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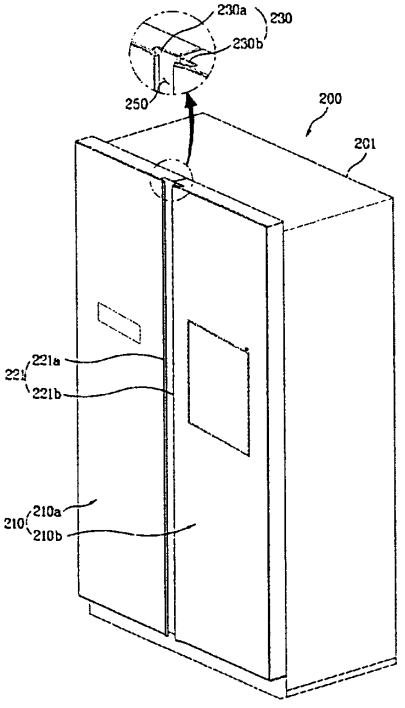
(54) A DOOR FOR AN ELECTRIC APPLIANCE AND A REFRIGERATOR HAVING A DOOR

(57) The present invention relates to a door for a domestic appliance and a refrigerator (200) having the same, and more particularly, a door (210) for a domestic appliance and a refrigerator (200) having the same, in which a curved surface portion (221) is formed on a portion of a door (210) of a domestic appliance for user s convenience at the time of opening of the door (210) and improving a sense of estate of the domestic appliance. For achieving the object, the present invention provides a door (210) for a domestic appliance and a refrigerator having the same, including a door body portion rotatably mounted to a domestic appliance body having a storage space, a cover member (220) on a front of the door body portion, the cover member (220) having a curved portion (221) on one side thereof, a handle portion (230) in rear of the curved portion (221), the handle portion (230) having a holding portion (231).

[Fig. 2]



EP 2 345 859 A2

Description

[Technical Field]

[0001] The present invention relates to a door for an appliance and a refrigerator having the same, and more particularly, a door for an appliance and a refrigerator having the same, in which a curved surface portion is formed on a portion of a door of a domestic appliance for user's convenience at the time of opening of the door and improving a sense of estate of the domestic appliance.

[Background Art]

[0002] In general, the domestic appliance is a product essential for domestic life, such as a refrigerator and a cooking utensil, having a storage or holding space, and is provided with the door for opening/closing the storage space.

[0003] The door is provided with a handle for a user to hold the handle in opening the door, which is fabricated of a member different from the door and projected forward from the door.

[0004] In the meantime, in a trend of gradual simplification of an exterior of the domestic appliance, needs for enhancing user's convenience by minimizing direct outward projections are suggested.

[Disclosure]

[Technical Problem]

[0005] An object of the present invention is to provide a door for an appliance and a refrigerator having the same in which an exterior of an appliance is simplified for improving a sense of esthete of a product itself and user's convenience.

[Technical Solution]

[0006] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a door for an appliance comprising a door body rotatably mounted to an appliance body having a storage space, a cover on a front of the door body, the cover having a curved part on one side thereof, a handle in rear of the curved part, the handle having a holder.

[0007] The handle includes; a first supporting part in contact with and supported on a rear of the curved part of the cover, and a second supporting part in contact with and supported on a side of the door body, wherein the holder is provided as a groove between the first supporting part and the second supporting part.

[0008] The holder has a shape of a groove provided in a vertical direction of the door.

[0009] The handle part further includes; a first supporting rib projected from the first supporting part to cover an edge of the curved part of the curved part.

[0010] The door further comprises a fastening member projected backward from the first supporting part for placing in a fastening slot in the appliance body.

[0011] The door further comprisesa fastening member mounting part on one side of the door body for mounting the fastening member thereto; and a mounting recess on one side of the handle for placing the fastening member mounting part therein.

[0012] The handle further includes a second supporting rib projected from the second supporting part to cover a side of the door body.

[0013] The door further comprises a seating part on one side of the door body for seating the handle thereon, wherein the seating part is shaped as a step.

[0014] The door further comprises cap members for covering top sides and bottoms sides of the cover , the door body, and the handle.

[0015] The cap member has a recess recessed from an outside to an inside thereof in conformity with a shape of the holder.

[0016] The curved part has an outer edge projected forward from a front of the cover.

[0017] The curved part has a curvature increased gradually as the curved part goes toward the outer edge the more.

[0018] The door further comprises an opened part in an inside of the door body ; and a see-through part in the opened part in rear of the cover to see through an inside of the body of the appliance.

[0019] In another aspect of the present invention, a refrigerator comprises:

> a body having a storage chamber; a door rotatably mounted to the door for opening/closing the storage chamber, the door having a curved part on one side thereof; and a handle in rear of the curved part, the handle having a holder.

[0020] The door has one end rotatably connected to the body, and the other end having the curved part formed thereon.

[0021] The door includes; a door body having a seating part on one side thereof for seating the handle thereon, and a cover having a curved part for covering a front of the door body.

[0022] The handle includes; a first supporting part in contact with and supported on a rear of the curved part, and a second supporting part seated and supported on the seating part, wherein the holder is provided between the first supporting part and the second supporting part.

[0023] The holder is provided in a vertical direction of the door.

[0024] The holder has an innermost side rounded to have a curvature.

[0025] The handle further includes; a first supporting rib extended from an edge of the first supporting part to

cover one side of the cover ; and a second supporting rib extended from an edge of the second supporting part to cover one side of the door body.

[0026] The refrigerator further comprises cap members for top sides and bottom sides of the door body and the handle.

[0027] The cap member has a recess on one side thereof in conformity with a cross sectional shape of the holder.

[0028] The curved part is projected forward the more as the curved part goes from an inside of the front of the door to an outside of the front of the door the more.

[Advantageous Effects]

[0029] The present invention has following advantageous effects.

[0030] By minimizing exposure of the handle and extent of the exposure and extending a holding range of the handle, user's convenience can be enhanced.

[Description of Drawings]

[0031]

FIG. 1 illustrates a perspective view of an arrangement of appliances each having a door in accordance with the present invention mounted thereto.

FIG. 2 illustrates a front side perspective view of a refrigerator having a door in accordance with the present invention mounted thereto;

FIG. 3 illustrates a plan view of a refrigerator having a door in accordance with the present invention mounted thereto;

FIG. 4 illustrates a perspective view of a door in accordance with the present invention to be applied to a refrigerator;

FIG. 5 illustrates an exploded perspective view of a door in accordance with the present invention to be applied to a refrigerator;

FIG. 6 illustrates a plan view of a door in accordance with the present invention to be applied to a refrigerator;

FIG. 7 illustrates an enlarged perspective view of an upper portion of a door in accordance with the present invention;

FIG. 8 illustrates a perspective view of a refrigerator having a door in accordance with the present invention applied thereto, in a door opened state;

FIG. 9 illustrates a perspective view of a wine refrigerator having a door in accordance with the present invention applied thereto;

FIG. 10 illustrates a plan view of a wine refrigerator having a door in accordance with the present invention applied thereto;

FIG. 11 illustrates a perspective view of a door in accordance with the present invention to be applied to a wine refrigerator;

FIG. 12 illustrates an exploded perspective view of a door in accordance with the present invention to be applied to a wine refrigerator;

FIG. 13 illustrates an exploded plan view of a door in accordance with the present invention applied to a wine refrigerator;

FIG. 14 illustrates an enlarged perspective view of an upper portion of a door in accordance with the present invention applied to a wine refrigerator;

FIG. 15 illustrates a perspective view of a cooking utensil having a door in accordance with the present invention applied thereto;

FIG. 16 illustrates a plan view of a cooking apparatus having a door in accordance with the present invention applied thereto;

FIG. 17 illustrates a perspective view of a door in accordance with the present invention to be applied to a cooking apparatus;

FIG. 18 illustrates an exploded perspective view of a cooking apparatus having a door in accordance with the present invention to be applied thereto;

FIG. 19 illustrates a partial enlarged perspective view of a door to be applied to a cooking apparatus; and

FIG. 20 illustrates a perspective view of a cooking apparatus having a door in accordance with the present invention applied thereto, in a door opened state.

[Best Mode]

[0032] Reference will now be made in detail to the specific embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

[0033] FIG. 1 illustrates an arrangement of electric appliances 200, 300 and 400 and cabinets 100 therein, which can be buried in a wall of a room, or projected outward to occupy a portion of a room space.

[0034] The units illustrated in FIG. 1 will be described starting from a left side to a right side.

[0035] At a leftmost side, there is a cabinet 100 for placing articles required to store, on a right side thereof, there is a wine refrigerator 300 for storing bottled drinks, such as wine.

[0036] On a right side of the wine refrigerator 300, there are a refrigerator 200, a cabinet 100, a cooking apparatus 400, and a cabinet 100.

[0037] Of course, above order can be changed depending on user's selection or a size of the space in which above appliances and cabinets are installed.

[0038] Each of the cabinets 100, the wine refrigerator 300, the refrigerator 200, and the cooking apparatus 400 includes a body 101, 201, or 301 having a holding space, and a door 110, 210, 310, or 410 rotatably mounted thereto for opening/closing the holding space.

[0039] The door 110, 210, 310, or 410 has a curved part on one side, and a handle in rear of the curved part for a user to hold and pull so as to open the door.

[0040] The refrigerator 200 has a body 201 which can

be buried in a wall and has a holding space formed therein, and the door 210 rotatably mounted to a front of the body 201.

[0041] Referring to FIG. 2, in a case of a side-by-side door type refrigerator, at a portion where a first door 210a and a second door 210b face each other, there is the curved part 221; 221a and 221b.

[0042] As described, in rear of the curved part221, there is a handle 230; 230a and 230b.

[0043] According to this, on the whole, between the curved part 221a of the first door 210a and the curved part 221b of the second door 210b, a space 250 is formed, which is continuous from a top to a bottom of the door 210.

[0044] Referring to FIG. 3, each of the curved parts 230; 230a and 230b is slightly projected from a front surface of the door 210, preferably the less as the projection goes to a side of the door the more.

[0045] The handle 230 in rear of the curved part221 has a groove shaped holder 231, having a front/rear direction width, preferably less than a half of a total thickness of the door.

[0046] The holder 231a at the first door 210a and the holder 231b at the second door 210b are symmetrical to each other, or one side thereof may have the groove formed deeper than the groove of the other side.

[0047] Referring to FIG. 4, it is preferable that the curved part221 and the holder 231 are formed at a side of the door 210 in a vertical direction starting from a top side to a bottom side of the door 210, and the depth and the front/rear direction width of the holder 231, and a curvature of the curved part221 are consistent starting from the top side to the bottom side of the door 210.

[0048] The door 210 and the handle 230 arranged at the door 210 will be described in detail.

[0049] Referring to FIG. 5, the door 210 includes a door body 211, and a cover 220 on the front of the door body 211, and the cover 220 has the curved part 221 at a side edge thereof.

[0050] In this instance, it is preferable that the curved member 220 is formed of glass having one curved side for forming the curved part221.

[0051] At the side edge of the door body 211, there is a stepped seating part 212 for seating the handle 230 thereon.

[0052] The handle 230 includes a first supporting part232 in contact with and supporting a rear side of the cover 220 having the curved part221 formed thereon, and a second supporting part233 seated on and supported by the seating part 212, and the holder 231 is formed in a shape of a groove between the first supporting part232 and the second supporting part233 as one side of the handle 230 is opened, and portions of the first supporting part232 and the second supporting part233 are spaced from each other.

[0053] It is preferable that the handle 230 is formed of wood taking easy machining and a sense of esthete into account.

[0054] As described before, the holder 231 is continuous in a vertical direction of the door.

[0055] In an assembled state of the cover 220 and the door body 211, and the handle 230, cap members 250 covers on a top side and a bottom of the assembly, respectively.

[0056] It is preferable that the cap member 250 has an end portion with a shape identical to a horizontal cross section of the holder 231 of the handle 230, i.e., the groove 251.

[0057] Referring to FIG. 6, the first supporting part232 of the handle 230 is in contact with and supported on a rear of the curved part221, and the second supporting part233 of the handle 230 is attached to and supported on the seating part 212.

[0058] In order to reinforce a supporting state of the handle 230 further, the handle 230 has first and second supporting ribs 235 and 236 formed thereon, additionally.

[0059] That is, the first supporting rib 235 is projected forward from the first supporting part232 so as to be in contact with an outermost side of the curved part221 of the cover 220, and the second supporting part236 is projected backward from an edge of the second supporting part233 so as to be in contact with a side of the door body 211.

[0060] In the meantime, it is preferable that the door body has a length L1 formed longer than a length L2 of the cover so that a portion of the handle 230 is visible from the front of the refrigerator slightly for providing variation of an outer appearance and enhancing a beauty thereof.

[0061] Accordingly, referring to FIG. 7, if an assembly of the cap member 250, the curved part221, the handle 230, and the door body 211 (See FIG. 6) is enlarged, it can be seen that the cap members 250 cover the tops and the bottoms of the door body 211, the curved part221, and the handle 230, respectively.

[0062] And, as the first supporting rib 235 covers the side of the curved part221 and the second supporting rib 236 covers the side of the door body 211, a supporting state of the assembly is improved, and finishing thereof becomes neater.

[0063] Referring to FIG. 8, the door 210 having the handle 230 is mounted to the body 200 with a hinge unit 260 which connects the body 200 to the door 210.

[0064] The hinge unit 260 has one end rotatably placed in and coupled to a first hinge slot 261 in an upper side of the front of the body, and the other end rotatably placed in and coupled to a second hinge slot 262 in an upper side of the rear of the door 210.

[0065] Accordingly, when the user holds the handle 230 and opens or closes the door 210, a rotation angle of the hinge unit 260 changes in a state the hinge unit 260 is rotatably fastened to the door 210 and the body 201.

[0066] The body 301 of the wine refrigerator 300 and the handle 330 fastened to the door 310 will be described.

[0067] Referring to FIG. 9, the wine refrigerator includes a body 301 having a storage chamber and shelves

provided therein, and a door 310 rotatably mounted to the body 301.

[0068] In this instance, it is preferable that the door 310 is formed of a transparent member so that the storage chamber is visible from an outside of the wine refrigerator, and the door 310 has a curved part321 on one side thereof and a handle 330 in rear of the curved part321.

[0069] Referring to FIG. 10, since the handle 330 has a groove shaped holder 331, the user can place a hand in the holder 331 and pulls the holder to open the door.

[0070] Referring to FIG. 11, the curved part321 is continuous from a top side to a bottom side of the door 310, to have the handle 330 in rear of the curved part321 also to be continuous from the top side to the bottom side of the door 310.

[0071] At the top side and the bottom side of the door 310, the holder 331 of the handle 310 is opened upward and downward, respectively.

[0072] Referring to FIG. 12, the door 310 includes a door body 311, a cover 320 on a front of the door body 311, a handle 330 seated on the door body 311 arranged in a vertical direction of the door 310, and a cap member 350 which covers the top side and the bottom side of the door body 310.

[0073] The door body 311 has an opened part 313 at center thereof and a seating part 312 on a side for seating the handle 330, and the handle 330 is seated on the seating part 312.

[0074] A see through member 325 is mounted to an inside circumference of the opened part, so that the things stored in the wine refrigerator are visible from an outside of the wine refrigerator.

[0075] In this instance, it is appropriate that the see through member 325 is formed of a transparent or semi-transparent material.

[0076] There is a hinge securing portion 314 provided at a portion of the door body 311 on an exact opposite side of the seating part 312 the handle 330 is mounted thereto for rotatably placing a hinge shaft (not shown) to be mounted to the body therein, and in order to provide the hinge securing portion 314, a step of a certain depth is provided around the hinge securing portion 314.

[0077] Referring to FIG. 13, the handle 330 includes a first supporting part332 in contact with and supported on a rear of the curved part321 of the cover 320, a second supporting part333 in contact with and supported on the seating part of the door body, and a holder 331 between the first supporting part332 and the second supporting part333.

[0078] A shape of the first supporting part332 in contact with the curved part221 has a shape in conformity with a rear of the curved part221, and a shape of the second supporting part333 in contact with the seating part 221 has a shape in conformity with a rear of the curved part312 is in conformity with the step shaped seating part 312.

[0079] The first supporting part332 has a first supporting rib 335 projected forward from an end to contact with the curved part of the cover, and the second supporting part333 has a first supporting rib 336 projected backward from an end to contact with a side of the door body 311, to assist mounting of the handle 330 on the door body 311 and the cover 320, respectively.

[0080] In rear of the cover 320, there is an opened part 313 for the user to see things stored in the storage chamber through the opened part from an outside of the cover 320.

[0081] Referring to FIG. 14, if the cap member 350 is placed on the top side of the door, the cap member 350 can cover top sides of all of the door body (not shown), the cover 320 and the handle 330.

[0082] In the meantime, as described before, since the cap member 350 has a recess 331 in conformity with a horizontal cross section of the holder 331, the holder 331 can be opened to the top side and the bottom side of the door through the recess 351.

[0083] FIG. 15 illustrates a perspective view of a cooking apparatus having a curved part.

[0084] As shown, the cooking apparatus includes a cooking apparatus body 410 placed in a holding space, and a door 410 rotatably mounted to a front of the body, wherein the door has a curved part421 identical to the wine refrigerator or a general refrigerator.

[0085] However, the door 410 has a fastening member 480 in rear of the curved part 421 for maintaining a closed state if the door 410 closes the body 401, and a fastening slot 481 for placing the fastening member 480 therein.

[0086] Referring to FIG. 16, there is a door contact part 402 at a front rim of the body 401 having a width and a height corresponding to the door 410. The width and height of the door contact part 402 is formed wider and higher than the body 401, taking wall thickness of the shelf S which forms the space in which he body is placed into account.

[0087] That is, if the body 401 is being placed in the shelf S, mounting of the cooking apparatus body 401 can be made finished as the door contact part 402 is held by a rim of an entrance of the holding space of the shelf S.

[0088] Moreover, by making a gap between the entrance to the shelf S and the body invisible from and outside of the shelf S, a problem of an outer appearance which is liable to take place due to the gap can be solved.

[0089] On a front of the door contact part 402, the door 410 is arranged, having the curved part 421 on a side of the door and a handle 430 in rear of the curved part 421.

[0090] Referring to FIG. 17, cap members 450 are provided on a top side and a bottom side of the door 410 respectively, for preventing top sides and bottom sides of a door body 411, a cover 420 to be described later and the handle 430 from exposing to an outside of the door 410.

[0091] Referring to FIG. 18, the door 410 includes the door body 411, the cover 420 provided in front of the door body 411 and the handle 430 attached to a side of the door body 411 in rear of the curved part 421 of the curved member 420.

[0092] The door body 411 has a seating part 412 on a side thereof for seating the handle 430 thereon, with a fastening member mounting part 483 projected in a lateral direction from the seating part 412 for mounting the fastening member 480 thereto.

[0093] The handle 430 has a vertical surface in conformity with the seating part 412 where the handle 430 is in contact with the seating part 412. The vertical surface has a mounting recess 439 for placing the fastening member mounting portion therein.

[0094] The handle 430 has a curved surface in conformity with the curved part 421 where the handle 430 is to be in contact with the curved part421.

[0095] In this instance, a portion of the handle 430 to be in contact with and supported on the curved part 421 will be called as a first supporting part 432, and a portion of the handle 430 to be in contact with and supported on the seating part 412 will be called as a second supporting part433.

[0096] In the meantime, the first supporting part 432 and the second supporting part 433 are connected to each other and have a step in a cross section which forms a holder 431 for the user to hold the handle 430 in opening the door 410.

[0097] If the user pulls the door forward in a state the user places a hand on the holder 431, the user can open the door, conveniently.

[0098] The cap members 450 are attached to the top side and the bottom side of the door 410 respectively, and have recesses 451 at one end thereof in conformity with a cross section of the holder 431, respectively.

[0099] Referring to FIG. 19, in a state the door body 411 (See FIG. 18), the cover 420 and the handle 430 are assembled, the cap members 451 cover the top sides and the bottom sides of the door body 411, the cover 420 and the handle 430, making finishing of the top sides and the bottom sides neat, and preventing foreign matters from placing in between above parts.

[0100] Referring to FIG. 20, the fastening member 480 on the door has a hook shape, with a backward projection from the fastening portion mounting portion 483. The fastening slot 482 in which the fastening member 481 is to be placed is provided in the door contact portion 402 at a position matched to the fastening member 481, for maintaining a closed state between the body 401 and the door 410 when the door 410 is closed.

Claims

1. A door for an appliance comprising:

a door body rotatably mounted to an appliance body having a storage space;
a cover on a front of the door body, the cover having a curved part on one side thereof;
a handle in rear of the curved part, the handle having a holder.

2. The door as claimed in claim 1, wherein the handle includes;
a first supporting part in contact with and supported on a rear of the curved part of the cover, and
a second supporting part in contact with and supported on a side of the door body ,
wherein the holder is provided as a groove between the first supporting part and the second supporting part.

3. The door as claimed in claim 2, wherein the holder has a shape of a groove provided in a vertical direction of the door.

4. The door as claimed in claim 2, wherein the handle part further includes;
a first supporting rib projected from the first supporting part to cover an edge of the curved part of the curved part.

5. The door as claimed in claim 4, further comprising a fastening member projected backward from the first supporting part for placing in a fastening slot in the appliance body.

6. The door as claimed in claim 5, further comprising:

a fastening member mounting part on one side of the door body for mounting the fastening member thereto; and
a mounting recess on one side of the handle for placing the fastening member mounting part therein.

7. The door as claimed in claim 4, wherein the handle further includes;
a second supporting rib projected from the second supporting part to cover a side of the door body.

8. The door as claimed in claim 2, further comprising a seating part on one side of the door body for seating the handle thereon, wherein the seating part is shaped as a step.

9. The door as claimed in claim 2, further comprising cap members for covering top sides and bottoms sides of the cover, the door body, and the handle.

10. The door as claimed in claim 9, wherein the cap member has a recess recessed from an outside to an inside thereof in conformity with a shape of the holder.

11. The door as claimed in claim 1, wherein the curved part has an outer edge projected forward from a front of the cover.

12. The door as claimed in claim 11, wherein the curved

part has a curvature increased gradually as the curved part goes toward the outer edge the more.

13. The door as claimed in claim 1, further comprising:

an opened part in an inside of the door body ; and
a see-through part in the opened part in rear of the cover to see through an inside of the body of the appliance.

14. A refrigerator comprising:

a body having a storage chamber;
a door rotatably mounted to the door for opening/closing the storage chamber, the door having a curved part on one side thereof; and
a handle in rear of the curved part, the handle having a holder.

15. The refrigerator as claimed in claim 14, wherein the door has one end rotatably connected to the body, and the other end having the curved part formed thereon.

16. The refrigerator as claimed in claim 14, wherein the door includes;
a door body having a seating part on one side thereof for seating the handle thereon, and
a cover having a curved part for covering a front of the door body.

17. The refrigerator as claimed in claim 16, wherein the handle includes;
a first supporting part in contact with and supported on a rear of the curved part, and
a second supporting part seated and supported on the seating part,
wherein the holder is provided between the first supporting part and the second supporting part.

18. The door as claimed in claim 17, wherein the holder is provided in a vertical direction of the door.

19. The refrigerator as claimed in claim 18, wherein the holder has an innermost side rounded to have a curvature.

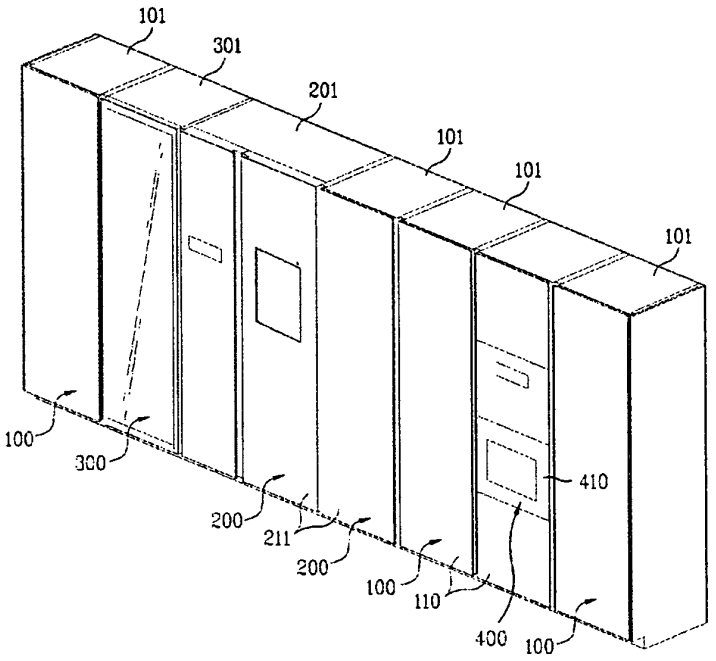
20. The refrigerator as claimed in claim 17, wherein the handle further includes;
a first supporting rib extended from an edge of the first supporting part to cover one side of the cover ; and
a second supporting rib extended from an edge of the second supporting part to cover one side of the door body.

21. The refrigerator as claimed in claim 16, further comprising cap members for top sides and bottom sides of the door body and the handle.

22. The refrigerator as claimed in claim 21, wherein the cap member has a recess on one side thereof in conformity with a cross sectional shape of the holder.

23. The refrigerator as claimed in claim 16, wherein the curved part is projected forward the more as the curved part goes from an inside of the front of the door to an outside of the front of the door the more.

[Fig. 1]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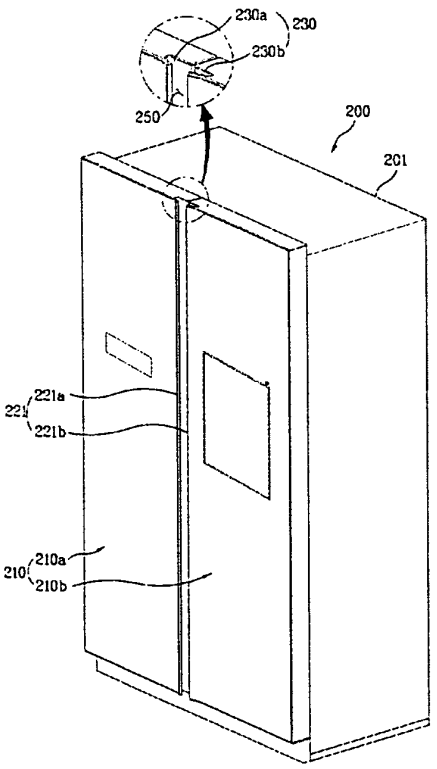
[Fig. 2]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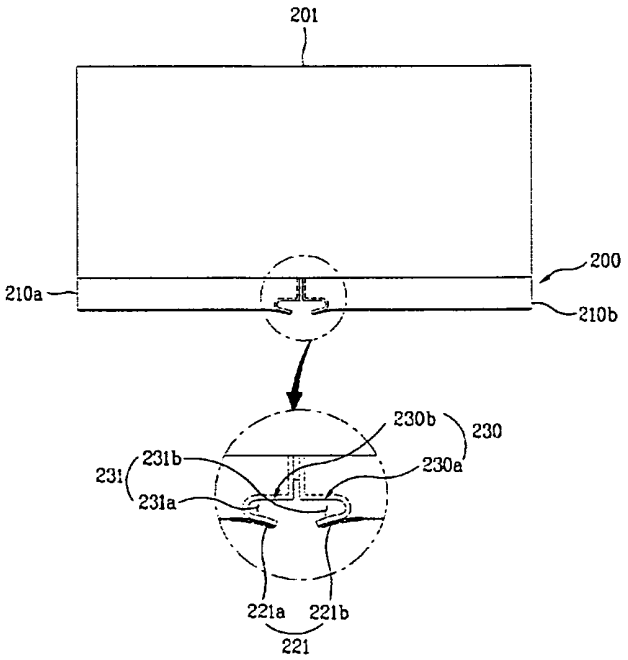
[Fig. 3]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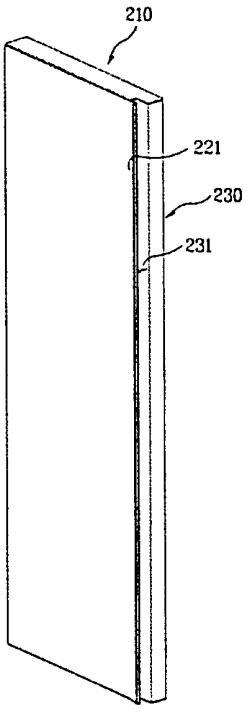
[Fig. 4]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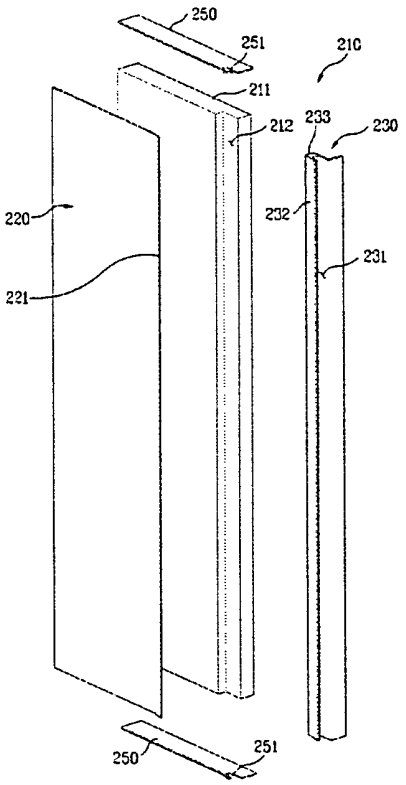
[Fig. 5]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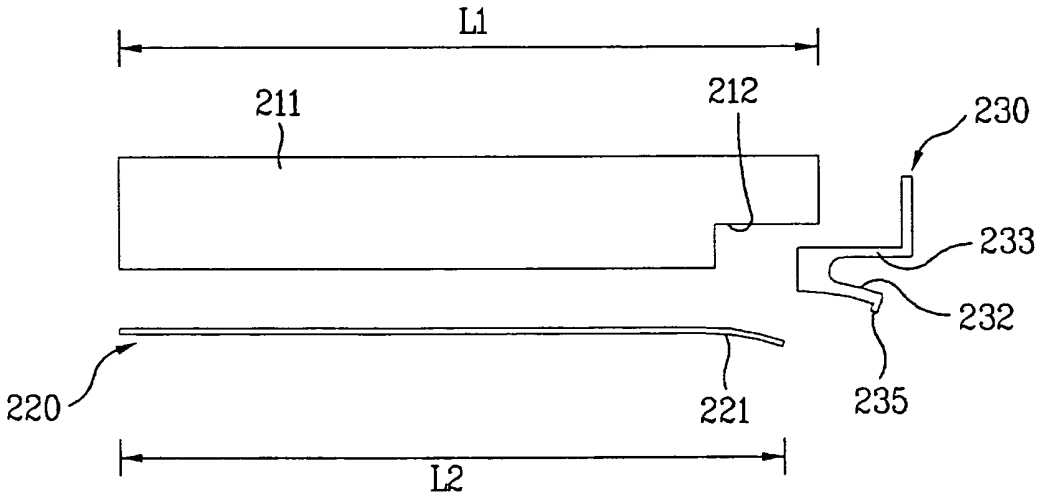
[Fig. 6]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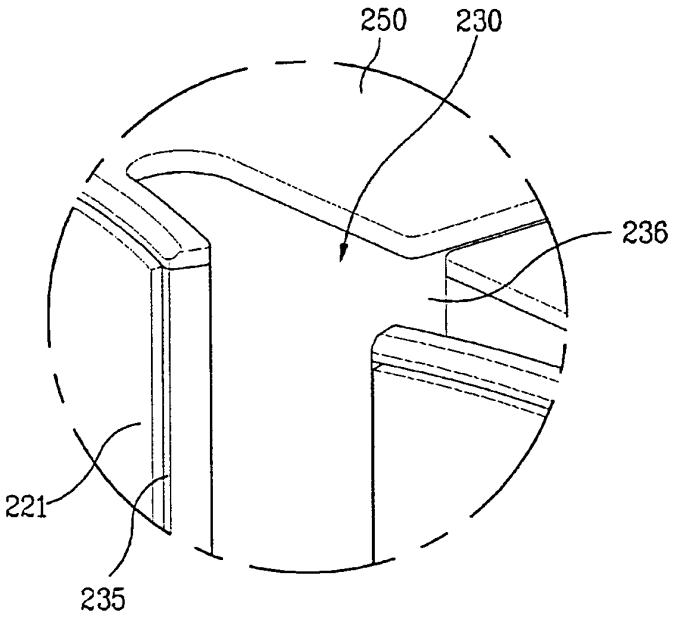
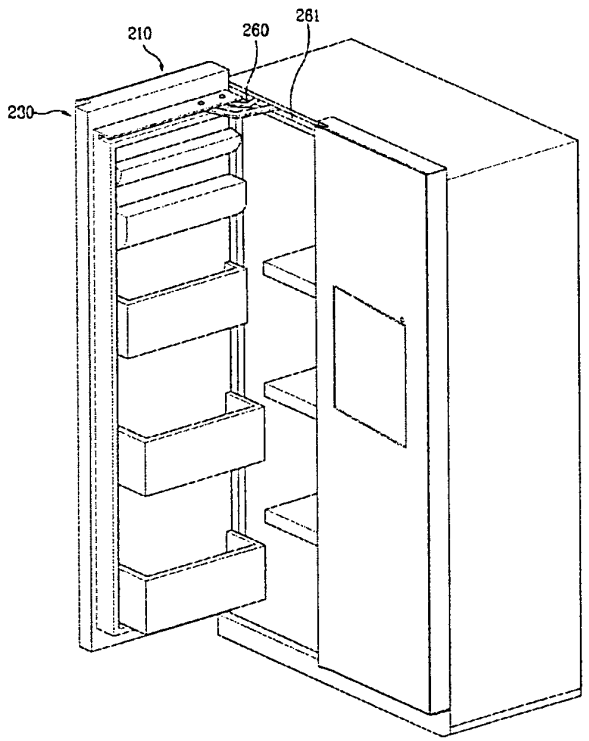
L2

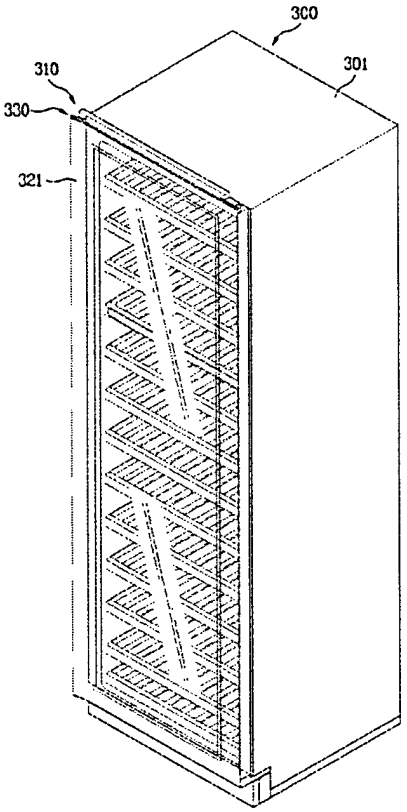
[Fig. 7]



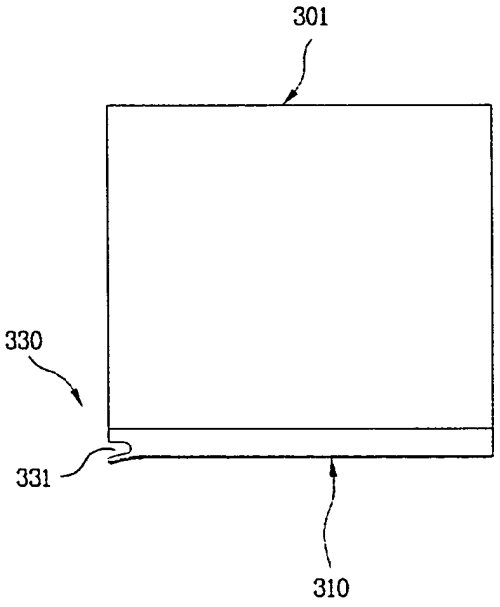
[Fig. 8]



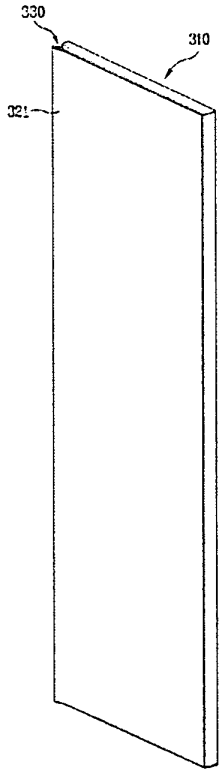
[Fig. 9]



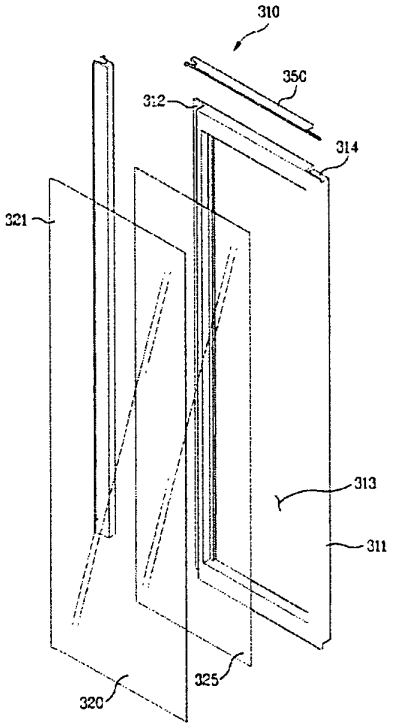
[Fig. 10]



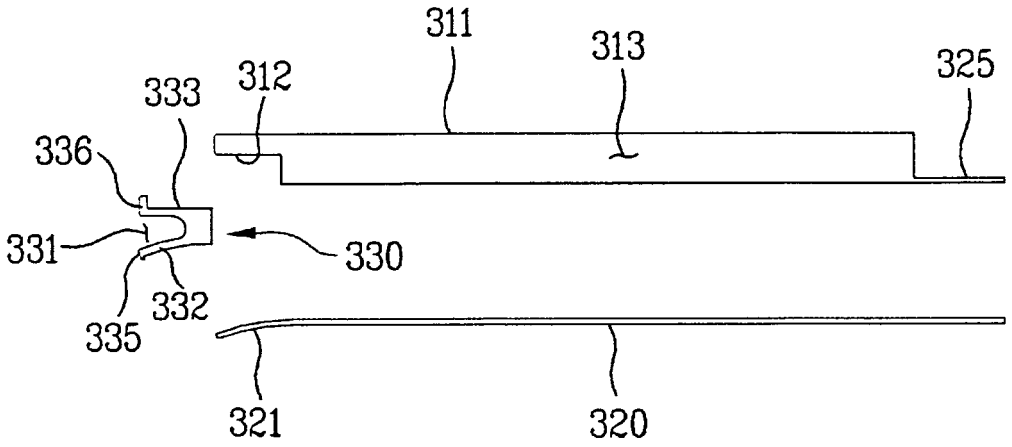
[Fig. 11]



[Fig. 12]



[Fig. 13]


311
313
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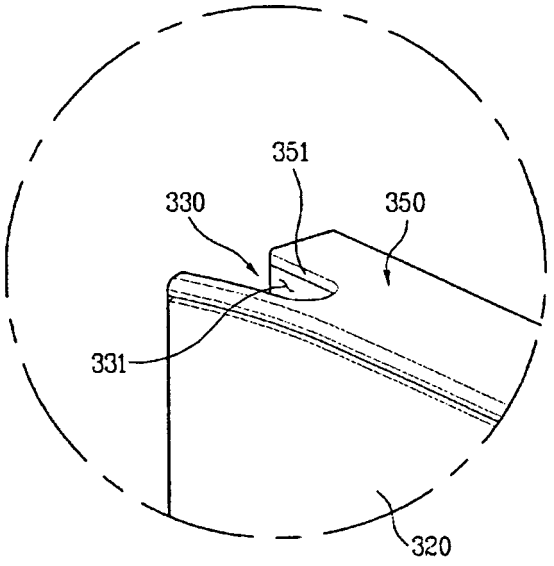
[Fig. 14]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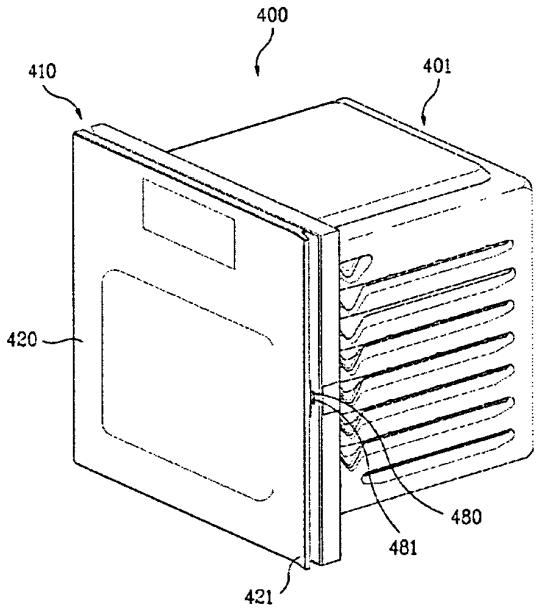
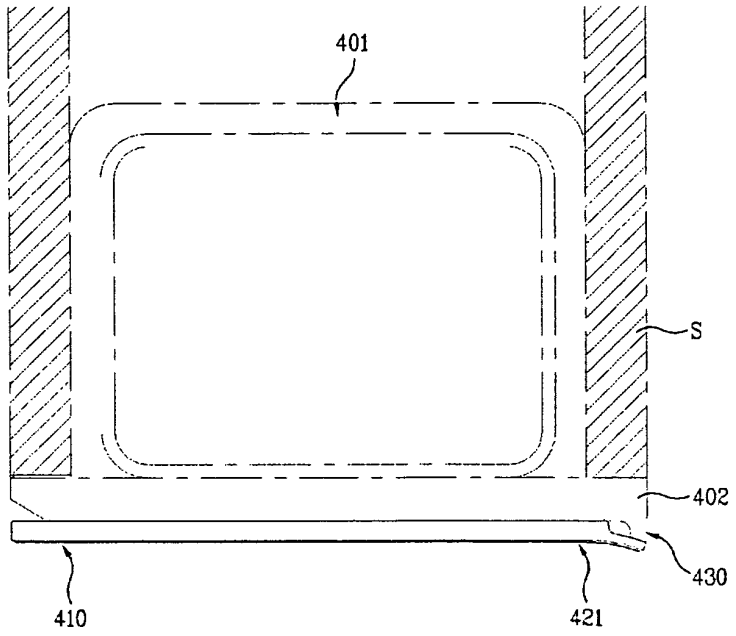
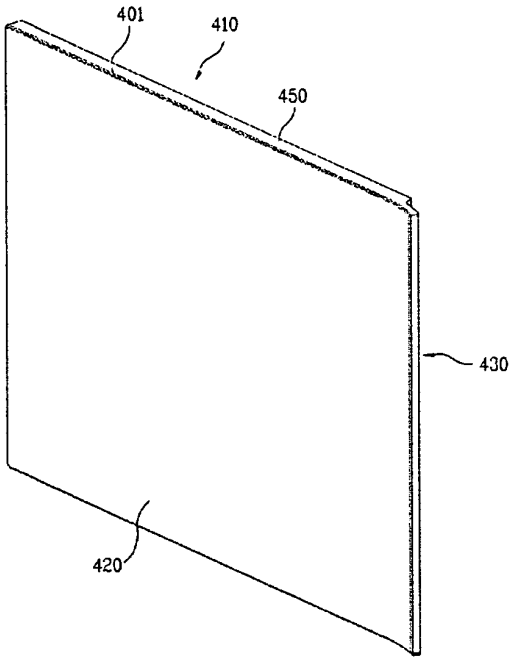
[Fig. 15]



[Fig. 16]



[Fig. 17]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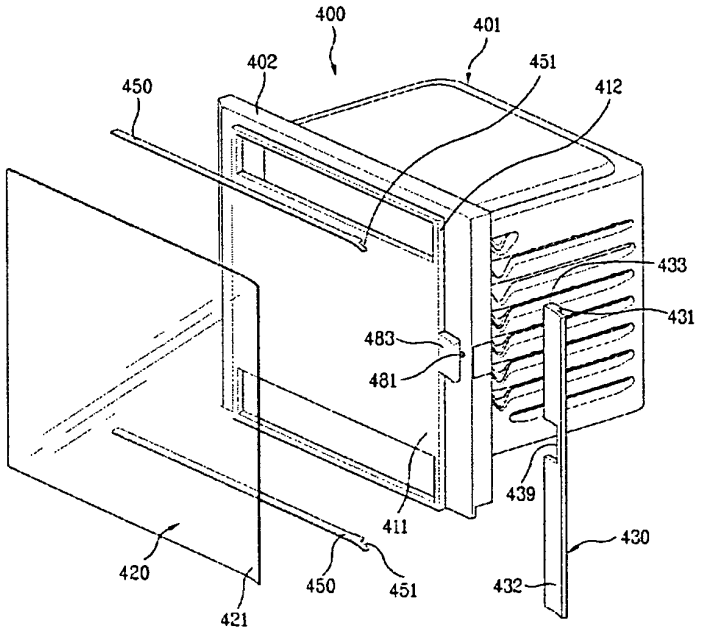
[Fig. 18]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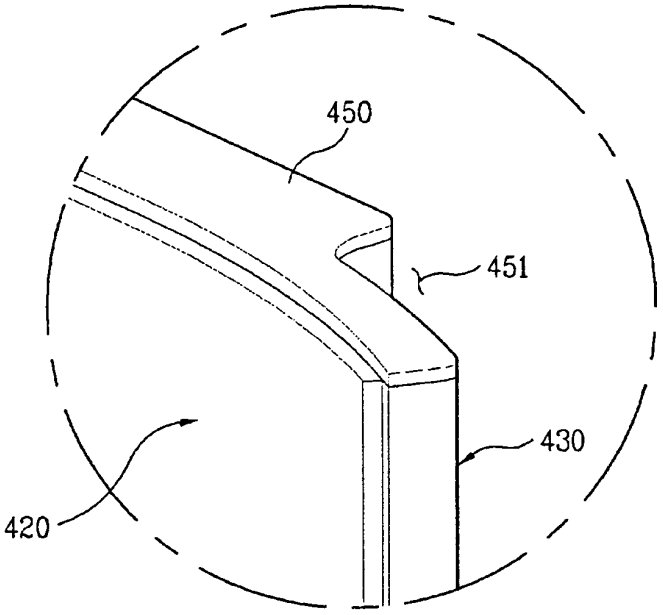
[Fig. 19]



[Fig. 20]