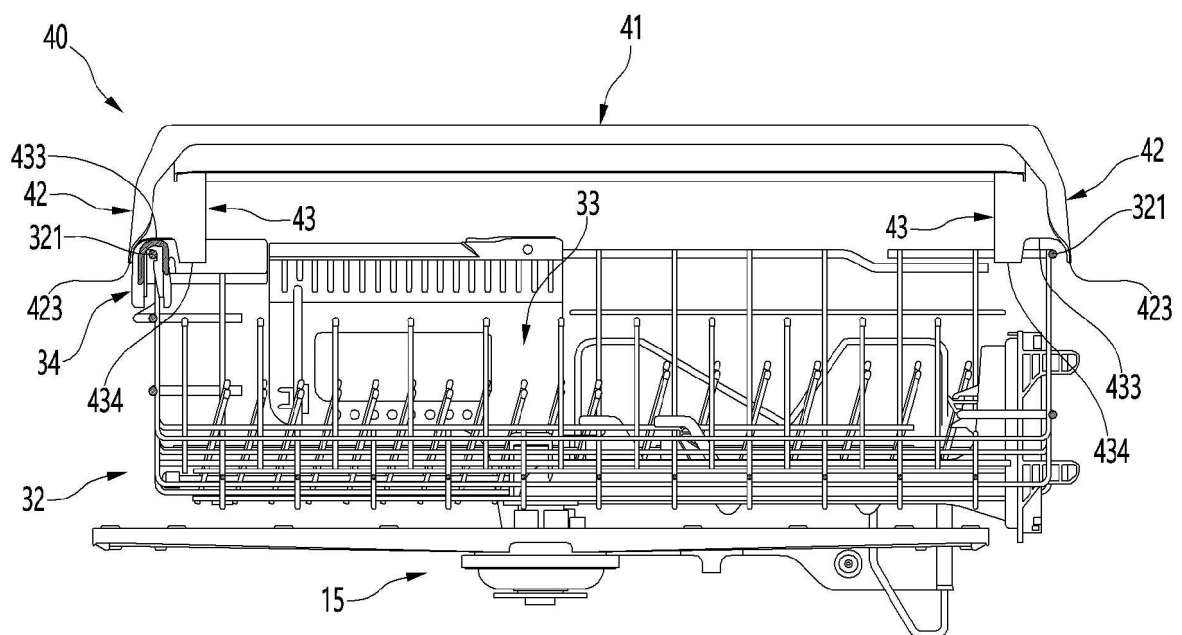
【Fig. 9】



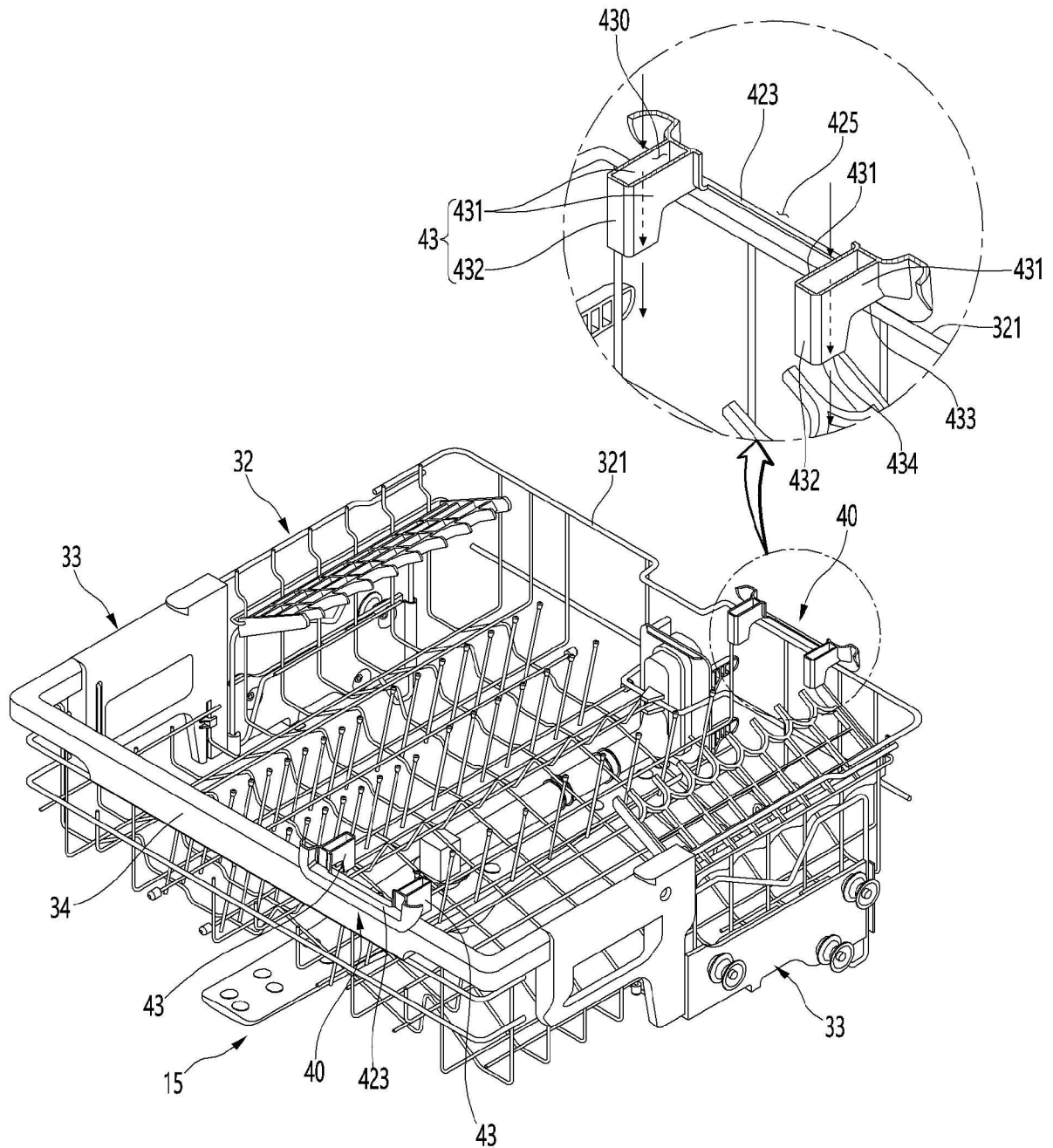
【Fig. 10】



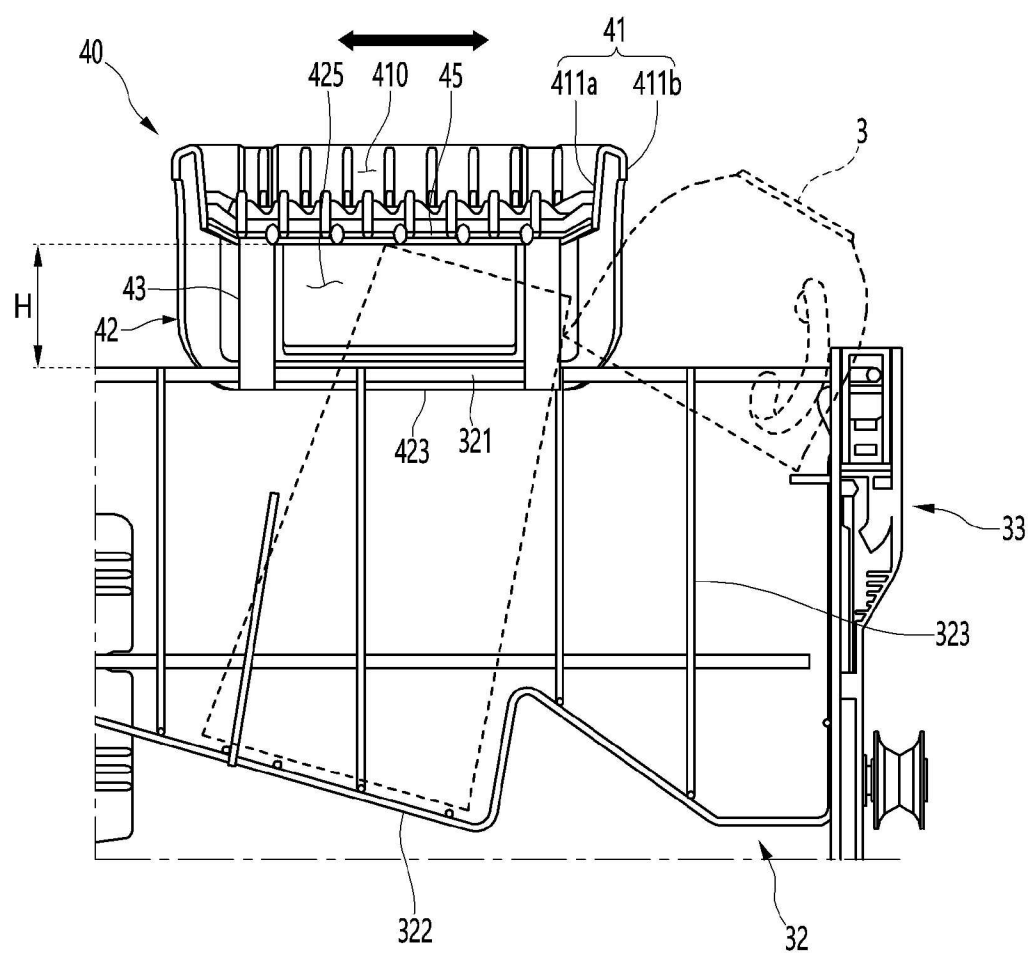
【Fig. 11】



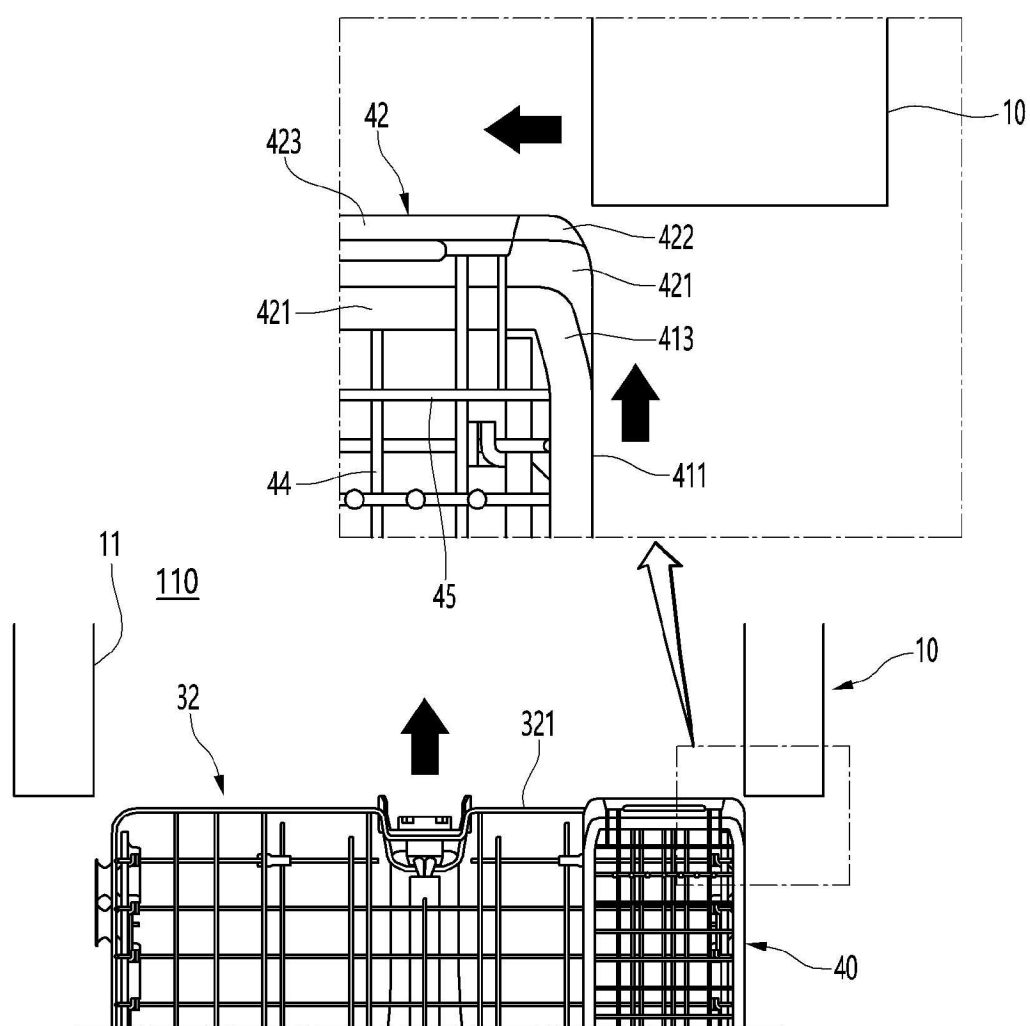
【Fig. 12】



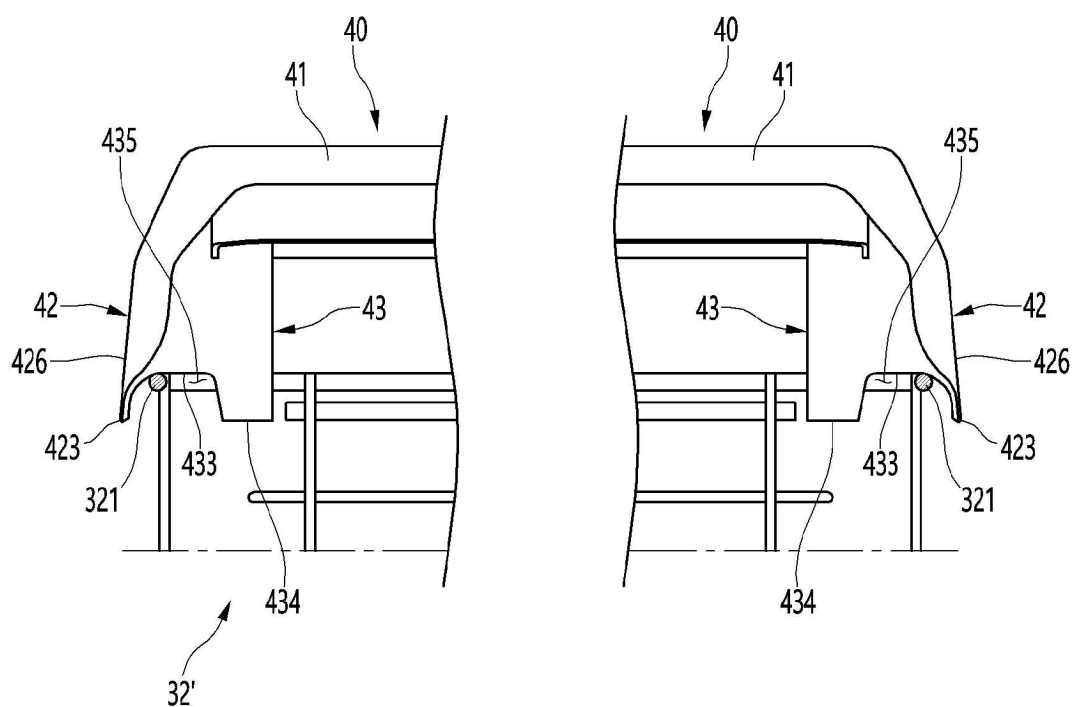
【Fig. 13】



【Fig. 14】



【Fig. 15】



【Fig. 16】

