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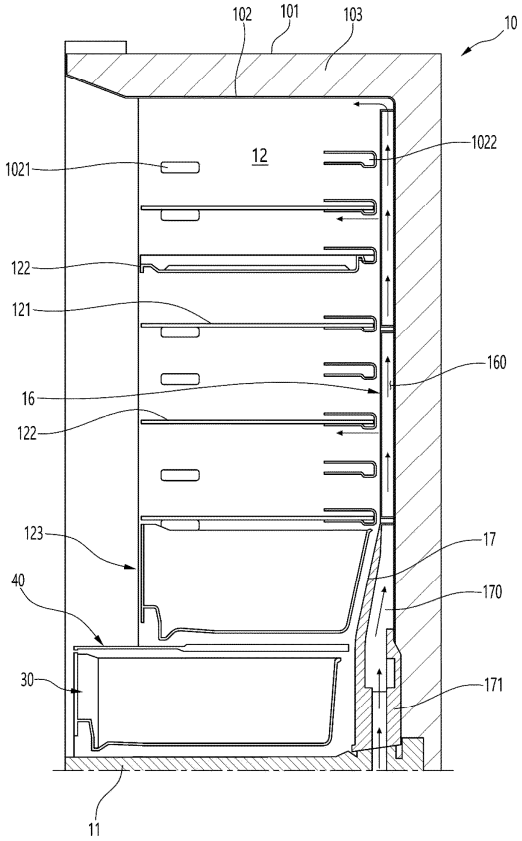
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(54) REFRIGERATOR

(57) A refrigerator includes a cabinet (10) forming a refrigerating compartment (12) and a freezing compartment (13); a plurality of shelves (121) provided in the refrigerating compartment (12) and arranged in a vertical direction; and a drawer assembly (50) provided below the shelves (121), wherein the drawer assembly (50) comprises: a drawer (30) protruding further forward than a front end of the shelves (121) and having an open upper side; and a drawer cover (40) provided above the drawer (30) and configured to shield the open upper side of the drawer (30), wherein the drawer cover comprises: a front cover (41) forming a front portion of the drawer cover (40) and formed of the same material as the shelves (121), on an upper surface of the front cover (41) so as to allow an interior of the drawer (30) to be visually observed; and a rear cover (42) coupled to a rear end of the front cover (41) and forming a rear portion of the drawer cover (40).

【Fig. 3】



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Description

BACKGROUND

[0001] The present disclosure relates to a refrigerator.

[0002] In general, a refrigerator is a household appliance configured to store food at a low temperature in an internal storage space shielded by a door. For this purpose, the refrigerator is configured to cool the interior of the storage space by using cold air generated through heat exchange with a refrigerant circulating in a refrigeration cycle, thereby allowing the stored food to be preserved in an optimal condition.

[0003] In recent years, refrigerators have tended to become larger in size and multifunctional in response to changes in dietary habits and a trend toward premium products, and refrigerators having various structures designed in consideration of user convenience have been released.

[0004] In particular, a plurality of shelves and drawers may be disposed inside the refrigerator, and the shelves and drawers may be formed of a transparent material in order to provide a luxurious appearance and facilitate identification of stored food.

[0005] In addition, among the drawers disposed inside a refrigerating compartment, refrigerators have been developed in which some drawers are capable of storing food at a temperature lower than that of the refrigerating compartment by concentrated supply of cold air.

[0006] However, in such refrigerators, a drawer cover that shields a drawer is formed of a material different from that of the shelf, which causes a problem in that the overall configuration inside the storage space appears visually inconsistent.

[0007] Further, since the structure of the drawer cover is complicated, there is a problem in that assembly workability is degraded and productivity is reduced.

SUMMARY

[0008] An object of the present invention is to provide a refrigerator in which an interior of a storage space has an overall sense of unity and an enhanced spatial perception.

[0009] Another object of the present invention is to provide a refrigerator in which assembly workability is improved and productivity is enhanced.

[0010] A refrigerator according to an embodiment of the present invention includes a cabinet forming a refrigerating compartment and a freezing compartment, a plurality of shelves provided in the refrigerating compartment and arranged in a vertical direction, and a drawer assembly provided below the shelves. The drawer assembly includes a drawer protruding further forward than a front end of the shelves and having an open upper side, and a drawer cover provided above the drawer and configured to shield the open upper side of the drawer. The drawer cover may include a front cover forming a front portion of the drawer cover and formed of the same material as the shelves on an upper surface thereof so as to allow an interior of the drawer to be visually observed, and a rear cover coupled to a rear end of the front cover and forming a rear portion of the drawer cover.

[0011] The shelves and the front cover may be formed of a glass material, and the rear cover may be formed of a plastic material.

[0012] The front cover may include a plate portion formed of a glass material and an end cap provided at a rear end of the plate portion, and the end cap may be coupled to the rear cover.

[0013] The end cap may be formed of a material different from that of the plate portion, and the end cap may have an insertion groove into which the rear end of the plate portion is inserted.

[0014] The end cap may be formed of a plastic material or a rubber material and may be inserted into a receiving portion of the rear cover.

[0015] The end cap may also be provided at a front end of the plate portion, and the end cap at the front end of the plate portion and the end cap at the rear end of the plate portion may be formed to have the same shape.

[0016] The end cap may be formed to be thicker than the plate portion, and the rear cover may include a receiving portion configured to accommodate the end cap so as to restrain the rear end of the front cover.

[0017] The rear cover may include an upper part forming an upper surface of the rear cover, and a lower part coupled to the upper part and forming a lower surface of the rear cover, and the end cap may be inserted between the upper part and the lower part.

[0018] A front end of the upper part and a front end of the lower part may include an upper front and a lower front protruding so as to restrain the end cap, and the plate portion may pass between the upper front and the lower front.

[0019] Rear ends of the upper part and the lower part may include a rear coupling portion and a rear protrusion that are coupled to each other, and front ends of the upper part and the lower part may include a front coupling portion and a front protrusion that are coupled to each other, such that the upper part and the lower part are engaged with each other by a hooking coupling.

[0020] End portions of the rear coupling portion and the front coupling portion may be formed in hook shapes, and the hook shapes may be engaged with openings formed in the rear protrusion and the front protrusion, respectively.

[0021] An insulation member may be provided between the upper part and the lower part, and the insulation member may be restrained by coupling of the upper part and the lower part.

[0022] The drawer may protrude further forward than the shelves, and the front cover may shield a front portion of the drawer protruding further forward than the shelves.

[0023] An upper drawer may be disposed on an upper surface of the rear cover so as to be drawable in and out,

and the front cover may protrude further forward than the upper drawer.

[0024] Left and right end portions of the front cover may be supported on molded portions formed on left and right inner side surfaces of the refrigerating compartment.

[0025] In another aspect, a refrigerator according to an embodiment of the present invention includes a cabinet forming a refrigerating compartment and a freezing compartment, an evaporator provided in the freezing compartment, a grill fan assembly provided at a rear side of the refrigerating compartment and configured to guide cold air from the evaporator to the freezing compartment and the refrigerating compartment, a plurality of shelves provided in the refrigerating compartment and arranged in a vertical direction, a drawer assembly provided below the shelves, and a drawer damper provided in the grill fan assembly and configured to control supply of cold air into the drawer assembly. The drawer assembly includes a drawer protruding further forward than a front end of the shelves and having an open upper side, and a drawer cover provided above the drawer and configured to shield the open upper side of the drawer. The drawer cover may include a front cover forming a front portion of the drawer cover and formed of the same glass material as the shelves on an upper surface thereof, and a rear cover coupled to a rear end of the front cover and forming a rear portion of the drawer cover.

[0026] A drawer discharge outlet configured to supply cold air into the drawer by opening and closing of the drawer damper may be formed at a rear side of the drawer, and a cold air inlet into which cold air flows may be formed on a rear surface of the drawer to face the drawer discharge outlet.

[0027] An upper drawer may be mounted on an upper surface of the rear cover, and the front cover may protrude further forward than a front end of the upper drawer.

[0028] The front cover may protrude further forward than the upper drawer, and the front cover may include a plate portion formed of a glass material and an end cap provided at a rear end of the plate portion, the end cap being coupled to the rear cover.

[0029] The rear cover may support the upper drawer from below and may include an upper part forming an upper surface of the rear cover, a lower part coupled to the upper part and forming a lower surface of the rear cover, and an insulation member disposed between the upper part and the lower part, wherein the upper part and the lower part are coupled to each other in a state in which the insulation member is disposed therebetween.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030]

FIG. 1 is a front view of a refrigerator according to a first embodiment of the present invention.

FIG. 2 is a front view of the refrigerator with a door opened.

FIG. 3 is a longitudinal sectional view of a refrigerating compartment of the refrigerator.

FIG. 4 is a sectional view taken along line 4-4 of FIG. 2.

FIG. 5 is a perspective view illustrating a drawer assembly disposed in the refrigerating compartment and an upper drawer coupled thereto.

FIG. 6 is a perspective view of a drawer cover, which is one component of the drawer assembly.

FIG. 7 is an exploded perspective view of the drawer cover viewed from above.

FIG. 8 is an exploded perspective view of the drawer cover viewed from below.

FIG. 9 is a cutaway perspective view taken along line 9-9 of FIG. 6.

FIG. 10 is a cutaway perspective view taken along line 10-10 of FIG. 6.

FIG. 11 is a longitudinal sectional view of the drawer cover according to a second embodiment of the present invention.

FIG. 12 is an enlarged cutaway perspective view of portion A of FIG. 11.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0031] Hereinafter, specific embodiments of the present invention will be described in detail with reference to the accompanying drawings. However, the present invention should not be construed as being limited to the embodiments in which the spirit of the present invention is disclosed, and other embodiments falling within the scope of the spirit of the present invention, or other inventions having a retrogressive nature, may be readily proposed through addition, modification, or deletion of other components.

[0032] Prior to the description, directions will be defined. In the embodiments of the present invention, as shown in FIGS. 1 and 2, a direction toward a front surface of a door is defined as a front direction, a direction toward a cabinet with respect to the front surface of the door is defined as a rear direction, a direction toward a floor surface on which the refrigerator is installed is defined as a downward direction, and a direction away from the floor surface is defined as an upward direction. Further, when directions that are not defined above are to be described, the directions may be defined and described based on each drawing.

[0033] Embodiments of the present invention are described In one example with reference to a refrigerator in which a refrigerating compartment and a freezing compartment are vertically arranged and each provided with a respective door. However, it should be understood in advance that the present invention is not limited to the structure and configuration of the refrigerator described herein and is applicable to any type of refrigerator including shelves and a drawer assembly.

[0034] FIG. 1 is a front view of a refrigerator according to a first embodiment of the present invention, and FIG. 2

is a front view of the refrigerator with a door opened, and FIG. 3 is a longitudinal sectional view of a refrigerating compartment of the refrigerator.

[0035] As illustrated, the refrigerator 1 may include a cabinet 10 that defines a storage space, and a door 20 configured to open and close the cabinet 10. The storage space may be cooled by operation of a refrigeration cycle and maintained at a low temperature set for food storage.

[0036] In one example, the cabinet 10 may be vertically partitioned by a barrier 11 to define a refrigerating compartment 12 and a freezing compartment 13. The refrigerating compartment 12 may be disposed above the barrier 11 and may be referred to as an upper storage space. The freezing compartment 13 may be disposed below the barrier 11 and may be referred to as a lower storage space.

[0037] The cabinet 10 may include an outer case 101 forming an outer surface thereof, and an inner case 102 disposed inside the outer case 101 and defining the storage space. The refrigerating compartment 12 and the freezing compartment 13 may be formed by the inner case 102. An insulation material 103 may be formed by filling a foaming material between the outer case 101 and the inner case 102.

[0038] The door 20 may form a front exterior appearance of the refrigerator 1 in a closed state. The door 20 may be rotatably connected to the cabinet 10 and may open and close the storage space by rotation.

[0039] The door 20 may include a refrigerating compartment door 21 configured to open and close the refrigerating compartment 12, and a freezing compartment door 22 configured to open and close the freezing compartment 13. A door basket 23 may be provided on a rear surface of the refrigerating compartment door 21. A plurality of door baskets 23 may be arranged to be vertically spaced apart from each other. The door baskets 23 may protrude rearward from the rear surface of the refrigerating compartment door 21.

[0040] Meanwhile, embodiments of the present invention are applicable to any refrigerator in which a drawer assembly may be provided regardless of an arrangement of a storage space or a type of a door. Hereinafter, for convenience of description and understanding, a refrigerator having a structure in which the refrigerating compartment is disposed above the freezing compartment will be described In one example.

[0041] An evaporator 141 may be provided at a rear side of the freezing compartment 13. Cold air generated by the evaporator 141 may be circulated and supplied to the freezing compartment 13 and the refrigerating compartment 12 to cool the refrigerating compartment 12 and the freezing compartment 13.

[0042] A freezing compartment grille fan 15 may be provided at a front side of the freezing compartment 13, and a cold air discharge outlet 151 and an intake inlet may be formed in the freezing compartment grill fan 15 to enable supply of cold air to the freezing compartment 13 and air circulation. The grill fan 15 may also be referred to as a grille panel. In addition, a freezing compartment storage member 131 may be provided inside the freezing compartment 13. The freezing compartment storage member 131 may be configured as a shelf structure or a drawer structure.

[0043] An interior of the refrigerating compartment 12 may be provided with refrigerating compartment storage members. The refrigerating compartment storage members may include a plurality of shelves 121 arranged vertically, and a drawer assembly 50 provided on a lower surface of the refrigerating compartment 12. The drawer assembly 50 may be configured to provide an environment having a temperature different from that of the refrigerating compartment 12, and may be referred to as a variable temperature compartment.

[0044] In addition, an upper drawer 123 may be further provided on an upper surface of the drawer assembly 50.

[0045] In detail, each shelf 121 may be formed in a plate shape on which food may be placed, and may be supported on molded portions 1021 and 1022 formed on left and right inner side surfaces of the refrigerating compartment 12. In one example, the molded portions 1021 and 1022 may include a protruding front molded portion 1021 and a recessed rear molded portion 1022 disposed rearward at the same height as the front molded portion 1021. Front portions and rear portions of left and right side surfaces of the shelf 121 may be supported by the front molded portion 1021 and the rear molded portion 1022, respectively. In addition, the shelf 121 may be selectively mounted on a plurality of molded portions 1021 and 1022 that are vertically spaced apart, thereby allowing height adjustment.

[0046] Further, at least a portion of the shelf 121 may be formed of a glass material, thereby facilitating visual inspection of the interior of the storage space and, in particular, allowing food items stored on the plurality of shelves 121 to be easily identified. In one example, the shelf 121 may be formed such that a portion other than a peripheral frame thereof is made of a glass material.

[0047] An interior of the storage space may further be provided with a tray 122. The tray 122 may be supported on the molded portions 1021 and 1022 in the same manner as the shelf 121. Unlike the shelf 121, the tray 122 may be formed of a plastic material, and at least a portion thereof may have a structure recessed downward so as to accommodate a portion of food. Of course, the shelf 121 and the tray 122 may be selectively supported on the molded portions 1021 and 1022, and may be selectively combined or separated by a user.

[0048] In addition, the shelf 121 and the tray 122 may be disposed at positions spaced apart from an opened front side of the refrigerating compartment by a predetermined distance. That is, in a state in which the refrigerating compartment door 21 is closed, the shelf 121 and the tray 122 may be positioned further rearward than a rear surface of the door basket 23 so as not to interfere with the door basket 23 disposed on the refrigerating compartment door 21.

[0049] The drawer assembly 50 may be provided on a bottom of the refrigerating compartment 12 and may be disposed lower than the plurality of shelves 121. The drawer assembly 50 may include a drawer 30 and a drawer cover 40.

[0050] The drawer 30 may be configured to be drawable in and out, and may have an open upper side to provide a space 300 for accommodating food therein. The drawer cover 40 may shield the open upper side of the drawer 30. The drawer cover 40 may also be configured to support a lower surface of the upper drawer 123.

[0051] The drawer cover 40 may shield the drawer 30 so that the space 300 independent from the interior of the refrigerating compartment 12 is formed. In this case, the space 300 may not be a completely airtight space, but may be an independent space capable of maintaining a temperature independently. Of course, as needed, the open upper side of the drawer 30 may be sealed by the drawer cover 40. An interior of the drawer 30 may be maintained at a temperature lower than that of the refrigerating compartment 12 by supply of cold air. For this purpose, at least a portion of the drawer 30 may be configured to be insulated.

[0052] Meanwhile, the drawer assembly 50 may protrude further forward than the shelf 121. In addition, the drawer assembly 50 may protrude further forward than the upper drawer 123. The drawer assembly 50 may be disposed closer to an opened front side of the refrigerating compartment 12 than the shelf 121. Further, the door basket 23 may be positioned higher than the drawer assembly 50 in order to prevent interference with the drawer assembly 50.

[0053] Since the drawer assembly 50 is disposed further forward than the shelf 121 and the upper drawer 123, a portion of the drawer cover 40 may be exposed upward. In detail, a front cover 41 constituting the drawer cover 40 may be exposed upward. In this case, the front cover 41 may be formed of a transparent material similar to that of the shelf 121. Accordingly, a food storage state inside the drawer 30 may be visually checked through the front cover 41.

[0054] Meanwhile, a multi-duct 16 may be provided on a rear side of the refrigerating compartment 12. The multi-duct 16 may form the rear side of the refrigerating compartment 12, and a plurality of cold air discharge outlets 161 for supplying cold air to the refrigerating compartment 12 may be formed therein. In addition, a cold air flow path 160 through which cold air supplied from the evaporator 141 flows toward the plurality of cold air discharge outlets 161 may be formed behind the multi-duct 16.

[0055] A refrigerating compartment grille fan 17 may be provided at a lower end of the multi-duct 16. The refrigerating compartment grille fan 17 may be provided at a lower rear side of the refrigerating compartment 12 and may be connected to the lower end of the multi-duct 16. The refrigerating compartment grille fan 17 may be provided with a connection duct 171, which may connect a space in which the evaporator 141 is disposed with the cold air flow path 160. The connection duct 171 may be formed by an insulation material disposed at a rear side of the refrigerating compartment grille fan 17. Of course, the refrigerating compartment grille fan 17 and the multi-duct 16 may be integrally formed.

[0056] The refrigerating compartment grille fan 17 may be provided at a rear side of the drawer assembly 50. In addition, the refrigerating compartment grille fan 17 may extend upward to a position above the upper drawer 123. Accordingly, the refrigerating compartment grille fan 17 may be shielded by the drawer assembly 50 and the upper drawer 123.

[0057] Hereinafter, the drawer assembly 50 will be described in more detail with reference to the drawings.

[0058] FIG. 4 is a sectional view taken along line 4-4 of FIG. 2, and FIG. 5 is a perspective view illustrating a drawer assembly disposed in the refrigerating compartment and an upper drawer coupled thereto.

[0059] As illustrated, the drawer 30 may be injection-molded of a plastic material. In addition, at least a portion of the drawer 30 may be formed of a transparent material so that food stored therein can be visually observed. The drawer 30 may include a front surface 311, a rear surface 312, left and right side surfaces 313, and a bottom surface 314, thereby defining a food storage space 300. The drawer cover 40 may shield an open upper side of the drawer 30.

[0060] A handle recess that allows a user to pull the drawer 30 in and out may be recessedly formed at a lower portion of the front surface 311 of the drawer 30. In addition, the left and right side surfaces 313 of the drawer 30 may include side protrusions 321 inserted into guide grooves 1241 recessed in side members 124 provided on both side surfaces of the refrigerating compartment 12, and rollers 322. Accordingly, the drawer 30 may be drawn in and out in a front-rear direction without lateral movement.

[0061] A cold air inlet 3121 recessed downward may be formed at an upper portion of the rear surface 312 of the drawer 30. The cold air inlet 3121 may be formed at a position corresponding to a drawer discharge outlet 174 formed on a front surface of the refrigerating compartment grille fan 17. In addition, when the drawer 30 is in an inserted state, the drawer discharge outlet 174 and the cold air inlet 3121 may be disposed close to each other in positions facing each other.

[0062] Accordingly, cold air generated by the evaporator 141 and supplied through the refrigerating compartment grille fan 17 may be supplied into the drawer 30. For this purpose, a drawer damper 18 may be provided in the refrigerating compartment grille fan 17. The drawer damper 18 may be provided inside the connection duct 171 to open and close the connection duct 171. Accordingly, an amount of cold air supplied into the drawer 30 may be adjusted according to opening and closing of the drawer damper 18, and a temperature inside the drawer 30 may be controlled.

[0063] That is, since the drawer 30 is provided on the

bottom of the refrigerating compartment 12, the drawer 30 may be cooled by cold air in the refrigerating compartment 12 due to a characteristic that cold air moves downward, and may be further cooled by cold air generated by the evaporator 141 and supplied through the connection duct 171. In addition, cold air supplied into the drawer 30 may be retained while the interior of the drawer 30 is shielded by the drawer cover 40, and the interior of the drawer 30 may be cooled to a temperature lower than that of the refrigerating compartment 12 by the drawer cover 40 having a structure capable of being at least partially insulated.

[0064] Meanwhile, a cold air intake inlet 175 may be formed at a lower end of the refrigerating compartment grille fan 17, so that cold air at the bottom of the refrigerating compartment 12 may be collected to the freezing compartment 13 through the refrigerating compartment grille fan 17.

[0065] The drawer cover 40 may be positioned above the drawer 30. The drawer cover 40 may be fixedly mounted to left and right side surfaces of the refrigerating compartment 12. In one example, left and right end portions of the drawer cover 40 may be supported on the molded portions 1021. As another example, a rear end of the drawer cover 40 may be fixedly mounted to the refrigerating compartment grille fan 17. Accordingly, even when the drawer 30 is drawn in and out, the drawer cover 40 may maintain a fixed mounted state.

[0066] The drawer cover 40 may include the front cover 41 and the rear cover 42.

[0067] The front cover 41 may protrude further forward than the shelf 121 and the upper drawer 123 and may be exposed to an interior of the refrigerating compartment 12. In addition, the front cover 41 may be formed of a transparent material so that an interior of the drawer 30 can be visually observed therethrough.

[0068] The rear cover 42 may be positioned below the upper drawer 123. In addition, the rear cover 42 may be shielded by the upper drawer 123. A size of the rear cover 42 may correspond to a size of a lower surface of the upper drawer 123. Further, the size of the rear cover 42 may correspond to a size of the shelf 121. In addition, the rear cover 42 may include a configuration for insulation, thereby preventing an interior of the upper drawer from being overcooled by cold air inside the drawer 30.

[0069] A size of the upper drawer 123 may correspond to the size of the shelf 121. Accordingly, an open upper side of the upper drawer 123 may be shielded by any one of the shelves 121. In addition, an interior of the upper drawer 123 may be visually observable through the transparent shelf 121. Further, the upper drawer 123 may be disposed to be drawable in and out, and may be supported by the drawer cover 40 from below so as to be drawable in and out.

[0070] In one example, side guides 432 for supporting the upper drawer 123 may be formed on left and right side surfaces of the drawer cover 40, and guide grooves 433 may be formed on inner surfaces of the side guides 432. In addition, side protrusions 1342 formed on left and right side surfaces of the upper drawer 123 and rollers formed at rear ends of the side protrusions 1342 may be provided, and may move along the guide grooves 433 so that the upper drawer 123 is drawn in and out.

[0071] Hereinafter, the drawer cover 40 will be described in more detail with reference to the drawings.

[0072] FIG. 6 is a perspective view of a drawer cover, which is one component of the drawer assembly, and FIG. 7 is an exploded perspective view of the drawer cover viewed from above, and FIG. 8 is an exploded perspective view of the drawer cover viewed from below, and FIG. 9 is a cutaway perspective view taken along line 9-9 of FIG. 6, and FIG. 10 is a cutaway perspective view taken along line 10-10 of FIG. 6.

[0073] As illustrated, the drawer cover 40 may be formed by coupling the front cover 41 and the rear cover 42. The front cover 41 may be formed of the same material as the shelf 121 and may allow an interior of the drawer 30 to be visually observed.

[0074] In one example, the front cover 41 may be formed of a glass material. Since the shelf 121 and the front cover 41 are formed of a glass material, an interior of the refrigerating compartment 12 may be configured to appear more luxurious and neat. Of course, the front cover 41 and the shelf 121 may be formed of a transparent material other than glass.

[0075] The front cover 41 may include a plate portion 411 made of a glass material, and end caps 412 and 413 provided at a front end and a rear end of the plate portion 411. The plate portion 411 may be formed in a rectangular plate shape and may be formed to have the same left-right width as the shelf 121. Accordingly, left and right end portions of the plate portion 411 may be supported on the molded portions 1021 and 1022. In addition, a thickness of the plate portion 411 may correspond to a thickness of the shelf 121 and may be formed to be thinner than a thickness of the rear cover 42.

[0076] The end caps 412 and 413 may form the front end and the rear end of the front cover 41. In one example, the end caps 412 and 413 may include a front end cap 412 forming the front end of the front cover 41, and a rear end cap 413 forming the rear end of the front cover 41. The front end cap 412 and the rear end cap 413 may have the same structure and shape, except for a mounting position thereof. Accordingly, hereinafter, the description will be made based on the rear end cap 413, which may be referred to as an end cap 413.

[0077] The end cap 413 may be formed of a material different from that of the front cover 41. In one example, the end cap 413 may be formed of a plastic material or a rubber material. The end cap 413 may be formed to have a length corresponding to a width of the plate portion 411.

[0078] The end cap 413 may be formed to be thicker than the plate portion 411 and may be configured such that front and rear ends of the plate portion 411 are inserted therein. Accordingly, the front end of the plate portion 411 may be protected by the end cap 413, and

damage to the plate portion 411 due to impacts occurring during food storage use may be prevented. In addition, by the end cap 413 provided at the rear end of the plate portion 411, the front cover 41 may be coupled to a front end of the rear cover 42.

[0079] The end caps 413 provided at the front end and the rear end of the plate portion 411 may be formed to have the same shape. In detail, the end cap 413 may include a deco end 4133 that is in contact with the rear end of the plate portion 411, a deco upper 4131 extending forward from an upper side of the deco end 4133, and a deco lower 4132 extending forward from a lower side of the deco end 4133. An insertion groove 4130 into which an end portion of the plate portion 411 is inserted may be formed between the deco upper 4131 and the deco lower 4132.

[0080] Accordingly, an end portion of the plate portion 411 may be in contact with the deco end 4133, the deco upper 4131, and the deco lower 4132 while being inserted into the insertion groove 4130. An adhesive may be provided on an inner surface of the insertion groove 4130. In addition, the end portion of the plate portion 411 may be press-fitted into the insertion groove 4130, or the end cap 413 may be brought into close contact with the end portion of the plate portion 411 by thermoforming.

[0081] The deco upper 4131 and the deco lower 4132 may protrude further than an upper surface and a lower surface of the plate portion 411, and may be caught and restrained within a receiving portion 4312 of the rear cover 42, so that the front cover 41 can be maintained in a state of being restrained to the rear cover 42.

[0082] The rear cover 42 may form a rear portion of the drawer cover 40 and may also have a structure for supporting the upper drawer 123 to be drawable in and out. In addition, the rear cover 42 may provide a structure in which the rear cover 42 is firmly coupled to the front cover 41. Further, the rear cover 42 may provide a thermal insulation structure. The rear cover 42 may be formed of a plastic material, and such structures may be implemented by injection molding.

[0083] In detail, the side guides 432 may be formed at left and right end portions of the rear cover 42 so as to extend upward. Guide grooves 433 extending in a front-rear direction may be formed on inner surfaces of the side guides 432 to accommodate side protrusions 4342 of the upper drawer 123 and the rollers. A plurality of reinforcing ribs 434 may be formed in a lattice shape on outer surfaces of the side guides 432.

[0084] The rear cover 42 may include an upper part 43 and a lower part 45. The upper part 43 and the lower part 45 may be coupled to each other to form an exterior appearance of the rear cover 42. The front cover 41 may be fixed to the rear cover 42 by coupling of the upper part 43 and the lower part 45. In addition, an insulation member 44 may be disposed inside the rear cover 42 by coupling of the upper part 43 and the lower part 45.

[0085] The upper part 43 may include an upper surface 431 forming an upper surface of the rear cover 42. In addition, the side guides 432 may be formed at left and right end portions of the upper surface 431.

[0086] An upper front 434 extending downward may be formed at a front end of the upper part 43. The upper front 434 may extend along the front end of the upper part 43 and may form a front surface of the upper part 43.

[0087] In addition, an upper rear 4372 extending downward may be formed at a rear end of the upper part 43. The upper rear 4372 may partially extend along the rear end of the upper part 43 and may form a rear surface of the upper part 43. The upper rear 4372 may be coupled to a rear recessed portion 4541 to be described below.

[0088] Further, a rear coupling portion 4381 may be formed on the upper rear 4372. The rear coupling portion 4381 may couple the rear end of the upper part 43 to the lower part 45. The rear coupling portion 4381 may be formed on the upper rear 4372. In addition, a hook 4382 protruding rearward may be formed at a lower end of the rear coupling portion 4381 and may be inserted into a lower opening 4552 of the lower part 45. Accordingly, rear ends of the upper part 43 and the lower part 45 may be firmly fixed to each other by the rear coupling portion 4381. The rear coupling portion 4381 may be formed at a central position between left and right sides of the rear end of the upper part 43.

[0089] Meanwhile, a front rim 4352, side rims 4362, and a rear rim 4371 may protrude downward from the upper surface 431. The front rim 4352, the side rims 4362, and the rear rim 4371 may be connected to each other to define a rectangular insulation space 4311 and may occupy most of an area of the upper surface 431. The insulation space 4311 may be formed to have a size corresponding to that of the insulation member 44 so that the insulation member 44 can be accommodated therein. In addition, in a state in which the insulation member 44 is accommodated, the insulation space 4311 may be in contact with a periphery of the rectangular insulation member 44. That is, when the insulation member 44 is disposed in the insulation space 4311, the periphery of the insulation member 44 may be in contact with the front rim 4352, the side rims 4362, and the rear rim 4371.

[0090] Meanwhile, an outer side 4361 may be formed laterally outward of each side rim 4362. The outer side 4361 may extend parallel to the side rim 4362, and a plurality of side reinforcing ribs 4363 may be formed between the outer side 4361 and the side rim 4362.

[0091] In addition, an outer front 4351 may be formed in front of the front rim 4352. The outer front 4351 may extend along the front rim 4352, and a plurality of front reinforcing ribs 4355 may be formed between the outer front 4351 and the front rim 4352.

[0092] Further, the front rim 4352 and the outer front 4351 may be positioned rearward of the upper front 434. In detail, the upper front 434 and the outer front 4351 may be spaced apart from each other to define a receiving portion 4312 in which the end cap 413 is accommodated. The receiving portion 4312 may be formed to correspond to a front-rear length of the end cap 413. Accordingly, the

end cap 413 may maintain a restrained state within the receiving portion 4312.

[0093] Meanwhile, a front recessed portion 4353 recessed rearward may be formed in the outer front 4351. In addition, a front coupling portion 4355 protruding forward may be formed in the front recessed portion 4353. A hook 4356 may be formed on the front coupling portion 4355. The front coupling portion 4355 may be formed by a portion of the outer front 4351.

[0094] A plurality of the front recessed portions 4353 and the front coupling portions 4355 may be formed in a left-right direction of the upper part 43. In one example, the front recessed portions 4353 and the front coupling portions 4355 may be respectively formed at a central portion and at left and right sides of the upper part 43.

[0095] The front recessed portion 4353 may be formed at a position corresponding to a front protrusion 4351 formed on the lower part 45 and may be recessed to a size corresponding to accommodate the front protrusion 4351. In addition, the front coupling portion 4355 may be inserted into a front opening 4352 formed in the front protrusion 4351 and may be locked therein.

[0096] The lower part 45 may be provided below the upper part 43 and may be formed to have a size corresponding to that of the upper part 43. In a state in which the lower part 45 is coupled to the upper part 43, the lower part 45 may form a lower surface of the rear cover 42. In addition, the lower part 45 may support the insulation member 44 from below.

[0097] In detail, the lower part 45 may include a support surface 451 having a size corresponding to that of the insulation member 44. The support surface 451 may be formed in a planar shape that is in contact with a lower surface of the insulation member 44.

[0098] In addition, lower sides 456 extending downward may be formed at left and right end portions of the support surface 451. Portions of left and right side surfaces of the lower part 45 may be formed by the lower sides 456.

[0099] Further, lower reinforcing ribs 4571 protruding downward may be formed on the support surface 451. The lower reinforcing ribs 4571 may extend to connect the lower sides 456, and a plurality of additional ribs 4572 may be further formed between the lower reinforcing ribs 4571 so that a lower portion of the support surface 451 is reinforced in a lattice shape by the ribs 4571 and 4572. Accordingly, deformation of the lower part 45 may be prevented, and damage during coupling of the upper part 43 and the lower part 45 may also be prevented.

[0100] A front extension portion 452 may protrude forward from a front end of the support surface 451. The front extension portion 452 may be formed to have a stepped structure downward. Accordingly, the front rim 4352 and the outer front 4351 may be supported on the front extension portion 452. In addition, a front protrusion 4351 extending upward may be formed on the front extension portion 452, and the front opening 4352 may be formed in the front protrusion 4351.

[0101] An upwardly extending lower front 4521 may be formed at a front end of the front extension portion 452. The lower front 4521 may form a front surface of the lower part 45. In addition, the lower front 4521 may restrain the end cap 413 inserted into the receiving portion 4312 from below. The lower front 4521 may be disposed below and spaced apart from the upper front 434 so as to face the upper front 434, and the plate portion 411 of the front cover 41 may be disposed between the upper front 434 and the lower front 4521. In addition, an end portion of the end cap 413 may be restrained by the upper front 434 and the lower front 4521.

[0102] A rear extension portion 454 may protrude rearward from a rear end of the support surface 451. The rear extension portion 454 may be formed to have a stepped structure downward. In addition, a recessed rear recessed portion 4541 may be formed at a rear end of the rear extension portion 454. The rear recessed portion 4541 may be formed to have a shape corresponding to that of the upper rear 4372 so that the upper rear 4372 is inserted when the upper part 43 and the lower part 45 are coupled to each other.

[0103] A rear protrusion 4551 protruding upward may be formed at a central portion of a rear end of the rear extension portion 454. In addition, a rear opening 4552 may be formed in the rear protrusion 4551 so that the rear coupling portion 4381 is inserted and fixed thereto.

[0104] Meanwhile, the insulation member 44 may be formed of a plate-shaped or sheet-shaped insulation material. In one example, the insulation member 44 may be formed of expanded polystyrene (EPS). In addition, the insulation member 44 may be formed of a vacuum insulation panel (VIP) having excellent thermal insulation performance relative to its thickness. A thickness of the insulation member 44 may correspond to a vertical height of the insulation space 4311 in a state in which the upper part 43 and the lower part 45 are coupled to each other. Accordingly, the insulation member 44 may fill the insulation space 4311 by coupling of the upper part 43 and the lower part 45, thereby allowing an area of the rear cover 42 to be insulated.

[0105] Meanwhile, referring to an assembly process of the drawer cover 40, the insulation member 44 may be disposed between the upper part 43 and the lower part 45, and the front cover 41 may be positioned at a front end of the rear cover 42.

[0106] At this time, the insulation member 44 may be inserted into the insulation space 4311, and the end cap 413 may be inserted into the receiving portion 4312. In this state, the lower part 45 may be coupled to the upper part 43. In order to facilitate restraint of the front cover 41, a rear end of the rear cover 42 may be coupled first, and then a front end of the rear cover 42 may be subsequently coupled to restrain the front cover 41. That is, by coupling the upper part 43 and the lower part 45, restraint of the front cover 41 and disposition of the insulation member 44 may be completed.

[0107] In detail, in a state in which a hook 4382 of the

rear coupling portion 4381 of the upper part 43 is inserted into the rear opening 4552 of the rear protrusion 4551 of the lower part 45 to restrain a rear end of the rear cover 42, when a front end of the rear cover 42 is rotated, the hook 4356 of the front coupling portion 4355 of the upper part 43 may be inserted into the front opening 4352 of the front protrusion 4351 of the lower part 45, so that a front portion of the rear cover 42 is coupled.

[0108] That is, after rear ends of the upper part 43 and the lower part 45 are coupled first, when the lower part 45 is rotated, front ends of the upper part 43 and the lower part 45 may be coupled. When the upper part 43 and the lower part 45 are coupled, a rear end of the front cover 41 may be restrained by the rear cover 42. In detail, in a state in which the end cap 413 is inserted into the receiving portion 4312, the upper front 434 may be in contact with an end of the deco upper 4131, the outer front 4351 may be in contact with the deco end 4133, and the lower front 4521 may be in contact with an end of the deco lower 4132. That is, the rear end cap 413 may be in a restrained state by front ends of the upper part 43 and the lower part 45, and thus the front cover 41 may be firmly coupled to the rear cover 42.

[0109] Accordingly, the upper part 43 and the lower part 45 may be coupled to each other by a simple hooking restraint or an interference fitting method without a fastening member such as a screw. In addition, the front cover 41 and the rear cover 42 may be firmly coupled to each other only by mutual coupling of the upper part 43 and the lower part 45, and fixation of the insulation member 44 may also be achieved.

[0110] The present invention may have various other embodiments in addition to the above-described embodiment. Another embodiment of the present invention differs from the above-described embodiment only in a structure of a front part of the drawer cover, while other structures are the same as those of the above-described embodiment. Accordingly, hereinafter, only configurations that differ from those of the above-described embodiment will be described in detail, and in order to avoid redundant description, configurations identical to those of the above-described embodiment will be denoted by the same reference numerals and detailed descriptions thereof will be omitted. In addition, reference numerals that are not separately described may be understood with reference to the description of the above-described embodiment.

[0111] Hereinafter, another embodiment of the present invention will be described in more detail with reference to the drawings.

[0112] FIG. 11 is a longitudinal sectional view of the drawer cover according to a second embodiment of the present invention, and FIG. 12 is an enlarged cutaway perspective view of portion A of FIG. 11.

[0113] As illustrated, a drawer assembly 50 of a refrigerator according to a second embodiment of the present invention may include the drawer 30 and a drawer cover 40'.

[0114] In addition, the drawer cover 40' may shield an open upper side of the drawer 30 and may include a front cover 46 and the rear cover 42. In this case, the front cover 46 may be formed of a material of the same type as that of the shelf 121 or a material having the same texture as that of the shelf 121. That is, the front cover 46 may be formed to be transparent like the shelf 121 so that an interior of the drawer 30 is visually observable.

[0115] The front cover 46 may be injection-molded of a transparent plastic material. The front cover 46 may include a planar plate portion 411, and plate protrusions 462 and 463 forming a front end and a rear end of the front cover 46. The plate protrusions may include a front plate protrusion 462 provided at a front end of the plate portion 411 and a rear plate protrusion 463 provided at a rear end of the plate portion 411.

[0116] The plate portion 411 and the plate protrusions 462 and 463 may be integrally formed of the same material. In one example, the front cover 46 may be injection-molded of a plastic material so that the plate portion 411 and the plate protrusions 462 and 463 are integrally formed. Of course, the front cover 46 may be formed of a glass material, and in this case, the plate portion 411 and the plate protrusions 462 and 463 may also be integrally formed.

[0117] The plate protrusions 462 and 463 may be formed in the same shape at a front end and a rear end of the front cover 46. Meanwhile, the plate portion 461 may be formed only at the rear end of the front cover 46. Accordingly, hereinafter, description will be made based on the rear plate protrusion 463 formed at the rear end of the front cover 46, and the rear plate protrusion 463 may be referred to as a plate protrusion 463.

[0118] The plate protrusion 463 may be formed to be thicker than the plate portion 411. The plate protrusion 463 may be formed along the rear end of the plate portion 411.

[0119] The plate protrusion 463 at the rear end of the front cover 46 may be restrained in a state of being accommodated at a front end of the rear cover 42. The rear cover 42 may be configured by coupling the upper part 43 and the lower part 45 that form an upper surface and a lower surface thereof. In addition, the insulation member 44 may be disposed between the upper part 43 and the lower part 45. The upper part 43 and the lower part 45 may be simply coupled to each other by hook coupling without a separate screw fastening. The structure and coupling structure of the upper part 43 and the lower part 45 are the same as those of the above-described embodiment.

[0120] In addition, a receiving portion 4312 for accommodating the plate protrusion 463 may be formed at the front end of the rear cover 42. Accordingly, when the upper part 43 and the lower part 45 are coupled in a state in which the plate protrusion 463 is disposed in the receiving portion 4312, the rear end of the front cover 46, that is, the plate protrusion 463, may be maintained in a restrained state with respect to the rear cover 42.

[0121] In one example, a front end of the front protrusion 4351 may be restrained by the upper front 434 and the lower front 4521, and a rear end of the front protrusion 4351 may be restrained while being in contact with the front rim 4352.

[0122] Accordingly, the front cover 46 may be simply coupled to the rear cover 42 without fastening a separate fastening member. In addition, the front cover 46 may maintain a state of being firmly coupled to the rear cover 42.

[0123] A refrigerator according to an embodiment of the present invention has the following advantages.

[0124] According to an embodiment of the present invention, a shelf is formed of a glass material, and a portion of a drawer cover that shields an upper surface of a drawer may be formed of the same glass material as the shelf. Accordingly, an interior of the refrigerating compartment may have an overall sense of unity, and an interior of the storage space may appear more organized and spacious.

[0125] In particular, the drawer cover may be configured as a combination of a front cover made of a glass material and a rear cover made of a plastic material. Accordingly, the front cover may provide a sense of unity with the shelf in a front region, while the rear cover may provide a structure for supporting and drawing the upper drawer in and out.

[0126] Further, the rear cover may be configured as a combination of an upper part and a lower part, and the front cover may be fixed to the rear cover by coupling of the upper part and the lower part. Accordingly, the front cover may be simply fixed to the rear cover without a separate coupling member.

[0127] In addition, the upper part and the lower part may be fixed to each other by a simple hook coupling without a fastening member such as a screw. Accordingly, an overall assembly structure of the drawer cover is simplified, thereby improving assembly workability and enhancing productivity.

[0128] Further, when an insulation material is disposed between the upper part and the lower part such that an internal temperature of a drawer assembly becomes lower than a temperature of the refrigerating compartment, it is possible to prevent cold air inside the drawer assembly from being transferred to an upper drawer.

Claims

1. A refrigerator comprising:

a cabinet (10) forming a refrigerating compartment (12) and a freezing compartment (13);
a plurality of shelves (121) provided in the refrigerating compartment (12) and arranged in a vertical direction; and
a drawer assembly (50) provided below the shelves (121),
wherein the drawer assembly (50) comprises:

a drawer (30) protruding further forward than a front end of the shelves (121) and having an open upper side; and
a drawer cover (40) provided above the drawer (30) and configured to shield the open upper side of the drawer (30),
wherein the drawer cover comprises:

a front cover (41) forming a front portion of the drawer cover (40) and formed of the same material as the shelves (121), on an upper surface of the front cover (41) so as to allow an interior of the drawer (30) to be visually observed; and
a rear cover (42) coupled to a rear end of the front cover (41) and forming a rear portion of the drawer cover (40).

2. The refrigerator of claim 1,

wherein the shelves (121) and the front cover (41) are formed of a glass material, and
the rear cover (42) is formed of a plastic material.

3. The refrigerator of claim 1 or 2,
wherein the front cover (41) comprises:

a plate portion (411) formed of a glass material; and
an end cap (413) provided at a rear end of the plate portion (411),
wherein the end cap (413) is coupled to the rear cover (42).

4. The refrigerator of claim 3,

wherein the end cap (413) is formed of a material different from that of the plate portion (411), and the end cap (143) has an insertion groove (4130) into which the rear end of the plate portion (411) is inserted.

5. The refrigerator of claim 4,
wherein the end cap (413) is formed of a plastic material or a rubber material and is inserted into a receiving portion (4312) of the rear cover (42).

6. The refrigerator of claim 4 or 5,

wherein the end cap (413) is also provided at a front end of the plate portion (411), and
the end cap (413) at the front end of the plate portion (411) and the end cap (41) at the rear end of the plate portion (411) have the same shape.

7. The refrigerator of one of claims 3 to 6,

wherein the end cap (413) is formed to be thicker than the plate portion (411), and
the rear cover (42) includes a receiving portion (4312) configured to accommodate the end cap (413) so as to restrain the rear end of the front cover (41).

8. The refrigerator of one of claims 3 to 7,
wherein the rear cover (42) comprises:

an upper part (43) forming an upper surface of the rear cover (42); and
a lower part (45) coupled to the upper part (43) and forming a lower surface of the rear cover (42),
wherein the end cap (413) is inserted between the upper part (43) and the lower part (45).

9. The refrigerator of claim 8,

wherein a front end of the upper part (43) and a front end of the lower part (45) include an upper front (434) and a lower front (4521) protruding so as to restrain the end cap (413), and
the plate portion (411) passes between the upper front (434) and the lower front (4521).

10. The refrigerator of claim 8 or 9,

wherein rear ends of the upper part (43) and the lower part (45) include a rear coupling portion (4381) and a rear protrusion (4551) that are coupled to each other,
front ends of the upper part (43) and the lower part (45) include a front coupling portion (4355) and a front protrusion (4351) that are coupled to each other, and
the upper part (43) and the lower part (45) are coupled with each other by a hook engagement.

11. The refrigerator of claim 10,

wherein end portions of the rear coupling portion (4381) and the front coupling portion (4355) have hook shapes, and
the hook shapes are engaged with openings (4552,4352) formed in the rear protrusion (4551) and the front protrusion (4351), respectively.

12. The refrigerator of claim 10 or 11,

wherein an insulation member (44) is provided between the upper part (43) and the lower part (45), and
the insulation member (44) is restrained by coupling of the upper part and the lower part (45).

13. The refrigerator of one of claims 2 to 12,

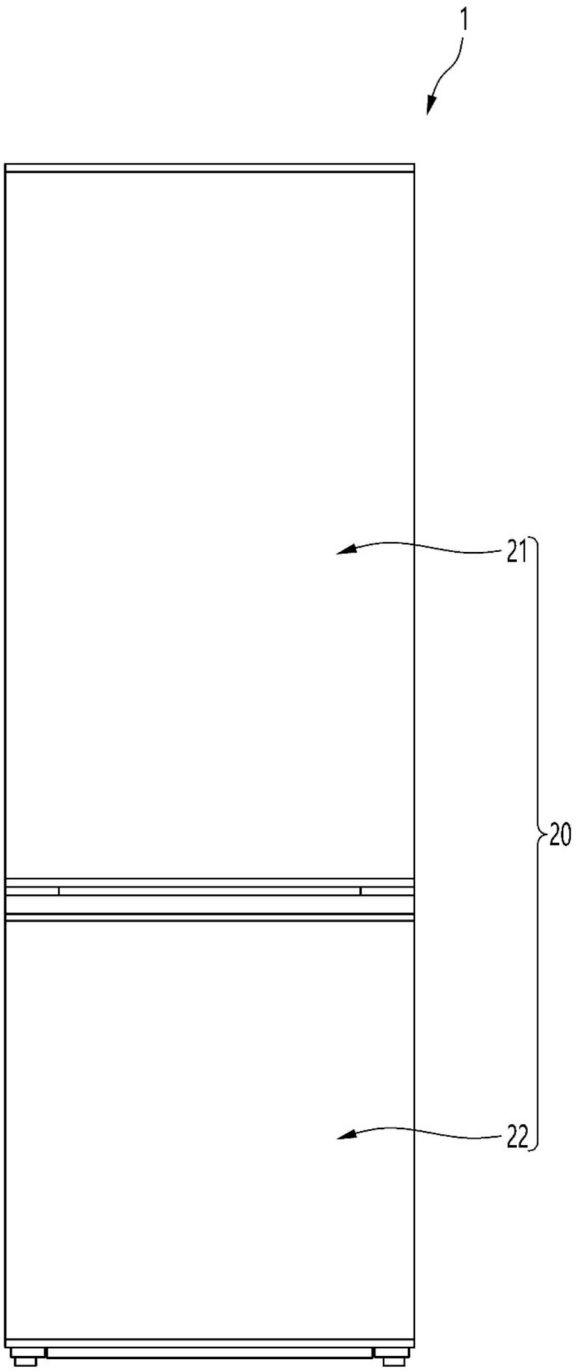
wherein the drawer (30) protrudes further forward than the shelves (121), and
the front cover (41) shields a front portion of the drawer (30) protruding further forward than the shelves (121).

14. The refrigerator of one of claims 1 to 13,

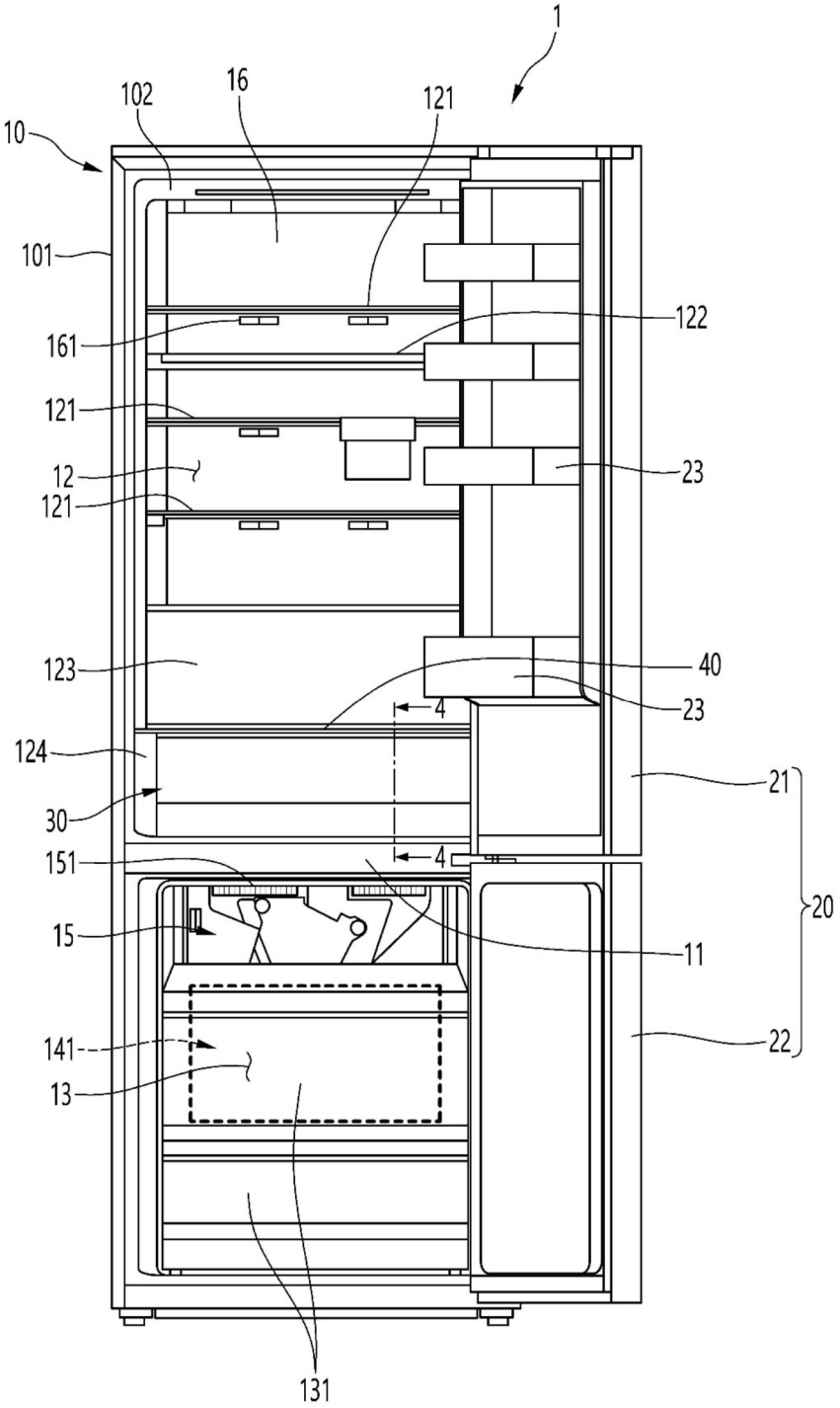
wherein an upper drawer (123) is disposed on an upper surface of the rear cover (42) so as to be drawable in and out, and
the front cover (41) protrudes further forward than the upper drawer (123).

15. The refrigerator of one of claims 1 to 14,
wherein left and right end portions of the front cover (41) are supported on support portions (1021) formed on left and right inner side surfaces of the refrigerating compartment (12).

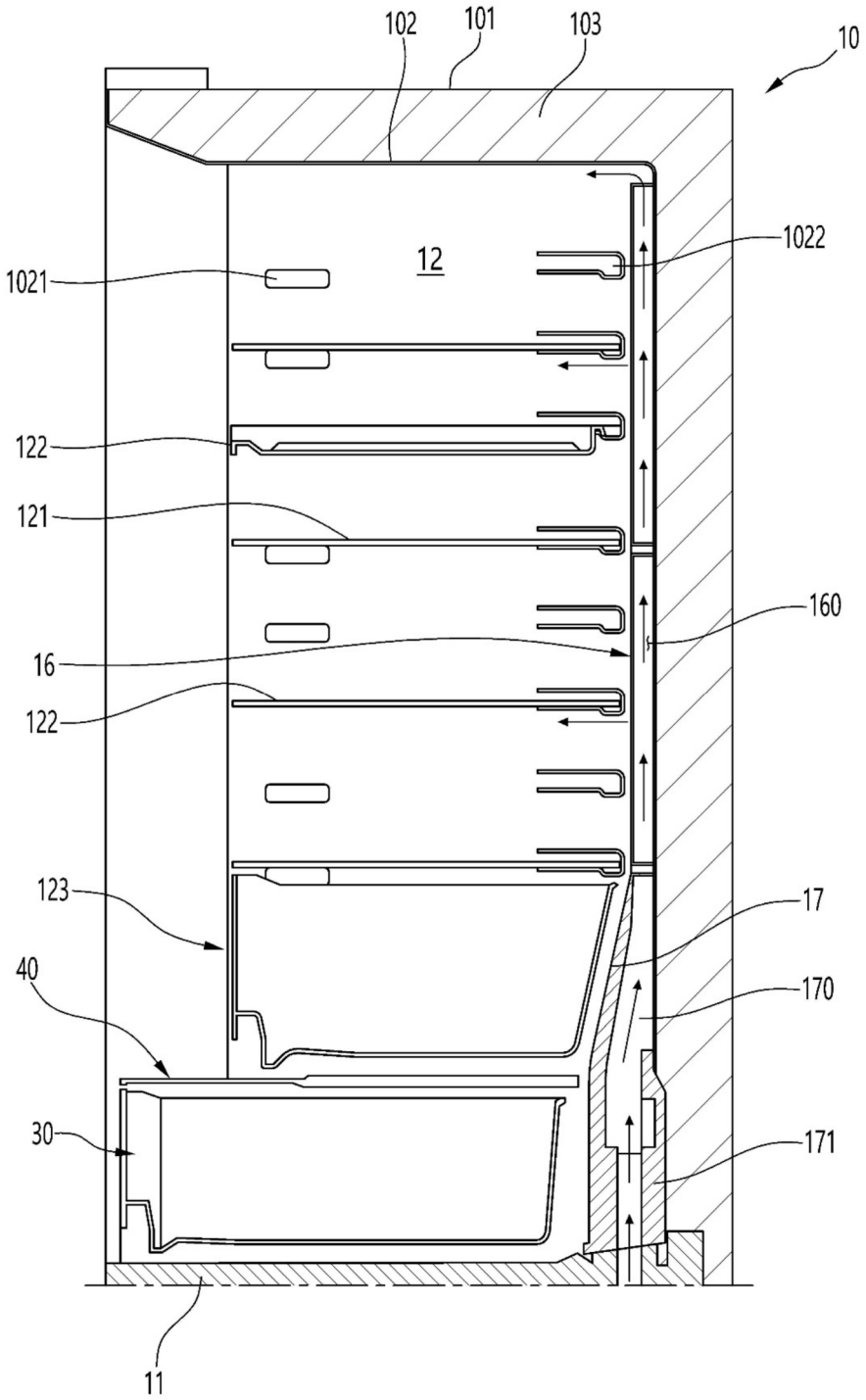
【Fig. 1】



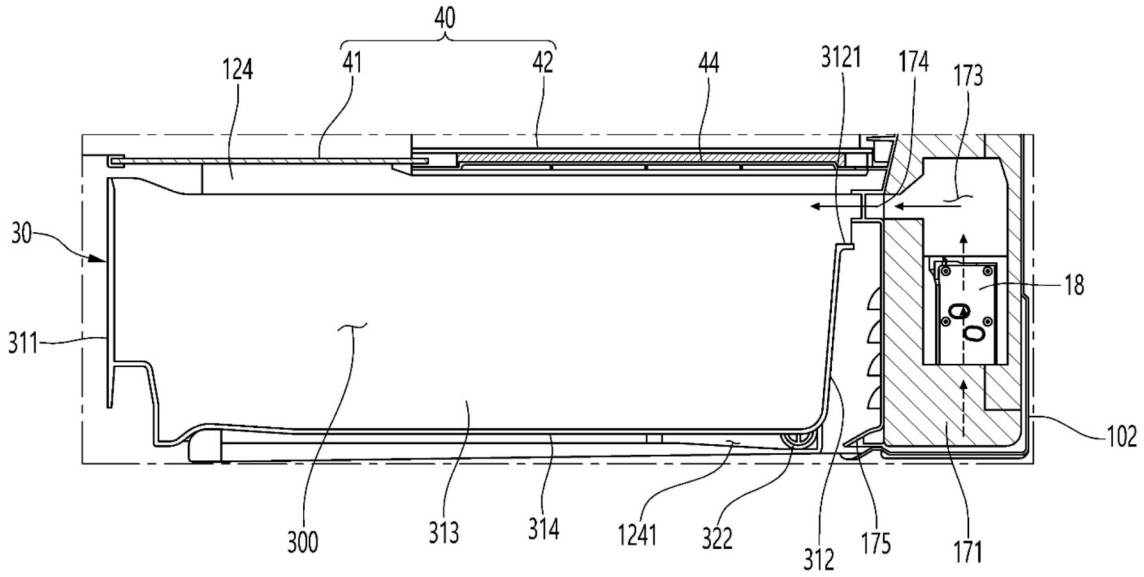
【Fig. 2】


1
102
16
121
10
101
161
122
121
12
121
23
123
40
4
23
124
21
30
4
151
20
15
11
141
22
13
131

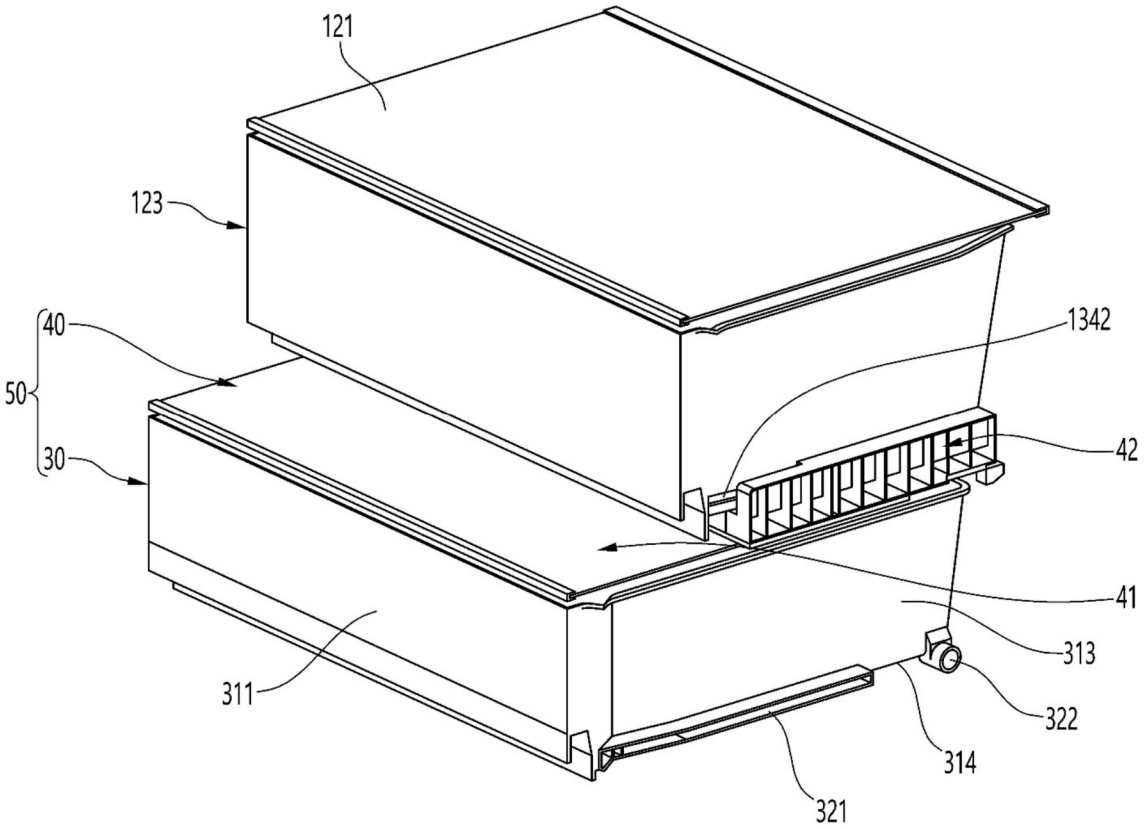
【Fig. 3】


102
101
103
10
12
1022
1021
122
121
160
16
122
123
17
40
170
30
171
11

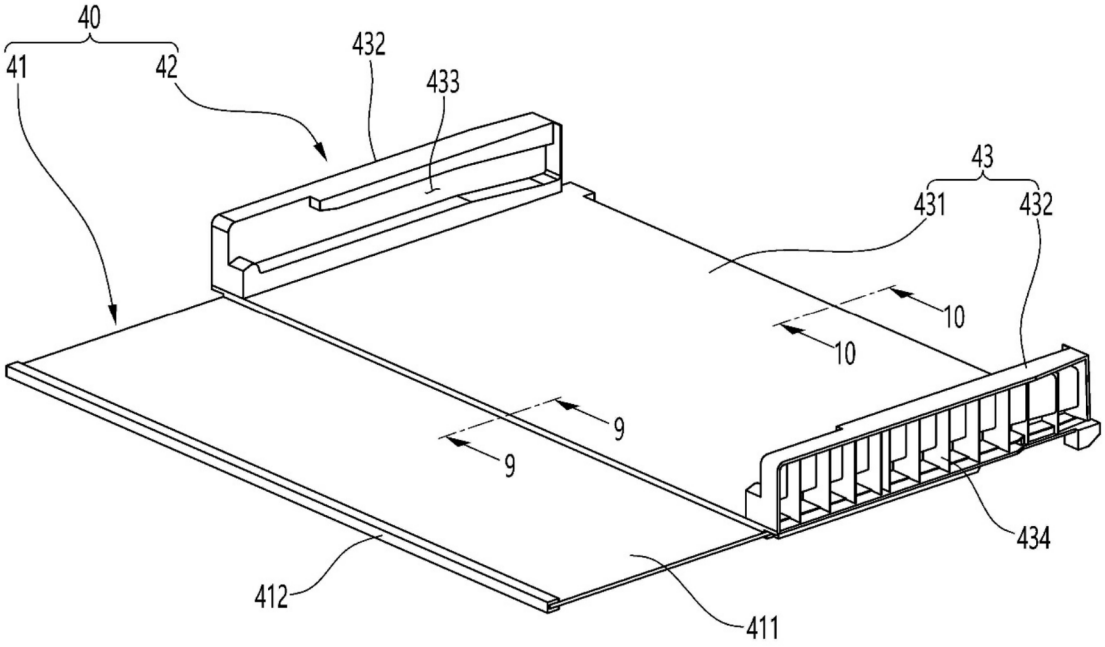
【Fig. 4】


40
124
41
42
44
3121
174
173
30
18
311
102
300
313
314
1241
322
312
175
171

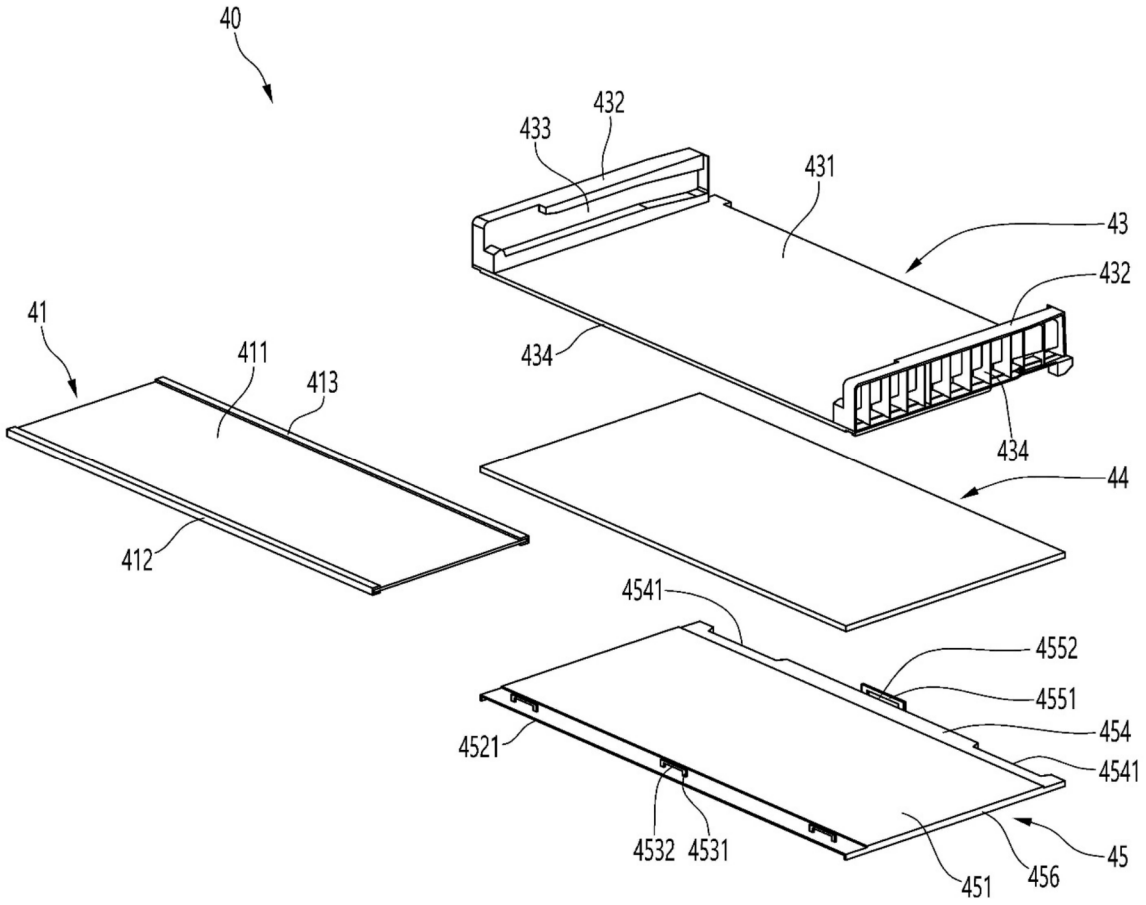
【Fig. 5】


121
123
40
50
30
1342
42
41
313
322
314
311
321

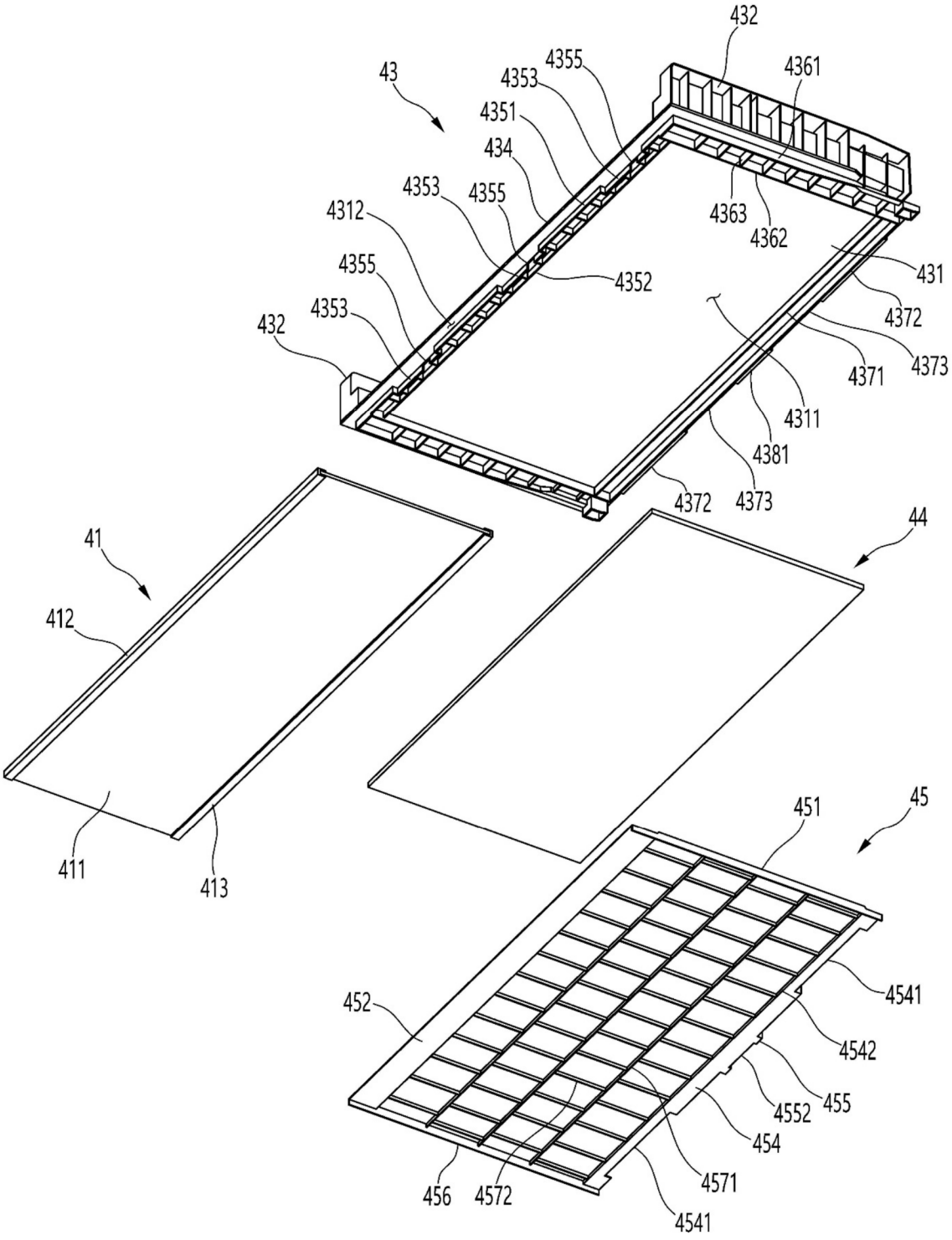
【Fig. 6】



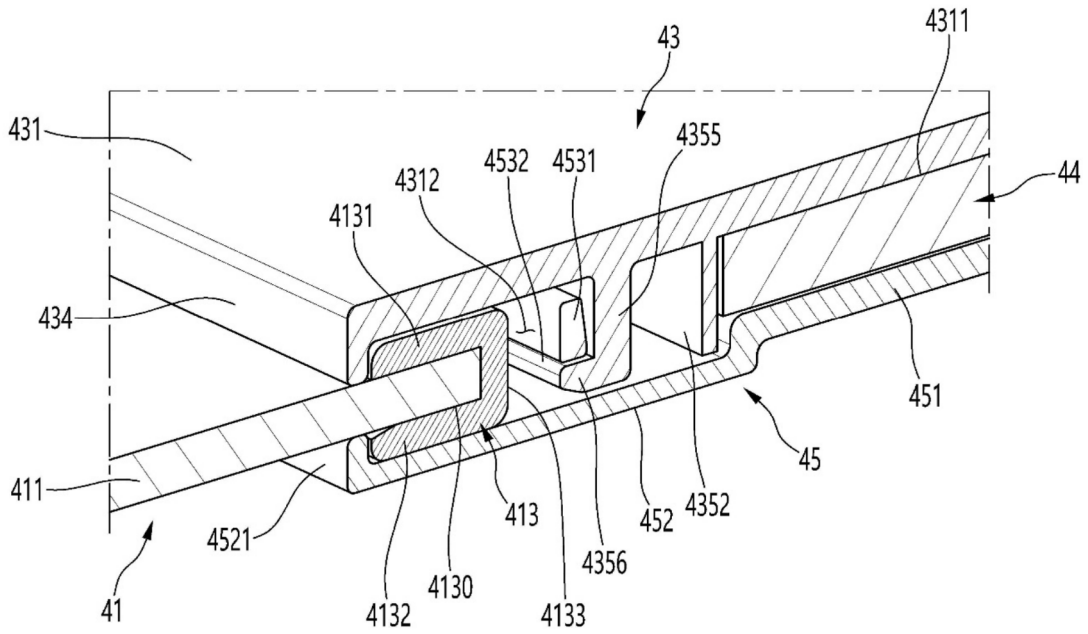
【Fig. 7】


40
432
433
431
43
432
41
411
413
434
434
44
412
4541
4552
4551
454
4521
4541
4532
4531
45
451
456

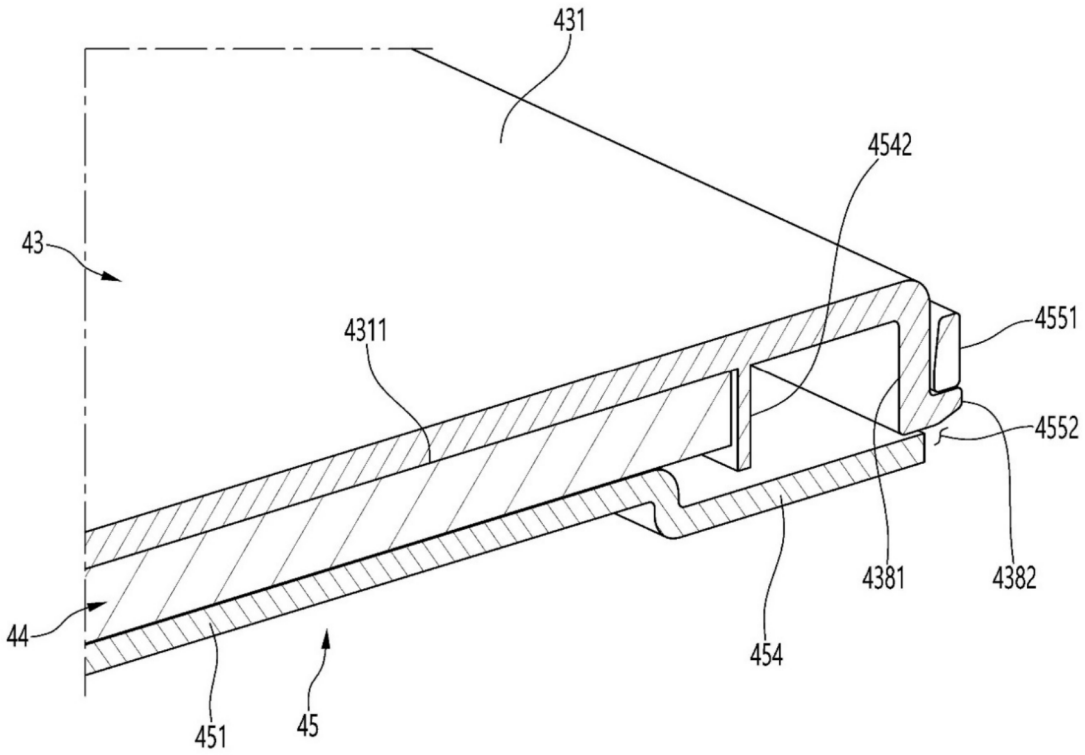
【Fig. 8】


432
4355
4361
43
4353
4351
434
4353
4355
4312
4363
4362
4355
4352
431
4353
4372
432
4373
4371
4311
4381
4372
4373
44
41
412
451
45
411
413
4541
452
4542
4552
455
454
4571
456
4572
4541

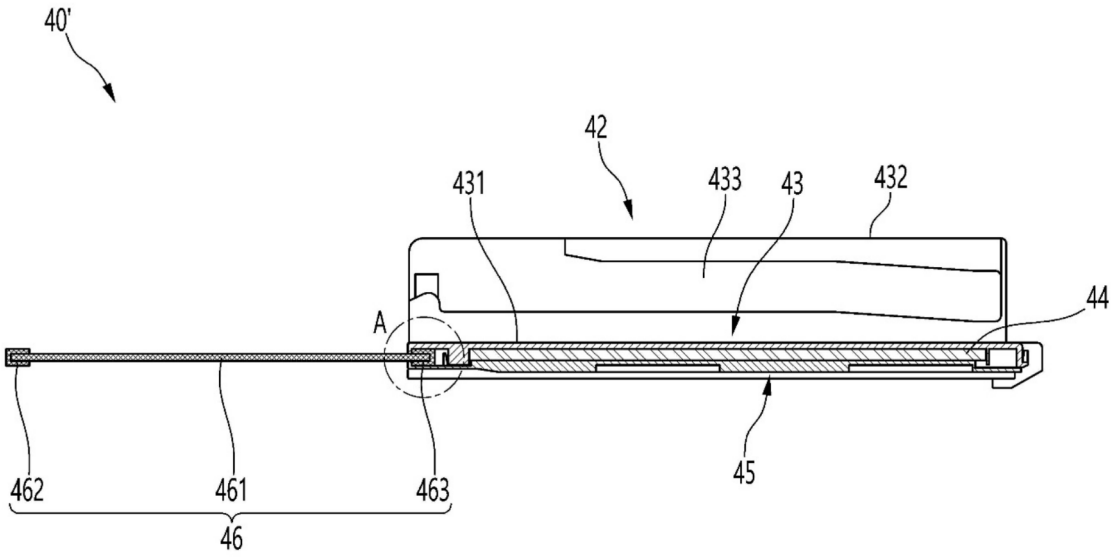
【Fig. 9】


43
4311
431
4355
44
4532
4531
4312
4131
434
451
45
411
413
452
4352
4521
4356
4130
41
4132
4133

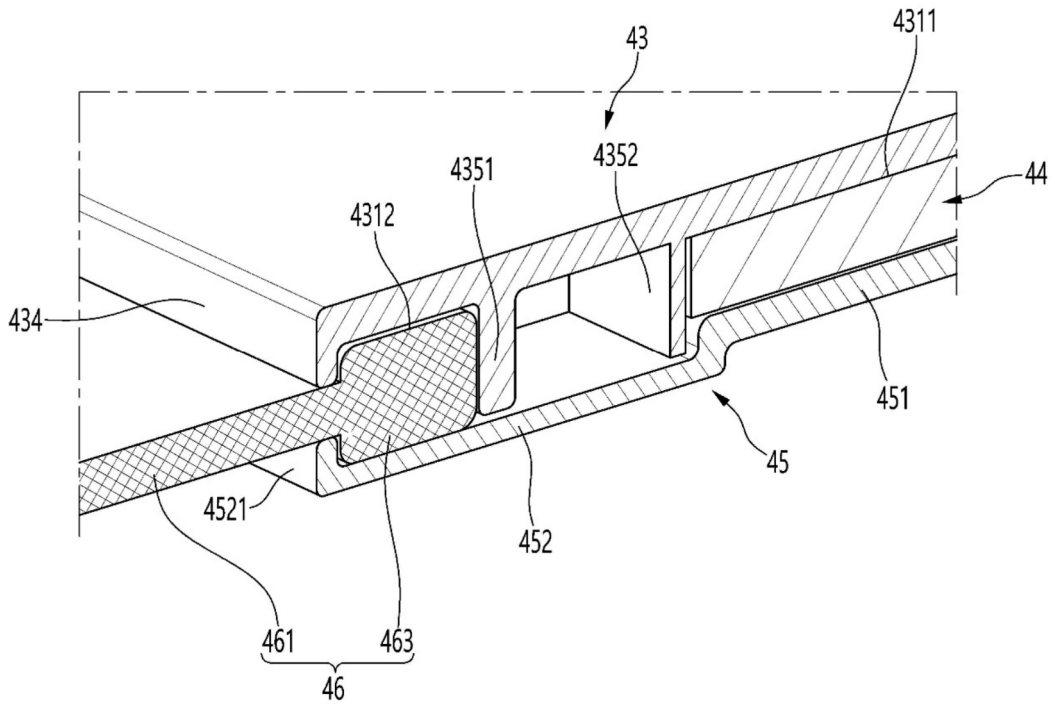
【Fig. 10】


431
4542
43
4551
4311
4552
4381
4382
44
454
451
45

【Fig. 11】


40'
42
431
433
43
432
44
A
462
461
463
45
46

【Fig. 12】


43
4311
4352
4351
44
4312
434
451
45
4521
452
461
463
46

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EUROPEAN SEARCH REPORT

Application Number
EP 26 16 7459

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X	KR 102 491 227 B1 (LG ELECTRONICS INC [KR]) 25 January 2023 (2023-01-25) * paragraph [0039]; figure 1 *	1-7, 13-15	
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TECHNICAL FIELDS SEARCHED (IPC)

F25D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 July 2026	Canköy, Necdet

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 26 16 7459

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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13-07-2026

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