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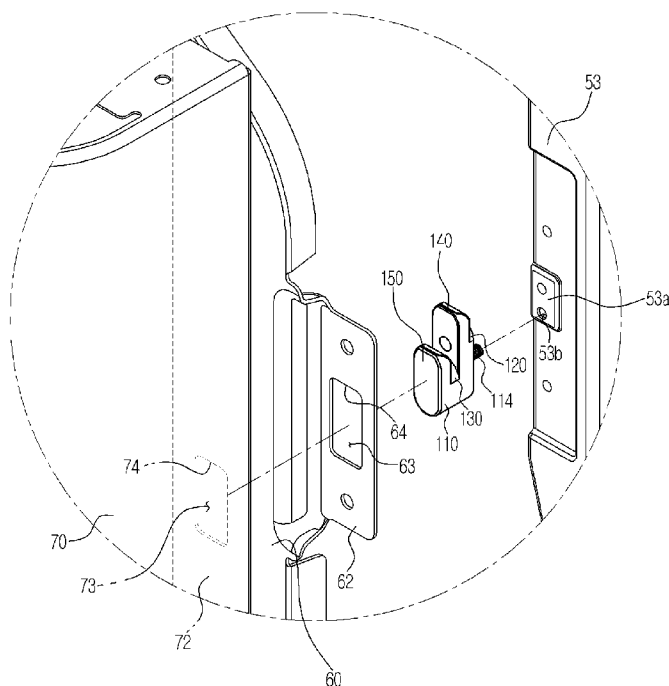
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(54) Title: LAUNDRY TREATING APPARATUS AND ASSEMBLING METHOD FOR THE SAME



(57) Abstract: A laundry treating apparatus includes a coupling unit to improve a coupling structure of a cabinet. Through the structure as such, a coupling of a front frame and a drum front may easily take place, and assembly quality and workability may be improved.

Description

Title of Invention: LAUNDRY TREATING APPARATUS AND ASSEMBLING METHOD FOR THE SAME

Technical Field

- [1] Embodiments of the present disclosure relate to a laundry treating apparatus, and more particularly, a laundry treating apparatus having an improved coupling structure.

Background Art

- [2] In general, a laundry apparatus is an apparatus configured to wash laundry through repeated rotations after inserting washing water and detergent into a tub and inputting laundry into a drum inside the tub. A dryer is an apparatus configured to dry a subject to be dried, which is inserted into the drum, by forcedly drafting heated air to an inside the drum.
- [3] The laundry treating apparatus as such includes a cabinet, a drum into which laundry is put at an inside thereof located inside the cabinet, and an opening unit provided at a front surface of the drum as to insert/withdraw the laundry.
- [4] A front frame forming a front surface of the cabinet and at which a door is disposed, as well as a drum front configured to support the drum, is separately provided at side frames of the cabinet.

Disclosure of Invention

Technical Problem

- [5] When the front frame and the drum front are coupled to the side frames, the coupling takes place after a process of temporary fixing for effective coupling, and during the process as such, difficulties may arise with respect to the structure of the temporary fixing at the time of coupling the front frame and the drum front into the side frames.

Solution to Problem

- [6] Additional aspects and/or advantages will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the invention.
- [7] Therefore, it is an aspect of the present disclosure to provide a laundry treating apparatus capable of effectively performing a temporary fixing of a front frame or a drum front of a cabinet, and also capable of simplifying a coupling structure.
- [8] Additional aspects of the disclosure will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the disclosure.
- [9] In accordance with one aspect of the present disclosure, a laundry treating apparatus includes a cabinet, a drum front, and coupling units. The cabinet may have a pair of

side frames formed as to face with respect to each other, a rear frame connecting the pair of side frames to each other, and a front frame formed as to face with respect to the rear frame and separately provided at the pair of side frames. The drum front may be configured to support a drying tub having laundry accommodated at an inside thereof, and provided to be supported at the cabinet. The coupling units may be disposed at the side frames, and allow the front frame and the drum front to be rested.

- [10] The coupling unit may include a first seating groove at which the drum front is rested; and a second seating groove provided at a front surface of the first seating groove and at which the front frame is rested.
- [11] The coupling unit may further include a first guide unit configured to guide movement of the drum front such that the drum front is seated at the first seating groove; and a second guide unit provided at a front surface of the first guide unit and configured to guide movement of the front frame such that the front frame is seated at the second seating groove.
- [12] The first guide unit and the second guide unit may be provided with a first guide surface and a second guide surface formed at one surface thereof, respectively, as to guide the drum front and the front frame to the first seating groove and the second seating groove, respectively.
- [13] The first seating groove and the second seating groove may be provided to be disposed at end portions of the first guide surface and the second guide surface, respectively.
- [14] The first guide unit and the second guide unit may include a first inclination surface and a second inclination surface, respectively, that are downwardly inclined with respect to the direction of a seating flange.
- [15] The side frame may include the seating flange bent inward from one end portion thereof such that the front frame and the drum front are seated on the seating flange; and the coupling unit may include a supporting surface provided to be in surface-contact with respect to the seating flange.
- [16] The drum front may include a first coupling groove formed as to penetrate through the first guide unit; and the front frame may include a second coupling groove formed as to penetrate through the second guide unit.
- [17] The first guide unit and the second guide unit may be provided in parallel with respect to each other.
- [18] The first guide unit may be formed larger than the second guide unit.
- [19] The first coupling groove may be formed larger than the second coupling groove.
- [20] The first guide unit may be provided with a predetermined thickness such that a first seating unit formed at the surrounding of the first coupling unit is spaced apart from a second seating unit formed at the surrounding of the second coupling unit.

- [21] The coupling unit may be disposed at a front surface of the side frame.
- [22] The side frame may include the seating flange bent inward from one end portion thereof such that the front frame and the drum front are seated on the seating flange; and the coupling unit may be provided in plurality, and the plurality of coupling units may be disposed up and down with respect to the seating flange.
- [23] The side frame may include the seating flange bent inward from one end portion thereof such that the front frame and the drum front are seated on the seating flange; the drum front may be rested at the coupling unit such that an inner side surface of the drum front facing the cabinet is faced with respect to the seating flange; and the front frame may be rested at the coupling unit while having both end portions of the front frame bent such that an outer side surface of front frame facing an outer side is faced with respect to the seating flange.
- [24] The drum front may be screw-coupled to side surfaces of the side frames, and the front frame may be screw-coupled to an upper side and a lower side of the side frame.
- [25] In accordance with one aspect of the present disclosure, a laundry treating apparatus includes a cabinet, a drum front, and coupling units. The cabinet may have a pair of side frames formed as to face with respect to each other, a rear frame connecting the pair of side frames to each other, and a front frame formed as to face with respect to the rear frame and separately provided at the pair of side frames. The drum front may be configured to support a drying tub disposed at an inside the cabinet, and provided to be supported at the side frames. The coupling units may be configured to be coupled to the side frames, and at which the front frame and the drum front are rested. The coupling unit may include a first seating groove at which the drum front is rested. The second seating groove may be spaced apart with respect to the first seating groove and at which the front frame is seated.
- [26] The coupling unit may further include a first guide unit configured to divide the first seating groove and the second seating groove from each other, and provided such that the first seating groove and the second seating groove are spaced apart from each other.
- [27] The coupling unit may further include a second guide unit spaced apart with respect to the first guide unit and provided to prevent the front frame seated at the second seating groove from being separated from the coupling unit.
- [28] The first guide unit and the second guide unit may be provided with a first guide surface and a second guide surface formed at one surface thereof, respectively, as to guide the drum front and the front frame to the first seating groove and the second seating groove, respectively.
- [29] The first guide unit and the second guide unit may include a first inclination surface and a second inclination surface, respectively, that are downwardly inclined with

respect to the direction of a seating flange.

- [30] In accordance with one aspect of the present disclosure, an assembly method of a laundry treating apparatus include: having a cabinet provided with a pair of side frames formed as to face with respect to each other, and a rear frame connecting the pair of side frames; coupling a coupling unit provided with a first seating groove and a second seating groove to the side frame; resting a drum front, configured to support a drying tub, at the first seating groove; and resting a front frame, formed as to face with respect to the rear frame and separately provided at the pair of side frames, at the second seating groove.
- [31] The coupling unit may include a first guide unit configured to guide movement of the drum front toward the first seating groove, and the drum front is provided to be seated at the first seating groove along the first guide unit.
- [32] The drum front may be rested at the first seating groove, and the drum front and the side frames may be screw-coupled with respect to each other.
- [33] The coupling unit may include a second guide unit configured to guide movement of the drum front toward the second seating groove, and the front frame may be provided to be seated at the second seating groove along the second guide unit.
- [34] The front frame may be rested at the second seating groove, and the front frame and the side frames may be screw-coupled with respect to each other.
- [35] In accordance with a further aspect of the present disclosure, a laundry treating apparatus includes a cabinet having side frames substantially parallel to each other, a rear frame connected to the side frames, and a front frame substantially parallel to the rear frame and separately connected to the side frames, a drum front configured to support a drying tub and supported at the cabinet, and a coupling unit coupled to one of the side frames and supporting the front frame and the drum front.
- [36] The laundry treating apparatus may include another coupling unit substantially parallel to the coupling unit and coupled to another of the side frames and supporting the front frame and the drum front.

Advantageous Effects of Invention

- [37] As is apparent, the laundry treating apparatus according to the present disclosure can improve the workability by simplifying a temporary fixing structure, as well as improve the assembling efficiency since there is no need to change components depending on coupling positions.

Brief Description of Drawings

- [38] These and/or other aspects of the disclosure will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

[39] FIG. 1 is a cross-sectional view of a laundry treating apparatus in accordance with one embodiment of the present disclosure.

[40] FIG. 2 is a drawing illustrating an inside the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[41] FIG. 3 is a drawing with respect to a portion of a structure of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[42] FIG. 4 is an exploded perspective view with respect to the portion of the structure of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[43] FIG. 5 is an exploded perspective view expanding a coupling portion of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[44] FIG. 6 is a perspective view with respect to the coupling portion of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[45] FIG. 7 is a side view with respect to the coupling portion of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[46] FIG. 8 is a cross-sectional perspective view with respect to a coupling of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

Best Mode for Carrying out the Invention

[47] Reference will now be made in detail to the embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout.

[48] FIG. 1 is a cross-sectional view of a laundry treating apparatus in accordance with one embodiment of the present disclosure, and FIG. 2 is a drawing illustrating an inside of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[49] As illustrated on FIG. 1 and FIG. 2, a laundry treating apparatus 1 in accordance with one embodiment of the present disclosure includes a cabinet 50 forming an exterior appearance, a drying tub 30 rotatively installed at an inside the cabinet 50, a driving apparatus 11 configured to rotate the drying tub 30, and an inlet flow path 15, an outlet flow path 20, and a draft apparatus 28 to circulate air to an inside the drying tub 30.

[50] The drying tub 30 is formed in the shape of a cylinder having a front surface and a rear surface thereof open, and is provided with a plurality of lifters 40 protruded in the shape of a crest at an inside thereof as to descend laundry after ascending the laundry. In addition, a drum front 60 and a drum rear 36, which are configured to support a front surface opening unit and a rear surface opening unit of the drying tub 30, respectively, and are respectively fixed at an inner side of a front surface unit and a rear surface unit of the cabinet 50 as to correspondingly cover a front surface opening unit

and the rear surface opening unit, are installed at an inner side the cabinet 50.

- [51] A drum opening unit 60a and an opening unit 70a through which a subject to be dried is inserted into or withdrawn from an inside the drying tub 30 are formed at a front surface and the drum front 60 of the cabinet 50, respectively, and a door 35 configured to open/close the drum opening unit 60a and the opening unit 70a is installed at a front surface of the cabinet 50.
- [52] The driving apparatus 11 includes a driving motor 12 installed at a lower portion of an inner side of the cabinet 50, and a pulley 13 and a rotating belt 14 configured to deliver a driving force of the driving motor 12 to the drying tub 30. The rotating belt 14 is installed to be wound at an outer surface of the drying tub 30 and at the pulley 13 that is coupled to an axis of the driving motor 12.
- [53] The inlet flow path 15 is configured to guide an inlet of outside air to an inside the drying tub 30. The inlet flow path 15 includes a lower inlet duct 16 installed at a lower portion of the drying tub 30, and a rear inlet duct 17 connecting an inlet unit 18 formed at an upper portion of a drum rear 36 and the lower inlet duct 16. A heater member 22 configured to heat air being taken in is installed at an inside the lower inlet duct 16.
- [54] The outlet flow path 20 is configured to guide an outlet of air being inlet to an inside the drying tub 30. The outlet flow path 20 includes a front outlet duct 24 connecting in between an outlet unit 23 of a lower portion of the drum front 60 and an entry of the draft apparatus 28 installed at a lower portion of the drying tub 30, and a rear outlet duct 25 installed at a lower side of the cabinet 50 such that an exit of the draft apparatus 28 and an outer side of a rear surface unit of the cabinet 50 are communicated with respect to each other.
- [55] A filter member 26 is installed at the front outlet duct 24 such that a foreign substance such as dust or lint included in the heated air being discharged from the drying tub 30 is filtered. A handle unit 27 is provided at an upper side of the filter member 26 such that a user may be conveniently able to attach/detach the filter member 26 by use of a force with respect to the front outlet duct 24.
- [56] The draft apparatus 28 includes a draft fan 28a installed at an axis 12b mounted at an opposite side of the axis 12a of the driving motor 12 configured to drive the drying tub 30, and a draft case 28b connected to each the front outlet duct 24 and the rear outlet duct 25 while wrapping around the draft fan 28a.
- [57] The structure as such is provided such that rotations of the drying tub 30 take place by motions of the driving motor 12 at the time of when performing a conventional drying of laundry, and that a subject to be dried that is accommodated an inside the drying tub 30 is ascended and descended according to the rotations of the drying tub 30. At the same time, the subject to be dried at an inside the drying tub 30 is dried in a short period of time by having circulations of outside air are taken place to an inside

the drying tub 30.

- [58] With respect to the draft motions of air, the moist air at an inside the drying tub 30 is discharged to an outside through the outlet flow path 20, and the new air as much as the air being discharged is inlet to an inside the drying tub 30 through the inlet flow path 15. The air being inlet through the inlet flow path 15 is provided to dry the subject to be dried as the air is inlet to an inside the drying tub 30 after being heated through the heater member 22.
- [59] FIG. 3 is a drawing with respect to a portion of a structure of the laundry treating apparatus in accordance with one embodiment of the present disclosure, FIG. 4 is an exploded perspective view with respect to the portion of the structure of the laundry treating apparatus in accordance with one embodiment of the present disclosure, and FIG. 5 is an exploded perspective view expanding a coupling portion of the laundry treating apparatus in accordance with one embodiment of the present disclosure.
- [60] The cabinet 50 may include a side frame 52, a rear frame 54, and a front frame 70.
- [61] The side frame 52 is provided in a pair while facing with respect to each other, and the rear frame 54 is provided to connect the pair of side frames 52. The front frame 70 is provided to face with respect to the rear frame 54, and is separately provided at the pair of side frames 52.
- [62] The side frame 52 may be provided at a front surface thereof with a seating flange 53 bent toward an inner side, such that the front frame 70 and the drum front 60 are coupled to with respect to each other. The seating flange 53 may be provided in a pair such that side surfaces of the both of the front frame 70 and the drum front 60 are supported.
- [63] A coupling unit 100, which is to be described later, may be coupled to the seating flange 53. The coupling unit 100 is coupled to the seating flange 53 such that the drum front 60 and the front frame 70 are temporarily fixed with respect to the side frame 52.
- [64] The drum front 60 may be provided at a front surface of the drying tub 30. The drum front 60 may be supported at the cabinet 50. The drum front 60 is formed as to be provided with the shape of a flange with respect to a drum, and is provided such that a portion of the drum front 60 is fixed by use of the side frames 52.
- [65] The drum front 60 is provided with the drum opening unit 60a, which is configured to communicate with the opening unit 70a of the front frame 70, formed thereto, such that the laundry at an inside the drying tub 30 may be inserted/withdrawn.
- [66] The drum front 60 may be provided with a coupling flange 62 formed thereto as to be coupled to the cabinet 50. The coupling flange 62 is referred to as a structure corresponding with respect to the seating flange 53 of the side frame 52, and is formed to be temporarily fixed at the coupling unit 100 while formed to be faced with respect to the seating flange 53.

- [67] A first coupling groove 63 may be formed at the coupling flange 62.
- [68] The first coupling groove 63 is formed at the coupling flange 62, and is provided to be seated at the coupling unit 100, which is to be described later, while having the shape of a groove. The shape of the first coupling groove 63 is provided while corresponding with respect to the shape of the coupling unit 100. In detail, a first guide unit 140, which is to be described later, is provided to penetrate through the first coupling groove 63, and the drum front 60 is seated at a first seating groove 120. The number of the first coupling grooves 63 is not limited, but in the embodiment of the present disclosure, the total of four units of the first coupling grooves 63 are provided, while the each of the two units of the first coupling grooves 63 are provided up and down at each of the both end portions of the coupling flange 62. A first seating unit 64 being seated at the coupling unit 100, which is to be described later, is formed at the surroundings of the first coupling groove 63.
- [69] The front frame 70 may be provided with the opening unit 70a configured to communicate with an inside the drying tub 30 formed thereto, and the opening unit 70a may be formed as to be open/closed by use of the door 35 being coupled to the front frame 70.
- [70] The front frame 70 is provided with a frame coupling unit 72 at each of the both end portions thereof, while the frame coupling unit 72 bentedly formed as to be coupled unto the side frame 52. The frame coupling unit 72 is referred to as a structure corresponding with respect to the seating flange 53 of the side frame 52, and is formed to be temporarily fixed at the coupling unit 100 while formed to be faced with respect to the seating flange 53.
- [71] A second coupling groove 73 may be formed at the frame coupling unit 72.
- [72] The second coupling groove 73 is formed at the frame coupling unit 72, and is provided to be seated at the coupling unit 100, which is to be described later, while having the shape of a groove. The shape of the second coupling groove 73 is provided while corresponding with respect to the shape of the coupling unit 100. In detail, a second guide unit 150, which is to be described later, is provided to penetrate through the second coupling groove 73, and the front frame 70 is seated at a second seating groove 130. The number of the second coupling grooves 73 is not limited, but in the embodiment of the present disclosure, the total of four units of the second coupling grooves 73 are provided, while the each of the two units of the second coupling grooves 73 are provided up and down at each of the both end portions of the frame coupling unit 72. A second seating unit 74 being seated at the coupling unit 100, which is to be described later, is formed at the surroundings of the second coupling groove 73.
- [73] The drum front 60 is rested at the coupling unit 100 such that an inner side surface of

the drum front 60 facing the cabinet 50 is faced with respect to the seating flange 53, and the front frame 70 is rested at the coupling unit 100 while both end portions thereof bent such that an outer side surface of the front frame 70 facing the outside is faced with respect to the seating flange 53. Through the structure as such, by having different dispositional directions of both structures while having the coupling unit 100 as a center, the gap in between the front frame 70 and the drum front 60 may be widened, and may be able to reduce interference with respect to each other.

[74] In addition, the drum front 60 is screw-coupled to side surfaces of the side frames 52, and the front frame 70 may be provided to be screw-coupled to an upper side and a lower side of the each side frame 52. Through the structure as such, a coupling portion of the drum front 60 may not be exposed to an outside, and a coupling portion of the front frame 70 may be provided not to be exposed to an outside by an upper frame 56.

[75] FIG. 6 is a perspective view with respect to the coupling portion of the laundry treating apparatus in accordance with one embodiment of the present disclosure, FIG. 7 is a side view with respect to the coupling portion of the laundry treating apparatus in accordance with one embodiment of the present disclosure.

[76] The coupling unit 100 is provided such that the front frame 70 and the drum front 60 are rested at the cabinet 50. That is, the front frame 70 and the drum front 60 are provided to be temporarily fixed at the side frames 52. By having the front frame 70 and the drum front 60 temporarily fixed prior to coupling into or fixing at the side frames 52, a coupling may be efficiently taken place.

[77] The coupling unit 100 may be disposed at a front surface of the side frame 52. The coupling unit 100 may be coupled to the seating flange 53 provided at a front surface of the side frame 52. The seating flange 53 may include a seating unit 53a such that the coupling unit 100 is seated. A coupling groove 53b may be formed at the seating unit 53a such that the coupling unit 100 is coupled to the seating flange 53.

[78] The coupling unit 100 is provided in plurality while disposed up and down at the seating flange 53, such that the front frame 70 and the drum front 60 may be stably and temporarily fixed. However, the number and the dispositions of the coupling units 100 are not limited, as long as the coupling units 100 are disposed as to rest the front frame 70 and the drum front 60.

[79] The coupling unit 100 includes a unit body 110, the first seating groove 120, and the second seating groove 130.

[80] The unit body 110 includes a supporting surface 120 formed to be in contact with respect to the seating unit 53a. A coupling bump 114 protruded from the supporting surface 110 as to be inserted into the coupling groove 53b may be formed at the supporting surface 120. In addition, a penetration groove 116 configured to penetrate the supporting surface 112 such that the unit body 110 of the coupling unit 100 is

screw-coupled to the seating flange 53 may be formed. Several methods are present as to couple the coupling unit 100 into the seating flange 53, and in the embodiment of the present disclosure, the coupling unit 100 is coupled to the seating flange 53 according to the method described above, and is not limited hereto.

- [81] The first seating groove 120 is provided such that the drum front 60 is seated. In detail, the first seating groove 120 is formed such that the first seating unit 64 of the drum front 60 is seated. The first seating groove 120 is disposed in between the first guide unit 140, which is to be described later, and one side surface of the side frame 52, and the width of the first seating groove 120 may be formed by considering the thickness of the drum front 60.
- [82] The first seating groove 120 may be convexly formed toward an upper portion by considering the shape of the first seating unit 64 of the drum front 60, and the shape thereof is not limited hereto.
- [83] The second seating groove 130 is provided such that the front frame 70 is seated. In detail, the second seating groove 130 is formed such that the second seating unit 74 of the front frame 70 is seated. The second seating groove 130 is disposed in between the first guide unit 140 and the second guide unit, which are to be described later, and the width of the second seating groove 130 may be formed by considering the thickness of the front frame 70.
- [84] The second seating groove 130 may be convexly formed toward an upper portion by considering the shape of the second seating unit 74 of the front frame 70, and the shape thereof is not limited hereto.
- [85] The first guide unit 140 is configured to guide movement of the drum front 60 such that the drum front 60 is seated at the first seating groove 120. The first guide unit 140 is formed as to be protrudedly formed toward an upper portion from the unit body 110, and may be formed such that the first seating groove 120 is disposed in between the seating flange 53 and the first guide unit 140.
- [86] The first guide unit 140 may include a first guide surface 142. The first guide surface 142 is formed at one surface of the first guide unit 140 as to guide the drum front 60 to the first seating groove 120. The first seating groove 120, while disposed at one end portion of the first guide surface 142, is provided such that the drum front 60 guided by use of the first guide surface 142 is seated at the first seating groove 120.
- [87] The first guide surface 142 may include a first supporting surface 142a and a first inclination surface 142b.
- [88] The first supporting surface 142a is formed as to support one surface of the drum front 60 at one side of the first guide unit 140, and the first inclination surface 142b is formed such that the first seating unit 64 of the drum front 60 is stably seated at the first seating groove 120 at an upper portion of the first guide unit 140.

- [89] The first inclination surface 142b is inclinedly formed as to be downward with respect to the direction toward the seating flange 53, and may be formed to be connected to the first supporting surface 142a. The first inclination surface 142b is configured such that the first seating unit 64 of the drum front 60 may be seated at the first seating groove 120 after moving along the first inclination surface 142b.
- [90] A frame supporting surface 143 may be formed at a bottom surface of the first guide unit 140 as to support one surface of the front frame 70. The frame supporting surface 143 is parallelly disposed with respect to the first supporting surface 142a such that the front frame 70 and the drum front 60 may be parallelly disposed.
- [91] The second guide unit 150 is configured to guide movement of the front frame 70 such that the front frame 70 is seated at the second seating groove 130. The second guide unit 150 is formed to be protrudedly formed toward an upper portion from the unit body 110, and may be formed such that the second seating groove 130 is disposed in between the second guide unit 150 and the first guide unit 140.
- [92] The second guide unit 150 may include a second guide surface 152. The second guide surface 152 is formed at one surface of the second guide unit 150 as to guide the drum front 60 to the second seating groove 130. The second seating groove 130, while disposed at one end portion of the second guide surface 152, is provided such that the front frame 70 guided by use of the second guide surface 152 is seated at the second seating groove 130.
- [93] The second guide surface 152 may include a second supporting surface 152a and a second inclination surface 152b.
- [94] The second inclination surface 152b is inclinedly formed as to be downward with respect to the direction toward the seating flange 53, and may be formed to be connected to the second supporting surface 152. The second inclination surface 152b is configured such that the second seating unit 74 of the front surface 70 may be seated at the second seating groove 130 after moving along the second inclination surface 152b.
- [95] FIG. 8 is a cross-sectional perspective view with respect to a coupling of the laundry treating apparatus in accordance with one embodiment of the present disclosure.
- [96] The first guide unit 140 may be formed as to be higher than an upper end of the second guide unit 150. That is, the height from a lower portion of the unit body 110 to an upper end of the first guide unit 140 may be formed to be higher than the height from a lower portion of the unit body 110 to the upper end of the second guide unit 150. The drum front 60 is seated at the first seating groove 120 and the front frame 70 is seated at the second seating groove 130, and by differentiating the heights of the first guide unit 140 and the second guide unit 150 as to prevent the front frame 70 from being seated at the first seating groove 120, the second coupling groove 73 of the front frame 70 is provided not to penetrate through the first guide unit 140.

- [97] For the structure as such, the first coupling groove 63 and the second coupling groove 73 are provided as to correspond with respect to the sizes of the first guide unit 140 and the second guide unit 150, respectively, and the vertical height of the first coupling groove 63 may be formed to be greater than the vertical height of the second coupling groove 73.
- [98] The first guide unit 140 and the second guide unit 150 may be provided in parallel with respect to each other. In detail, the first guide surface 142, the frame supporting surface 143 of the first guide unit 140 are provided to be in parallel with respect to the second guide surface 152 of the second guide unit 150, such that the drum front 60 and the front frame 70 may be parallelly seated.
- [99] The first guide unit 140 is provided to divide the first seating groove 120 and the second seating groove 130. The first seating groove 120 and the second seating groove 130 may be provided to be spaced apart by a predetermined space with respect to each other as to minimize interference in between the front frame 70 and the drum front 60. In the embodiment of the present disclosure, the first guide unit 140 is provided to be spaced apart as much as the forward/backward thickness of the first guide unit 140. As the first guide unit 140 is provided with a thickness at a predetermined space, by spacing apart the first seating unit 64 with respect to the second seating unit 74 of the drum front 60, the vibration and delivery of noise that may be occurred with respect to each other may be reduced.
- [100] The second guide unit 150 is provided as to prevent the front frame 70 seated at the second seating groove 130 from being separated from the coupling unit 100.
- [101] Hereinafter, an assembly method of the laundry treating apparatus in accordance with the structure above will be described.
- [102] The pair of side frames 52, the rear frame 54, and the front frame 70 separately provided with respect to the side frames 52 are provided.
- [103] The coupling unit 110 is coupled to the seating flange 53 of the side frame 52, and the drum front 60 is rested at the first seating groove 120. In detail, the drum front 60 is rested at the first seating groove 120 along the first guide unit 140. The drum front 60 rested at the first seating groove 120 is screw-coupled with respect to side surfaces of the side frames 52 as to be coupled and fixed.
- [104] The front frame 70 is rested at the second seating groove 130 after the drum front 60 is coupled. In detail, the front frame 70 is rested at the second seating groove 130 along the second guide unit 150. The front frame 70 rested at the second seating groove 130 is screw-coupled with respect to an upper side and a lower side of the each side frame 52 as to be coupled and fixed.
- [105] Through the process as the above, the drum front 60 and the front frame 70 are seated at the side frames 52.

[106] As is apparent, the laundry treating apparatus according to the present disclosure can improve the workability by simplifying a temporary fixing structure, as well as improve the assembling efficiency since there is no need to change components depending on coupling positions.

[107] Although a few embodiments of the present disclosure have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles and spirit of the disclosure, the scope of which is defined in the claims and their equivalents.

Claims

- [Claim 1] A laundry treating apparatus, comprising:
a cabinet having a pair of side frames formed to face each other, a rear frame connecting the pair of side frames to each other, and a front frame formed to face the rear frame and separately provided at the pair of side frames;
a drum front configured to support a drying tub having laundry accommodated inside thereof, and supported at the cabinet; and
at least one coupling unit disposed at the side frames, and allowing the front frame and the drum front to be rested.
- [Claim 2] The laundry treating apparatus of claim 1, wherein:
the at least one coupling unit comprises a first seating groove at which the drum front is rested, and a second seating groove provided at a front surface of the first seating groove and at which the front frame is rested.
- [Claim 3] The laundry treating apparatus of claim 2, wherein:
the at least one coupling unit further comprises a first guide unit configured to guide movement of the drum front such that the drum front is seated at the first seating groove, and a second guide unit provided at a front surface of the first guide unit and configured to guide movement of the front frame such that the front frame is seated at the second seating groove.
- [Claim 4] The laundry treating apparatus of claim 3, wherein:
the first guide unit and the second guide unit are provided with a first guide surface and a second guide surface formed at one surface thereof, respectively, as to guide the drum front and the front frame to the first seating groove and the second seating groove, respectively.
- [Claim 5] The laundry treating apparatus of claim 4, wherein:
the first seating groove and the second seating groove are provided to be disposed at end portions of the first guide surface and the second guide surface, respectively.
- [Claim 6] The laundry treating apparatus of claim 4, wherein:
the first guide unit and the second guide unit comprise a first inclination surface and a second inclination surface, respectively, that are downwardly inclined with respect to the direction of a seating flange.
- [Claim 7] The laundry treating apparatus of claim 1, wherein:
the side frame comprises the seating flange bent inward from one end

portion thereof such that the front frame and the drum front are seated on the seating flange; and

the at least one coupling unit comprises a supporting surface provided to be in surface-contact with respect to the seating flange.

[Claim 8] The laundry treating apparatus of claim 3, wherein:
the drum front comprises a first coupling groove formed as to penetrate through the first guide unit; and
the front frame comprises a second coupling groove formed as to penetrate through the second guide unit.

[Claim 9] The laundry treating apparatus of claim 3, wherein:
the first guide unit and the second guide unit are provided in parallel with respect to each other.

[Claim 10] The laundry treating apparatus of claim 3, wherein:
the first guide unit is formed larger than the second guide unit.

[Claim 11] The laundry treating apparatus of claim 8, wherein:
the first coupling groove is formed larger than the second coupling groove.

[Claim 12] The laundry treating apparatus of claim 1, wherein:
the first guide unit is provided with a predetermined thickness such that a first seating unit formed at the surrounding of the first coupling unit is spaced apart from a second seating unit formed at the surrounding of the second coupling unit.

[Claim 13] The laundry treating apparatus of claim 1, wherein:
the at least one coupling unit is disposed at a front surface of the side frame.

[Claim 14] The laundry treating apparatus of claim 1, wherein:
the side frame comprises the seating flange bent inward from one end portion thereof such that the front frame and the drum front are seated on the seated on the seating flange; and
the at least one coupling unit is provided in plurality, and the plurality of coupling units are disposed up and down with respect to the seating flange.

[Claim 15] The laundry treating apparatus of claim 1, wherein:
the side frame comprises the seating flange bent inward from one end portion thereof such that the front frame and the drum front are seated on the seating flange; and
the drum front is rested at the at least one coupling unit such that an inner side surface of the drum front facing the cabinet is faced with

respect to the seating flange; and

the front frame is rested at the at least one coupling unit such that both end portions of the front frame are bent and an outer side surface of front frame facing an outer side is faced with respect to the seating flange.

[Claim 16]

The laundry treating apparatus of claim 1, wherein:

the drum front is screw-coupled to side surfaces of the side frames, and the front frame is screw-coupled to an upper side and a lower side of the side frame.

[Claim 17]

A laundry treating apparatus, comprising:

a cabinet having a pair of side frames formed as to face with respect to each other, a rear frame connecting the pair of side frames to each other, and a front frame formed as to face with respect to the rear frame and separately provided at the pair of side frames;

a drum front configured to support a drying tub disposed at an inside the cabinet, and provided to be supported at the side frames; and

coupling units at which the front frame and the drum front are rested, and configured to be coupled to the side frames,

wherein at least one of the coupling units comprises a first seating groove at which the drum front is rested; and

a second seating groove spaced apart with respect to the first seating groove and at which the front frame is seated.

[Claim 18]

The laundry treating apparatus of claim 17, wherein:

the at least one of the coupling units further comprises a first guide unit configured to divide the first seating groove and the second seating groove from each other, and provided such that the first seating groove and the second seating groove are spaced apart from each other.

[Claim 19]

The laundry treating apparatus of claim 18, wherein:

the at least one of the coupling units further comprises a second guide unit spaced apart with respect to the first guide unit and provided to prevent the front frame seated at the second seating groove from being separated from the at least one of the coupling units.

[Claim 20]

The laundry treating apparatus of claim 19, wherein:

the first guide unit and the second guide unit are provided with a first guide surface and a second guide surface formed at one surface thereof, respectively, as to guide the drum front and the front frame to the first seating groove and the second seating groove, respectively.

[Claim 21]

The laundry treating apparatus of claim 19, wherein:

the first guide unit and the second guide unit comprise a first inclination surface and a second inclination surface, respectively, that are downwardly inclined with respect to the direction of a seating flange.

[Claim 22]

An assembly method of a laundry treating apparatus, the assembly method comprising:

having a cabinet provided with a pair of side frames formed to face each other, and a rear frame connecting the pair of side frames;

coupling a coupling unit provided with a first seating groove and a second seating groove to the side frame;

resting a drum front, configured to support a drying tub, at the first seating groove; and

resting a front frame, formed as to face with respect to the rear frame and separately provided at the pair of side frames, at the second seating groove.

[Claim 23]

The assembly method of claim 22, wherein:

the coupling unit comprises a first guide unit configured to guide movement of the drum front toward the first seating groove, and

the drum front is provided to be seated at the first seating groove along the first guide unit.

[Claim 24]

The assembly method of claim 23, wherein:

the drum front is rested at the first seating groove, and the drum front and the side frames are screw-coupled with respect to each other.

[Claim 25]

The assembly method of claim 24, wherein:

the coupling unit comprises a second guide unit configured to guide movement of the drum front toward the second seating groove, and the front frame is provided to be seated at the second seating groove along the second guide unit.

[Claim 26]

The assembly method of claim 25, wherein:

the front frame is rested at the second seating groove, and the front frame and the side frames are screw-coupled with respect to each other.

[Claim 27]

A laundry treating apparatus, comprising:

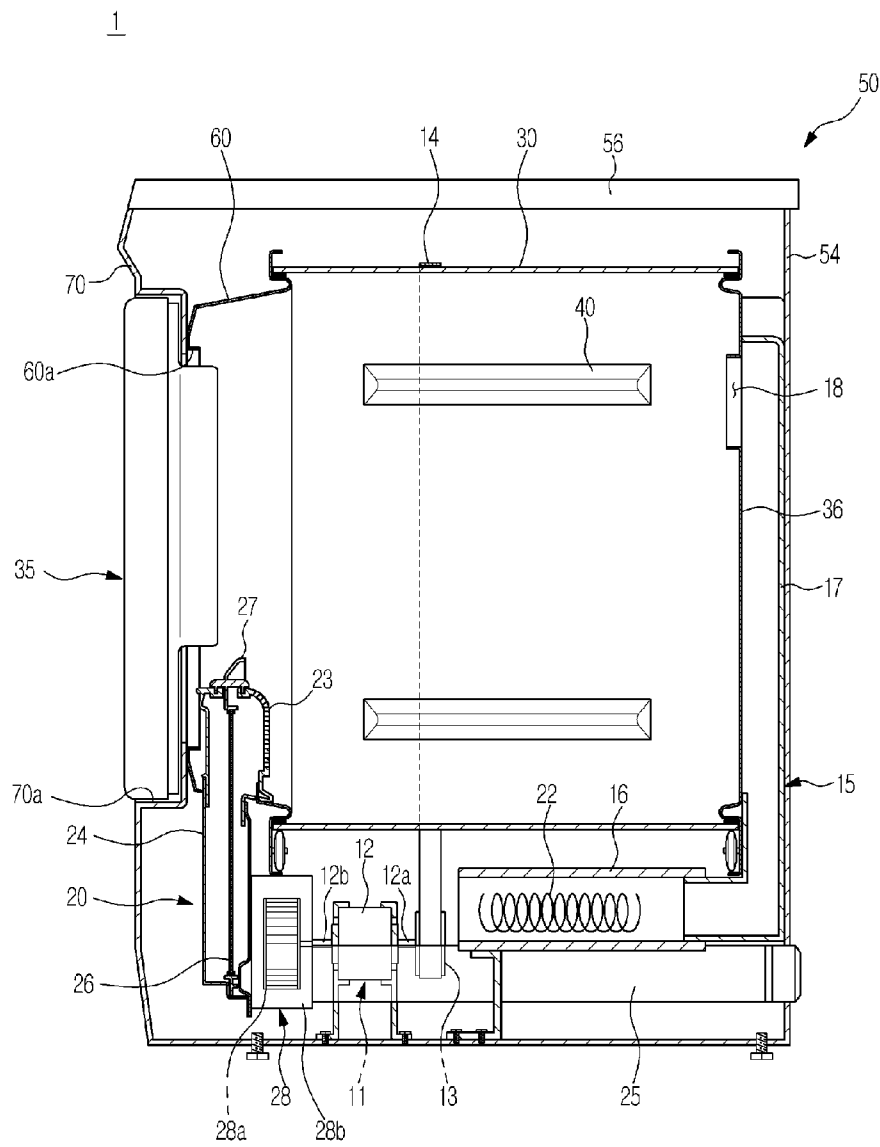
a cabinet comprising side frames substantially parallel to each other, a rear frame connected to the side frames, and a front frame substantially parallel to the rear frame and separately connected to the side frames; a drum front configured to support a drying tub and supported at the cabinet; and

a coupling unit coupled to one of the side frames and supporting the front frame and the drum front.

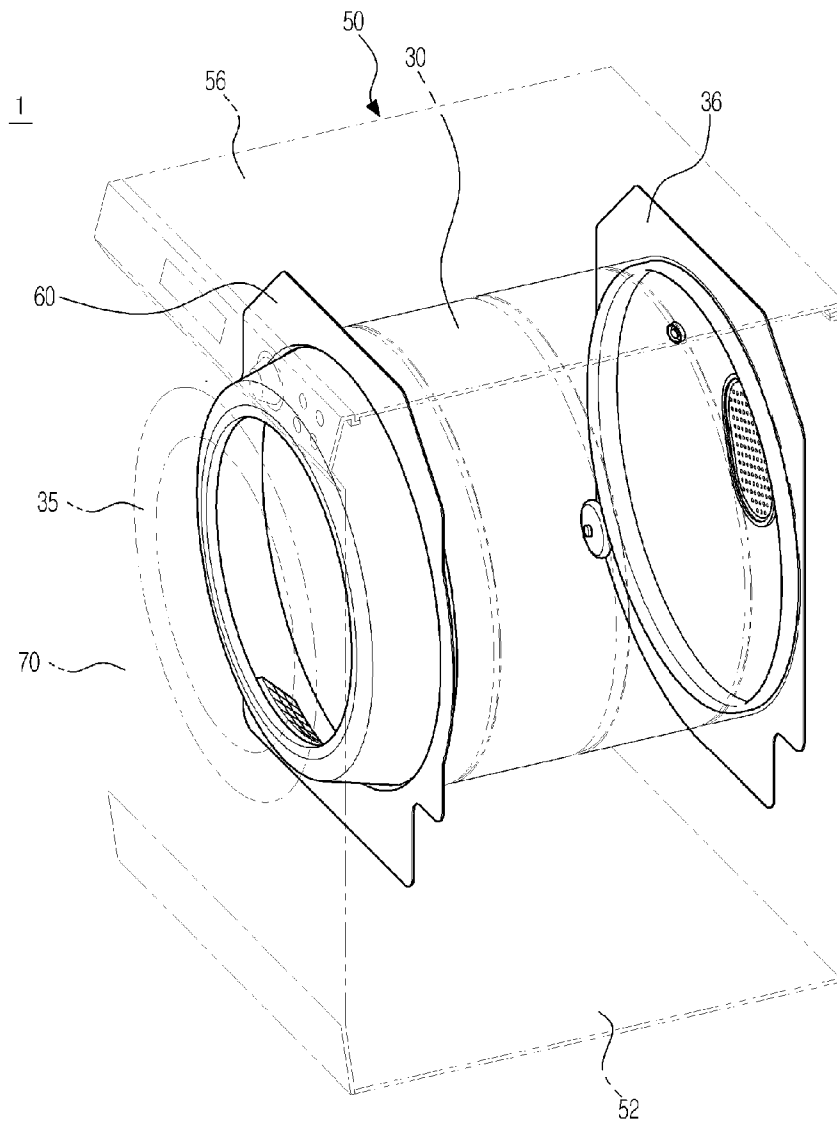
[Claim 28]

The laundry treating apparatus of claim 27, further comprising another coupling unit substantially parallel to the coupling unit and coupled to another of the side frames and supporting the front frame and the drum front.

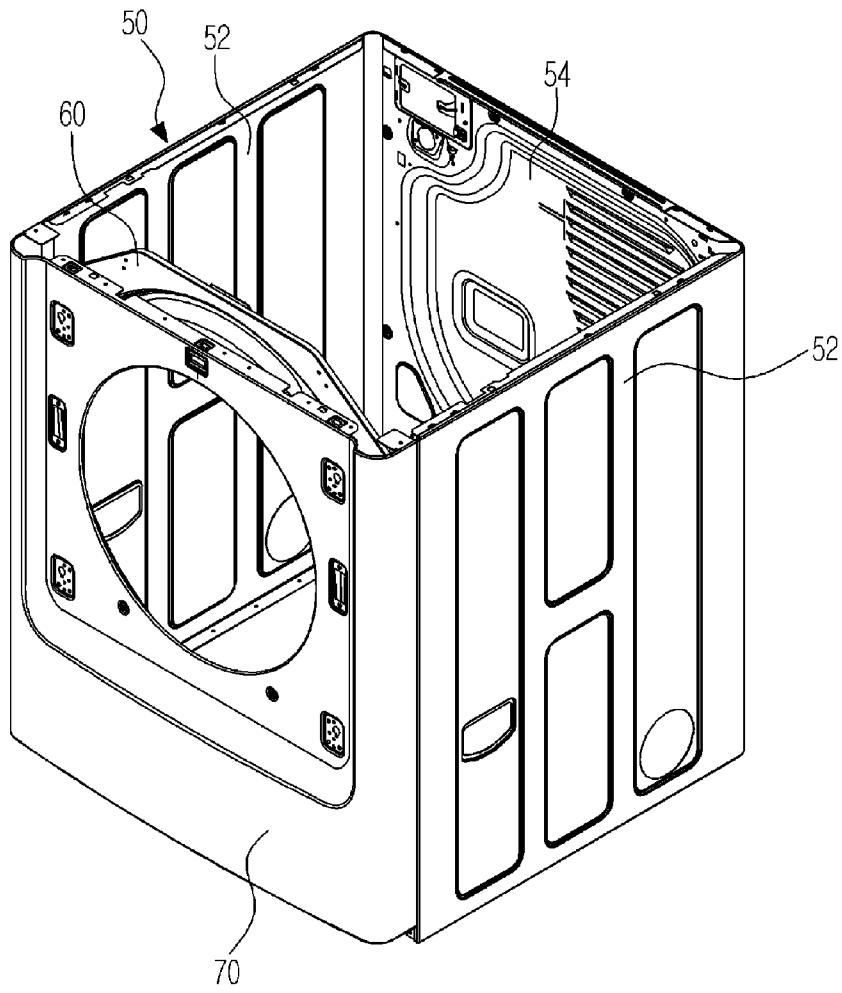
[Fig. 1]



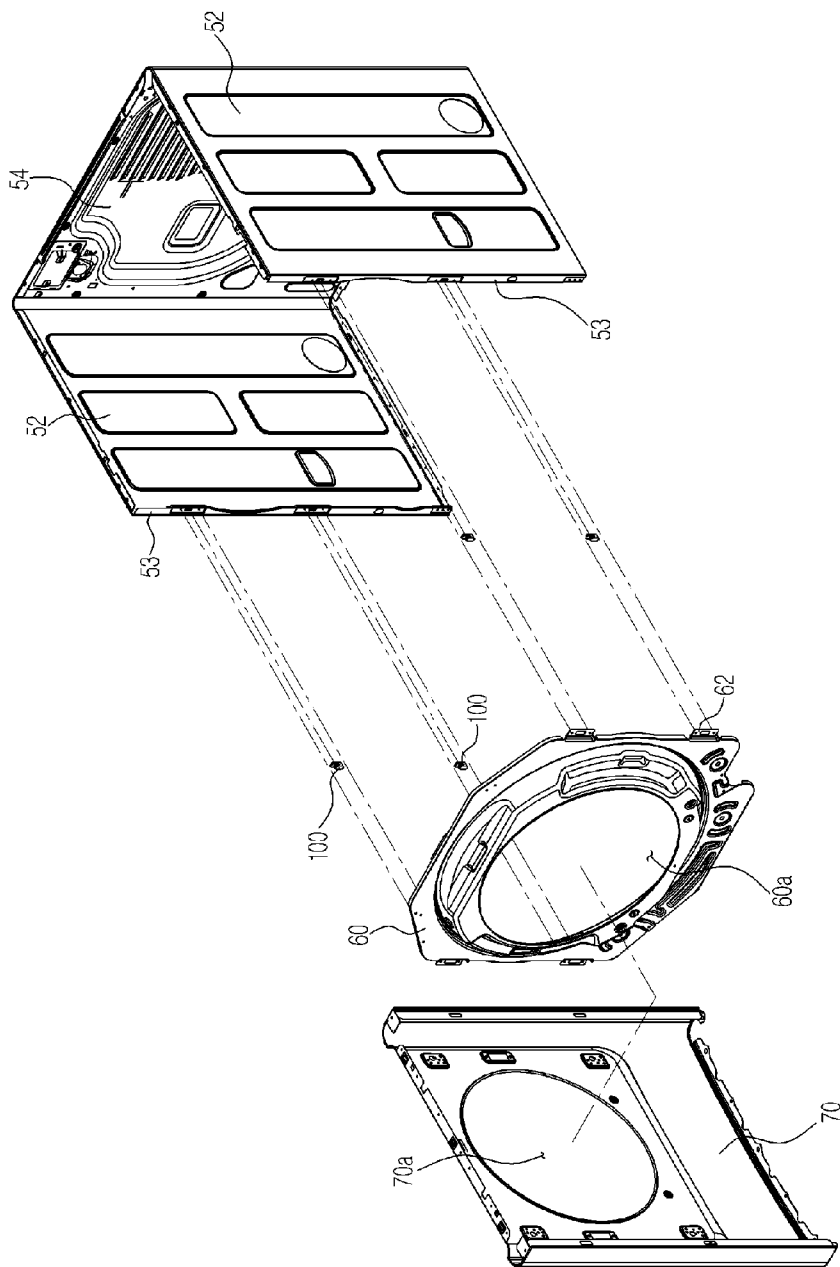
[Fig. 2]



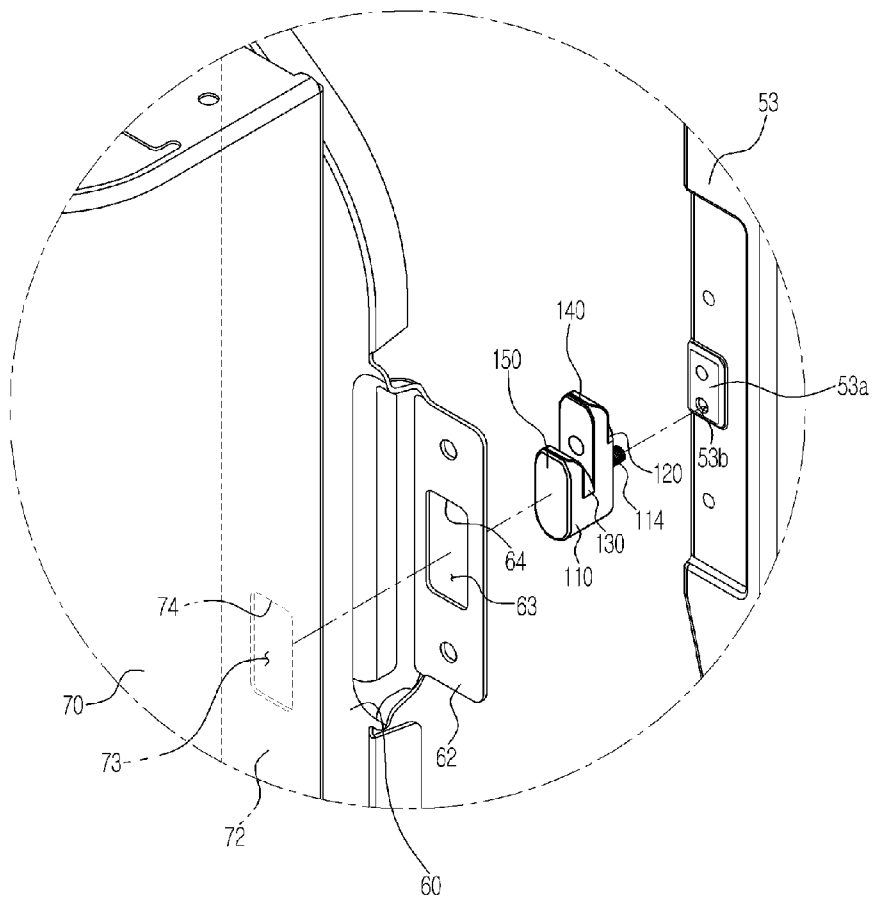
[Fig. 3]



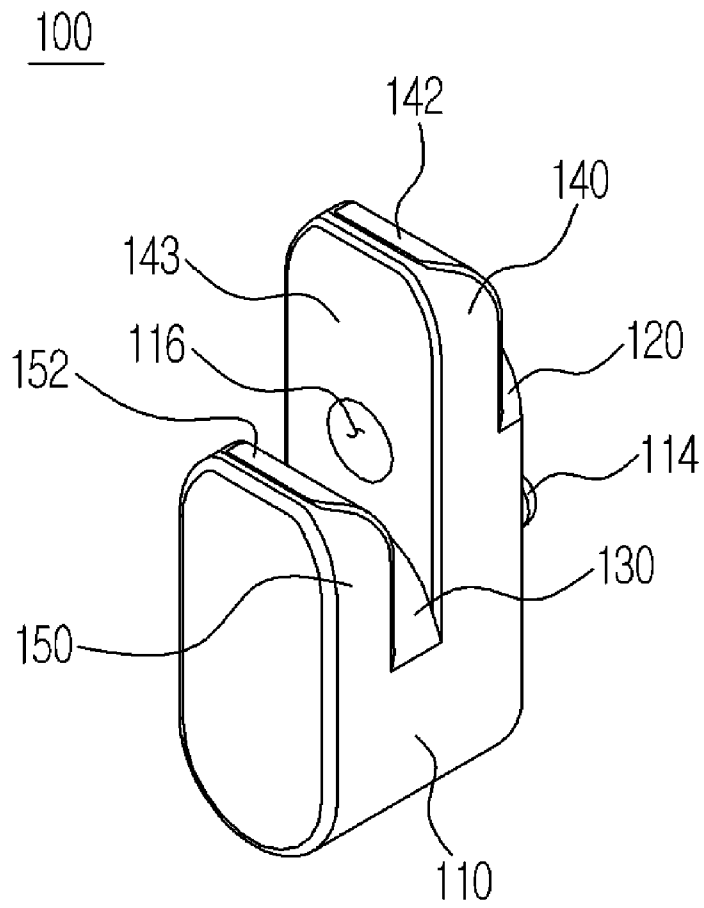
[Fig. 4]



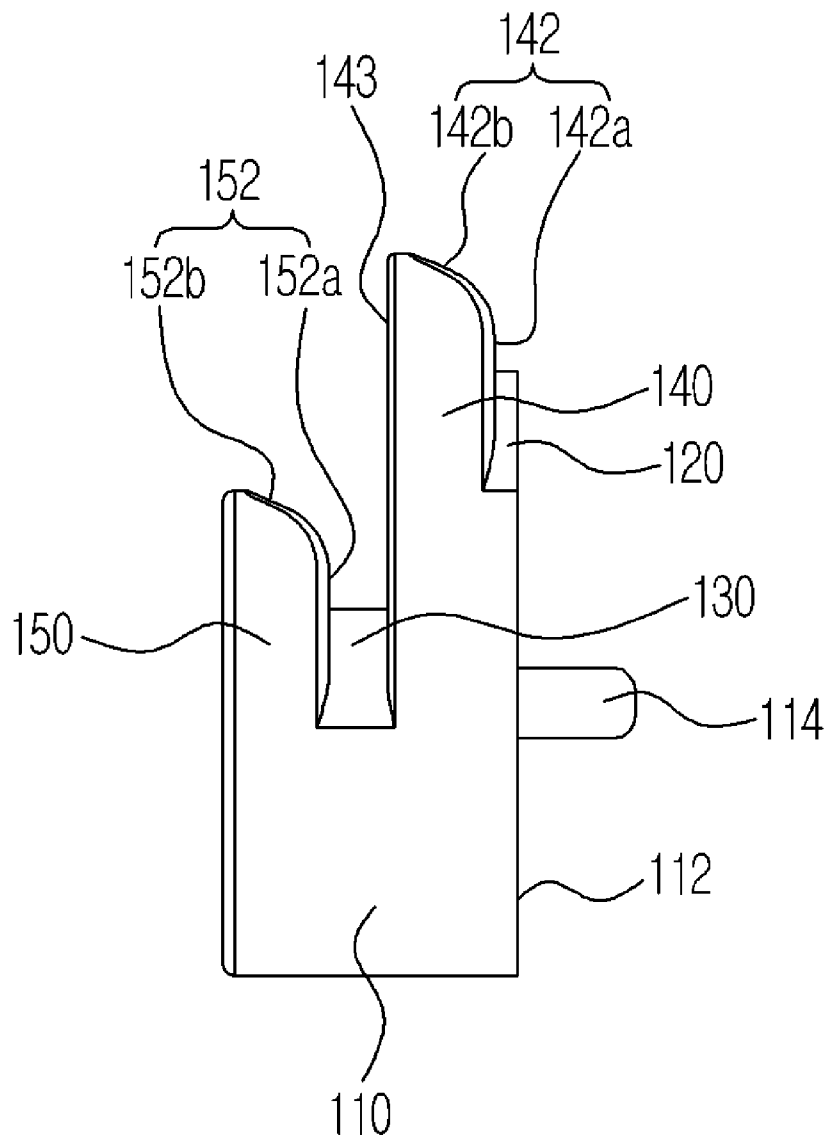
[Fig. 5]



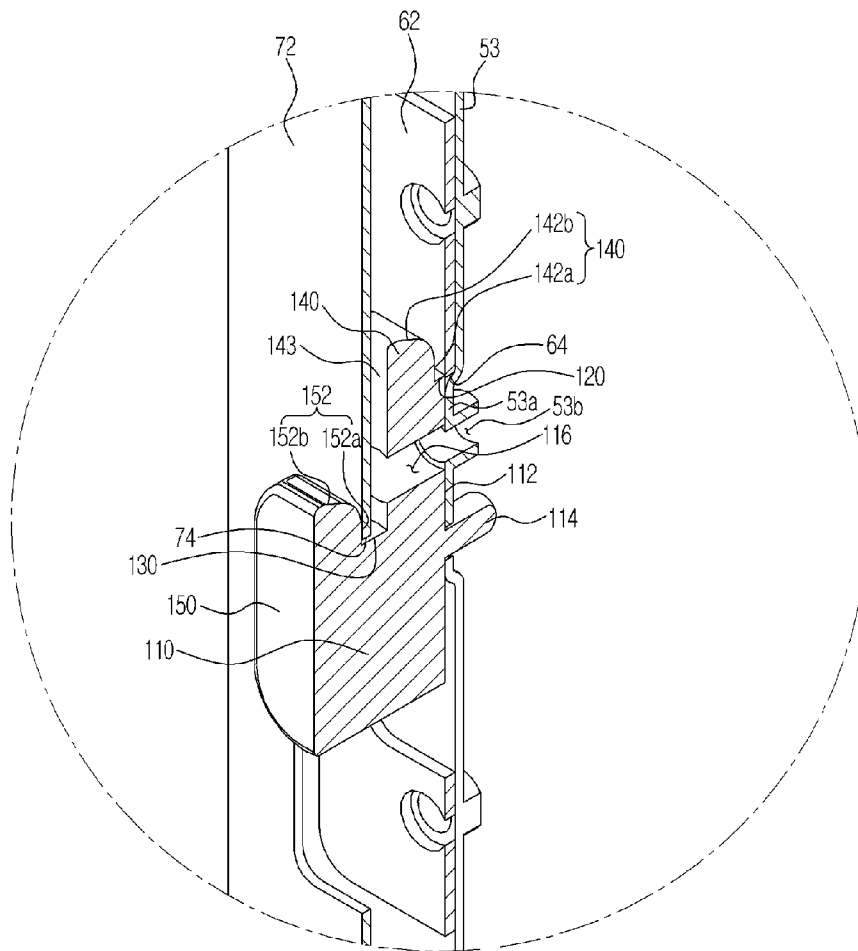
[Fig. 6]



[Fig. 7]



[Fig. 8]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2014/012701**A. CLASSIFICATION OF SUBJECT MATTER****D06F 39/12(2006.01)i, D06F 35/00(2006.01)i, D06F 37/26(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

D06F 39/12; D06F 37/26; D06F 23/02; D06F 35/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: laundry, drum, cabinet, frame, coupling, groove, and guide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

17 April 2015 (17.04.2015)

Date of mailing of the international search report

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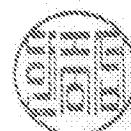
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