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(71) Applicant: **LG Electronics Inc.**
Seoul 150-721 (KR)

(72) Inventors:
• **LEE, Su-Won**
Changwon City
Gyoungsangnam-do 641-711 (KR)

• **SHIN, Seok-Hong**
Changwon City
Gyoungsangnam-do 641-711 (KR)
• **LEE, Kyung-Eun**
Changwon City
Gyoungsangnam-do 641-711 (KR)

(74) Representative: **Urner, Peter**
TER MEER STEINMEISTER & PARTNER GbR
Patentanwälte
Mauerkircherstrasse 45
81679 München (DE)

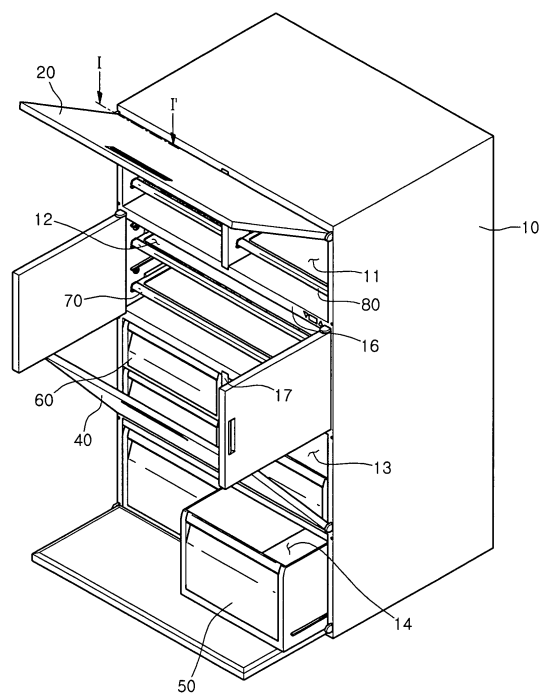
(54) **REFRIGERATOR**

(57) The present invention relates to a refrigerator, and more particularly, to a refrigerator in which the assembly of the internal constituents of a main body and doors can be formed in various shapes.

The refrigerator according to the embodiment of the present invention includes a main body in which a plurality of storage chambers are formed; a plurality of doors that selectively shield the front sides of the storage chambers and are provided rotatably at least one direction and the other direction; hinge units that are provided detachably at at least one side of the storage chambers and provide the rotation center of the doors; and a plurality of hinge holes that are formed at at least one side of the storage chambers and to which the hinge units are coupled.

With the refrigerator according to the embodiment of the present invention, a user can facilitate the locations of drawers and shelves or the assembly of doors.

Fig. 2



Description

Cross references related applications

[0001] The present application claims priority under 35 U.S.C. 119 and 35 U.S.C. 365 to Korean Patent Application No. 10-2009-0041057 (filed on May 12, 2009), which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The embodiment relates to a refrigerator, and more particularly, to a refrigerator in which the assembly of the internal constituents of a main body and doors can be formed in various shapes.

2. Description of the related art

[0003] Generally, a refrigerator is provided with a plurality of storage chambers in which stored goods are received in order to keep foods in a refrigerated or frozen state and one sides of the storage chambers are opened so that the foods can be received or taken out. And, doors that selectively shield the storage chambers are provided in front of the storage chambers.

[0004] Moreover, shelves, drawers, etc. that preserve the stored foods may be provided inside the storage chambers.

[0005] According to the refrigerator in the related art, generally, the shelves, the drawer, etc. are provided in predetermined positions inside a main body that forms the storage chambers and the refrigerator doors are rotatably or drawably provided at one side of the main body.

[0006] In this case, although a user wishes to use any one of the shelf and the drawer, it was impossible to change or relocate the constitution of the inside of the main body.

[0007] Further, since the door is rotated or drawn-out in a state where it is fixed to one side of the main body, it was impossible for a user to relocate the door at his or her desired position or reassemble the door in order to rotate the door in his or her desired direction.

SUMMARY OF THE INVENTION

[0008] The present invention proposes to overcome the above problems. It is an object of the present invention to provide a refrigerator capable of allowing the constituents provided in storage chambers to be located or assembled at user's desired positions.

[0009] Moreover, it is an object of the present invention to provide a refrigerator capable of allowing a plurality of partitioned storage chambers to be used as a freezing chamber, a refrigerating chamber, and a switching room.

[0010] In order to achieve the above objects, according to one embodiment of the present invention, there is provided a refrigerator including: a main body in which a plurality of storage chambers are formed; a plurality of doors that selectively shield the front sides of the storage chambers and are provided rotatably at least one direction and the other direction; hinge units that are provided detachably at at least one side of the storage chambers and provide the rotation center of the doors; and a plurality of hinge holes that are formed at at least one side of the storage chambers

vided a refrigerator including: a main body in which a plurality of storage chambers are formed; a plurality of doors that selectively shield the front sides of the storage chambers and are provided rotatably at least one direction and the other direction; hinge units that are provided detachably at at least one side of the storage chambers and provide the rotation center of the doors; and a plurality of hinge holes that are formed at at least one side of the storage chambers

[0011] According to another embodiment of the present invention, there is provided a refrigerator including: a main body that has at least one storage chamber and the other storage chamber; partitioning parts that partition the storage chambers; shelves that are coupled detachably to the one storage chamber and are coupleable to the other storage chamber; drawers that are coupled detachably to the other storage chamber and are coupleable to the one storage chamber; drawing-out guides that are provided in the one storage chamber and the other storage chamber and guide the drawing in/ out of the shelves and the drawers; and drawing-out rollers that are provided in the shelves and the drawers and are guided by the guiding-out guides.

[0012] With the refrigerator according to the embodiments of the present invention, the drawers or the shelves provided inside the main body can be detached and relocated at the user's desired positions, making it possible to improve responsibility according to the user's requirements.

[0013] Moreover, the user can selectively adopt the drawers or shelves that are frequently used, making it possible to efficiently utilize the space of the storage chambers.

[0014] Further, the doors can be coupled and rotated in the direction that they are conveniently manipulated by the user, making it possible to improve use convenience and to improve satisfaction for the product.

[0015] In addition, the switching chamber that can be switched into a freezing chamber or a refrigerating chamber is provided in one storage chamber of the plurality of storage chambers, making it possible to efficiently utilize the space of storage chamber according to the user's requirements.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

FIG. 1 is a perspective view showing an external appearance of a refrigerator according to a first embodiment of the present invention;

FIG. 2 is a perspective view showing a state where the doors of the refrigerator according to the first embodiment of the present invention are opened;

FIG. 3 is a perspective view showing the internal constitution of the main body of the refrigerator according to the first embodiment of the present invention;

FIG. 4 is an exploded perspective view showing the portion of the main body of the refrigerator according to the first embodiment of the present invention;
 FIG. 5 is a perspective view showing the constitution of a basket according to the first embodiment of the present invention;
 FIG. 6 is a perspective view showing the constitution of a hinge door according to the first embodiment of the present invention;
 FIG. 7 is a cross-sectional view taken along line II-II' of FIG. 6;
 FIG. 8 is a cross-sectional view taken along line I-I' of FIG. 2;
 FIG. 9 is a perspective view of a main body in which a plurality of storage chambers according to a second embodiment of the present invention are shown;
 FIG. 10 is a system diagram showing the constitution of the refrigerator according to the second embodiment of the present invention; and
 FIG. 11 is a block diagram showing the constitution of the refrigerator according to the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] Hereinafter, the proposed embodiments will be described in detail with reference to the accompanying drawings. However, the idea of the present invention is not limited to the proposed embodiments but another embodiment may be easily proposed by those skilled in the art who understand the idea of the present invention with in the same idea of the present invention.

[0018] FIG. 1 is a perspective view showing an external appearance of a refrigerator according to a first embodiment of the present invention, and FIG. 2 is a perspective view showing a state where the doors of the refrigerator according to the first embodiment of the present invention are opened.

[0019] Referring to FIGS. 1 and 2, the refrigerator 1 according to the first embodiment of the present invention includes a main body 10 that forms a plurality of storage chambers, and a plurality of doors 20, 30, and 40 that are provided in front of the main body 10 and selectively shield the plurality of storage chambers.

[0020] More specifically, in the plurality of storage chambers, a first storage chamber 11, a second storage chamber 12, a third storage chamber 13, and a fourth storage chamber 14, that are partitioned in a predetermined size from the upper portion of the main body 10 to the lower portion thereof. The respective storage chambers may be constituted in the same size.

[0021] A plurality of partitioning parts 16 that partition the respective storage chambers are provided between the respective storage chambers of the plurality of storage chambers 11, 12, 13, and 14.

[0022] An upper hinge door 20, a side-by-side type door 30, and lower hinge doors 40 are provided in front

of the plurality of storage chambers 11, 12, 13, and 14, respectively. The upper hinge door 20 is rotatably provided centering on the upper portion of the door 20, and the side-by-side type door 30 is configured of a plurality of doors that are rotated centering on one side or the other side of the main body 10.

[0023] The lower hinge doors 40 may be rotatably provided centering on the lower portion of the door 40. However, the location of the doors 20, 30, and 40 is nothing but one embodiment, but the location thereof may vary according to user's requirements to be described later.

[0024] First drawers 50, second drawers 60, first shelves 70, and second shelves 80 where stored foods are preserved are provided in the storage chambers 11, 12, 13, and 14. The drawers 50 and 60 and the shelves 70 and 80 are coupled detachably to the storage chambers 11, 12, 13, and 14.

[0025] The first shelves 70 are provided at upper and lower sides of the second storage chamber 12, respectively, wherein two first shelves 70 may be spaced and located from each other. In this case, the volume of the stored foods that can be stored on the two first shelves 70 may correspond to the internal volume of the second storage chamber 12.

[0026] The second shelves 80 are provided at both the upper and lower sides of the first storage chamber 11, wherein four second shelves 80 may be located. In this case, the volume of the stored foods that can be stored on the four second shelves 80 may correspond to the internal volume of the first storage chamber 11.

[0027] The first drawers 50 are provided at both sides of the inside of the fourth storage chamber 14, wherein the volume of the two first drawers 50 may correspond to the internal volume of the fourth storage chamber 14.

[0028] The second drawers 60 are vertically provided at both sides of the inside of the third storage chamber 13, wherein the volume of the four second drawers 60 may correspond to the internal volume of the third storage chamber 13.

[0029] However, the location of the shelves 70 and 80 and the drawers 50 and 60 is nothing but one embodiment, but they may be moved from one storage chamber to the other storage chamber to be located according to user's requirements. In other words, the second shelves 80 may be located at the second storage chamber 12 or the first drawers 50 may be located at the third storage chamber 13. The relevant description will be described later with reference to the drawings.

[0030] Meanwhile, an intermediate partitioning plate 17 that vertically partitions the internal space of the respective storage chambers may be provided in the storage chambers 11, 12, 13, and 14. The intermediate partitioning plate 17 may be coupled detachably to the inserting grooves 16a of the partitioning part 16.

[0031] In other words, the intermediate partitioning plate 17 is coupled between the inserting groove 16a of the upper partitioning part 16 and the inserting groove 16a of the lower partitioning part 16, making it possible

to partition the storage chamber. In FIG. 3, although the intermediate partitioning part 17 is shown to be coupled to the third storage chamber 13, it may also be coupled to other storage chambers 11, 12, and 14.

[0032] However, when the first shelves 70 are provided in one storage chamber of the storage chambers 11, 12, 13, and 14, the intermediate partitioning plate 17 may be in a detached state, and when the drawers 50 and 60 or the second shelves 80 are provided, the intermediate partitioning plate 17 may be coupled in order to vertically partition the storages.

[0033] FIG. 3 is a perspective view showing the internal constitution of the main body of the refrigerator according to the first embodiment of the present invention, FIG. 4 is an exploded perspective view showing the portion of the main body of the refrigerator according to the first embodiment of the present invention, FIG. 5 is a perspective view showing the constitution of a basket according to the first embodiment of the present invention, FIG. 6 is a perspective view showing the constitution of a hinge door according to the first embodiment of the present invention, FIG. 7 is a cross-sectional view taken along line II-II' of FIG. 6, and FIG. 8 is a cross-sectional view taken along line I-I' of FIG. 2.

[0034] Referring to FIGS. 3 to 8, the plurality of storage chamber 11, 12, 13, and 14 that are partitioned by the plurality of partitioning parts 16 are formed in the main body 10 according to the first embodiment of the present invention.

[0035] A plurality of drawing-out guides 110 and 115 that guides the drawing in/out of the drawers 50 and 60 and the shelves 70 and 80 are provided at the respective inner sides of the storage chambers 11, 12, 13, and 14.

[0036] The drawing-out guides 110 and 115 includes an upper drawing-out guide 110 that is provided at the upper portion of one side wall of the storage chamber and a lower drawing-out guide 115 that is provided at the lower portion of one side wall of the storage chamber. Although not shown in the drawings, the drawing-out guides 110 and 115 may also be provided at the other wall of the storage chamber in the same manner.

[0037] The reason why the drawing-out guides 110 and 115 are provided in plural at the upper portion and the lower portion is that when a plurality of shelves and drawers are provided at the upper portion and the lower portion of one storage chamber, such as, the shelves 70 and 80 and the second drawers 60, the plurality of shelves and drawers are allowed to be easily drawn in and out.

[0038] The drawing-out guides 110 and 115 include hooking sills 111 and 116 that limit the extent that the drawers 50 and 60 and the shelves 70 and 80 are drawn in and out. The drawers 50 and 60 and the shelves 70 and 80 are interfered by the hooking sills 111 and 116, while being completely drawn in.

[0039] And, guide rollers 112 and 117 that allow the drawers 50 and 60 and the shelves 70 and 80 to be smoothly drawn in and out are provided at one side of

the drawing-out guides 110 and 115, respectively.

[0040] Moreover, drawing-out guides 18 and guide rollers 19 that correspond to the drawing-out guides 110 and 115 and the guide rollers 112 and 117, respectively, may be provided at both sides of the intermediate partitioning part 17. In a state where the intermediate partitioning plate 17 is coupled, the drawers 50 and 60 and the shelves 70 and 80 may be guided by the drawing-out guides 18 and the guide rollers 19 to be moved.

[0041] As shown in FIG. 5, guide members 52 and drawing-out rollers 54 that allow the drawer 50 to be easily moved according to the drawing-out guides 110 and 115 are provided at both sides of the first drawer 50.

[0042] In the guide members 52, the guide rollers 112 and 117 may be guided to be rolled, and the drawing-out rollers 54 may be guided by the drawing-out guides 110 and 115 to be rolled. The guide members 52 and the drawing-out rollers 54 may also be operated with the drawing-out guides 18 and the guide rollers 19.

[0043] In the present embodiment, the first drawer 50 is described by way of example, but the guide members 52 and the drawing-out rollers 54 may also be applied to the second drawers 60 and the shelves 70 and 80 in the same manner.

[0044] Meanwhile, a plurality of hinge units 150 that couple the doors 20, 30, and 40 are provided at the outer edges of the respective storage chambers 11, 12, 13, and 14.

[0045] The hinge unit 150 includes an engaging part 151 that is engaged detachably to the main body 10 and a coupling part 152 that is extended to one side of the engaging part 151 and is coupled to any one of the doors 20, 30, and 40.

[0046] The engaging part 151 may be engaged with a plurality of hinge holes 121, 122, 124, and 125 that are formed on the main body 10. One screw thread is formed on the outer circumferential surface of the engaging part 151, wherein the one screw thread may be coupled to the other screw threads formed on the hinge holes 121, 122, 124, and 125.

[0047] The engaging part 151 may be coupled selectively to the hinge holes 121, 122, 124, and 125. In other words, a user can couple the engaging part 151 to the hinge holes by inserting the engaging part 151 into the hinge holes 121, 122, 124, and 125 and rotating it in one direction, and to the contrary, the user can detach the engaging part 151 from the hinge holes 121, 122, 124, and 125 by rotating the engaging part 151 in the other direction.

[0048] A projection insert hole 153 into which a hinge protection 25 provided in the doors 20, 30, and 40 is inserted is formed in the coupling part 152. The projection insert hole 153 may form the hinge center of the doors 20, 30, and 40.

[0049] Moreover, the plurality of hinge holes 121, 123, 124, and 125 may be formed at edge portions of the respective storage chambers 11, 12, 13, and 14. In FIG. 4, the hinge holes that are formed at the edge portions

of the second storage chamber 12 of the storage chambers 11, 12, 13, and 14 will be described. In the present embodiment, although the hinge holes that are formed around the second storage chamber 12 are described, the same hinge holes may also be provided in other storage chambers 11, 13, and 14.

[0050] The plurality of hinge holes 121, 122, 124, 125 include a plurality of upper hinge holes 121 that are formed at the upper portion of one side of the second storage chamber 12 and the upper portion of the other side thereof, a plurality of lower hinge holes 122 that are formed at the lower portion of one side of the second storage chamber 12 and the lower portion of the other side thereof, a plurality of upper end hinge holes 124 that are formed at the upper end of one side of the second storage chamber 12 and the upper end of the other side thereof, and a plurality of lower end hinge holes 125 that are formed at the lower end of one side of the second storage chamber 12 and the lower end of the other side thereof.

[0051] Herein, the upper end hinge holes 124 and the lower end hinge holes 125 are formed at the positions corresponding to each other, of the upper end and the lower end of the storage chamber 12.

[0052] A door that is rotatably provided centering on the upper portion, such as the upper hinge door 20, may be coupled to the upper hinge holes 121. In other words, the both sides of the upper hinge door 20 may be coupled rotatably to the upper hinge holes 121 provided at both sides.

[0053] A door that is rotatably provided centering on the lower portion, such as the lower hinge door 40, may be coupled to the lower hinge holes 122. In other words, the both sides of the lower hinge door 40 may be coupled rotatably to the lower hinge holes 121 provided at both sides.

[0054] A door that is rotatably provided centering on the both sides of the main body, such as the side-by-side type door 30, may be coupled to the upper end hinge hole 124 and the lower end hinge hole 125. In other words, one door of the side-by-side type door 30 may be coupled to one pair of the upper end hinge hole 124 and the lower end hinge hole 125 and the other door thereof may be coupled to the other pair of the upper end hinge hole 124 and the lower end hinge hole 125.

[0055] As shown in FIG. 6, the upper hinge door 20 includes an out door 21 that forms an external appearance and a door liner 22 that forms a rear surface.

[0056] And, a hinge projection 25 that can be inserted into the upper hinge hole 121 and an elastically moving part 23 that is provided at one side of the hinge projection 25 are provided at both sides of the out door 21. The elastically moving part 23 supports the hinge projection 25 to the door 20 and is able to be elastically moved inward the out door 21.

[0057] An elastic member 27 that elastically supports the elastically moving part 23 is provided at one side of the elastically moving part 23. The elastic member 27 is

provided inside the out door 21, wherein it may be shrunk while the elastically moving part 23 is moved inward.

[0058] When wishing to couple the upper hinge door 20 into the upper hinge hole 121, the user can insert the hinge projection 25 into the projection insert hole 154 by pushing the elastically moving part 23. Thereafter, if the elastically moving part 23 is released, the elastically moving part 23 is moved outward by the restoring force of the elastic member 27 and the hinge projection 25 can be inserted completely into the projection insert hole 154.

[0059] In the present embodiment, the upper hinge door 20 is described by way of example, the constitution of the hinge projection, the elastically moving part, and the elastic member may also be applied to the side-by-side type door 30 and the lower hinge door 40 in the same manner.

[0060] As shown in FIG. 8, a first screw thread 121a that is screw-coupled with the upper hinge hole 121 is formed at the upper hinge hole 121. And, a second screw thread 151a corresponding to the first screw thread 121a is formed at the engaging part 151.

[0061] The user can insert the hinge unit 150 into the upper hinge hole 121 and rotate it. At this time, the hinge unit 150 can be engaged with the upper hinge hole 121 by the screw-coupling between the first screw thread 121a and the second screw thread 151a.

[0062] And, the first screw thread 121a formed at the upper hinge hole 121 may also be formed at the lower hinge hole 122, the upper end hinge hole 124, and the lower end hinge hole 125.

[0063] However, the number of the screw threads formed at the upper hinge hole 121 and the lower hinge hole 122 may be formed so that the projection insert hole 153 horizontally face the storage 12 in a state where the hinge unit 150 is completely coupled.

[0064] Meanwhile, the number of the screw threads formed at the upper end hinge hole 124 and the lower end hinge hole 125 may be formed so that the projection insert hole 153 vertically face the storage 12 in a state where the hinge unit 150 is completely coupled.

[0065] As described above, the hinge unit 150 may be assembled and coupled with one hinge hole of the plurality of hinge holes 121, 122, 124, and 125. In other words, when wishing to insert his or her desired door into one storage chamber, the user can couple the hinge unit 150 with the hinge hole corresponding to the door.

[0066] Finally, doors can be located in a different manner from the location of the door shown in FIG. 2. For example, the lower hinge door may be coupled with the second storage chamber 12 and the side-by-side type door may be coupled with the storage chamber 13.

[0067] Furthermore, any one of the drawers 50 and 60 and the shelves 70 and 80 provided in one storage chamber may be detached to be coupled to other storage chamber. In other words, more drawers or shelves may be mounted according to the user's requirements.

[0068] Hereinafter, a second embodiment of the present invention will be described. In the present em-

bodiment, it will be described centering on the differences with the first embodiment, while using the original reference numerals and description of the first embodiment for the same portions as the first embodiment.

[0069] FIG. 9 is a perspective view of a main body in which a plurality of storage chambers according to a second embodiment of the present invention are shown, FIG. 10 is a system diagram showing the constitution of the refrigerator according to the second embodiment of the present invention, and FIG. 11 is a block diagram showing the constitution of the refrigerator according to the second embodiment of the present invention.

[0070] Referring to FIGS. 9 to 11, a plurality of storage chambers 11, 12, 13, and 14 according to the second embodiment of the present invention may be partitioned by a plurality of partitioning parts 16. As shown in FIG. 9, the first storage chamber 11 and the second storage chamber 12 may be operated as a refrigerating chamber R, the third storage chamber 13 may be operated as a switching chamber C, and the fourth storage chamber 14 may be operated as a freezing chamber F.

[0071] However, the operated locations of the storage chambers are nothing but one embodiment, but the storage chambers may be operated so that a plurality of switching chambers C or a plurality of freezing chambers F are used.

[0072] In the partitioning parts 16, first input units 132 that set the storage temperatures of the refrigerating chambers and the freezing chambers 11, 12, and 14 and first display units 131 that display the current temperature and the set temperature of the storage chambers 11, 12, and 14 are provided.

[0073] And, in the partitioning parts 16, second input units 136 that set the low temperature mode or high temperature mode, and the storage temperature of the switching chamber 13 and second display units 135 that display the mode or temperature of the switching chamber 13 are provided.

[0074] A cooling cycle diagram that controls the inside temperature of the refrigerator is shown in FIG. 10.

[0075] The cooling cycle according to the present embodiment includes a compressor 200 that compresses coolant, a condenser 210 that condenses the coolant compressed in the compressor 200, a refrigerating chamber evaporator 230 that performs a heat exchange of the refrigerating chamber, a switching chamber evaporator 240 that evaporates coolant in order to perform a heat exchange of the switching chamber, a freezing chamber evaporator 270 that evaporates coolant in order to perform a heat exchange of the freezing chamber, and a three-way valve 220 that controls coolant to be flowed into the refrigerating chamber evaporator 230 or the switching chamber evaporator 240.

[0076] Reviewing the flow of the cooling cycle, the coolant is first compressed through the compressor 200 and the compressed coolant is transferred to the condenser 210. The flow of the coolant passing through the condenser 210 may be controlled into the refrigerating

chamber evaporator 230 or the switching chamber evaporator 240 through the three-way valve 220.

[0077] If the three-way valve 220 forms a passage to the refrigerating chamber evaporator 230, the coolant is supplied to the refrigerating chamber evaporator 230. Therefore, the switching chamber evaporator 230 performs a heat exchange and cooling air is supplied to the refrigerating chamber by the operation of a refrigerating chamber fan (not shown).

[0078] However, if the three-way valve 220 forms the passage to the switching chamber evaporator 240, the coolant is supplied to the switching chamber evaporator 240. Therefore, the switching chamber evaporator 240 performs a heat exchange and cooling air is supplied to the switching chamber by the operation of a switching chamber fan (not shown).

[0079] The coolant flowed into the refrigerating chamber evaporator 230 or the switching chamber evaporator 240 is flowed into the freezing chamber evaporator 270. The freezing chamber evaporator 270 performs a heat exchange and cooling air is supplied to the freezing chamber by the operation of a freezing chamber fan (not shown).

[0080] Referring to FIG. 11, the refrigerator according to the second embodiment of the present invention includes the input unit 132, the display unit 131, a first temperature sensor 261, a second temperature sensor 262, and a third temperature sensor 263 that are provided in the refrigerating chambers 11 and 12, the freezing chamber 14, and the switching chamber 13, respectively, to sense the temperature of storage chambers, a first cooling air supplying unit 281, a second cooling air supplying unit 282, and a third cooling air supplying unit 283 that are provided in the refrigerating chambers 11 and 12, the freezing chamber 14, and the switching chamber 13, respectively, to supply cooling air, a three-way valve 220 that controls the flow of the coolant to the refrigerating chamber evaporator 230 or the switching chamber evaporator 240, a heater 250 that is provided in the switching chamber to raise the temperature of the switching chamber, and a controller 300 that controls the operations of the constitutions.

[0081] The temperature of the refrigerating chambers 11 and 12 and the freezing chamber 14 can be set by manipulating the input unit 132, respectively, and the controller 300 can control the opened degree of the cooling air supplying units 281 and 282 by comparing the set temperature input by the input unit 132 with the current temperature sensed by the temperature sensors 261 and 262.

[0082] Meanwhile, the inside temperature of the switching chamber 13 may be set to various modes and temperatures. If the switching chamber is set to have low temperature mode and temperature, by manipulating the second input unit 136, the controller 300 can control the three-way valve 220 to be opened to the switching chamber evaporator 240 side.

[0083] As a result, the coolant passing through the

compressor 200 and the condenser 210 is supplied to the switching chamber evaporator 240 and a heat exchange is performed in the switching evaporator 240, making it possible to supply cold air to the inside of the switching chamber.

[0084] To the contrary, if the switching chamber is set to have high temperature mode and temperature by manipulating the second input unit 136, the controller 300 controls the three-way valve 220 to be opened to the refrigerating chamber evaporator 230. And, the coolant passage to the switching chamber evaporator 240 will be closed and the cooling air will be supplied to the refrigerating chambers 11 and 12.

[0085] Moreover, when the temperature of the switching chamber is required to be highly raised, the temperature of the switching chamber 13 is raised by a heater 250 that is provided inside the switching chamber 13. The operation of the heater 250 can be controlled by the operation of the third temperature sensor 263 and the controller 300.

[0086] With the constitution as described above, the switching chamber can be applied when a higher preservation temperature than the temperature of a general refrigerating chamber is required as well as the stored goods are preserved in a refrigerating state.

[0087] With the refrigerator according to the embodiments of the present invention, the drawers or the shelves provided inside the main body can be relocated at the user's desired positions so that responsibility according to the user's requirements can be improved, having significant industrial applicability.

[0088] The scope of the present invention is not limited to the embodiment set forth herein, but modification, adding and removing can be made in the present invention without departing from the spirit and scope of the invention.

Claims

1. A refrigerator comprising:

a main body in which a plurality of storage chambers are formed;
a plurality of doors that selectively shield the front sides of the storage chambers and are provided rotatably at least one direction and the other direction;
hinge units that are provided detachably at at least one side of the storage chambers and provide the rotation center of the doors; and
a plurality of hinge holes that are formed at at least one side of the storage chambers and to which the hinge units are coupled.

2. The refrigerator according to claim 1, wherein the plurality of doors include:

an upper hinge door that is provided rotatably centering on the upper portion;
lower hinge doors that are provided rotatably centering on the lower portion; and
a side-by-side door that is provided rotatably centering on one side and the other side of the main body.

3. The refrigerator according to claim 2, wherein the plurality of hinge holes include:

a plurality of upper hinge holes to which the upper hinge door is coupled;
a plurality of lower hinge holes to which the lower hinge doors are coupled; and
a plurality of upper end hinge holes and lower end hinge holes to which the side-by-side type door is coupled.

4. The refrigerator according to claim 3, wherein the upper hinge holes, the lower hinge holes and the upper and lower end hinge holes are formed at outer sides of the plurality of storage chambers, respectively.

5. The refrigerator according to claim 1, wherein hinge projections that are coupled to the hinge units are provided in each of the plurality of doors.

6. The refrigerator according to claim 5, wherein elastic members that allow the hinge projections to be elastically coupled are included in the doors.

7. The refrigerator according to claim 1, wherein a first screw thread that couples the hinge unit is formed at the hinge hole, and a second screw thread that is coupled to the first screw thread is formed at the hinge unit.

8. A refrigerator comprising:

a main body that has at least one storage chamber and the other storage chamber;
partitioning parts that partition the storage chambers;
shelves that are coupled detachably to the one storage chamber and are coupleable to the other storage chamber;
drawers that are coupled detachably to the other storage chamber and are coupleable to the one storage chamber;
drawing-out guides that are provided in the one storage chamber and the other storage chamber and guide the drawing in/ out of the shelves and the drawers; and
drawing-out rollers that are provided in the shelves and the drawers and are guided by the guiding-out guides.

9. The refrigerator according to claim 8, wherein the drawing-out guides are provided in plural at the inner sides of the one storage chamber or the other storage chamber.

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10. The refrigerator according to claim 8, further comprising:

an intermediate partitioning plate that partitions the one storage chamber or the other storage chamber and is detachably coupled to the main body.

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11. The refrigerator according to claim 8, comprising:

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a plurality of doors that selectively shield the one storage chamber and the other storage chamber; and

hinge units that are coupled detachably to the outer side of the one storage chamber or the other storage chamber and provide the rotation centers of the plurality of doors.

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Fig. 1

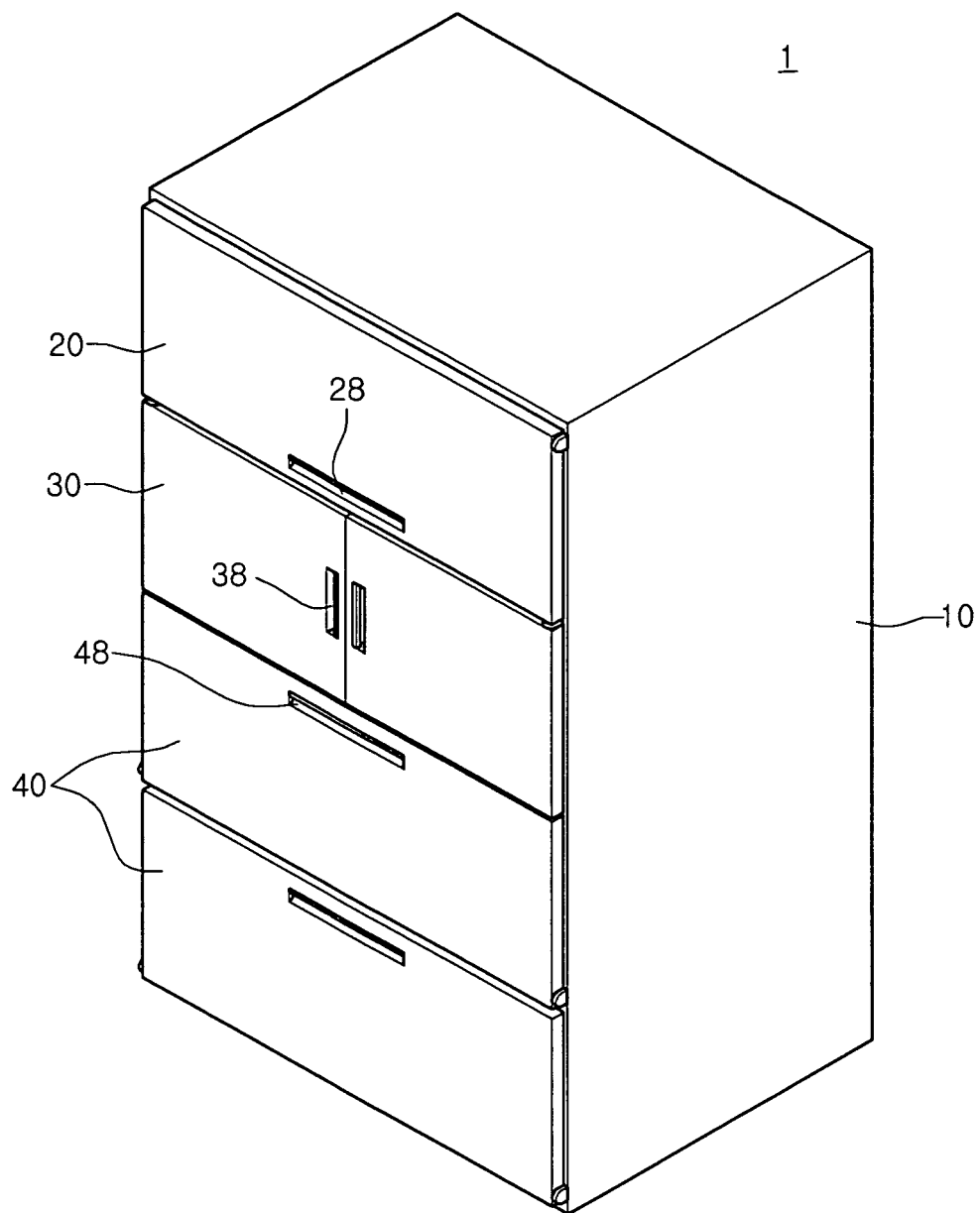


Fig. 2

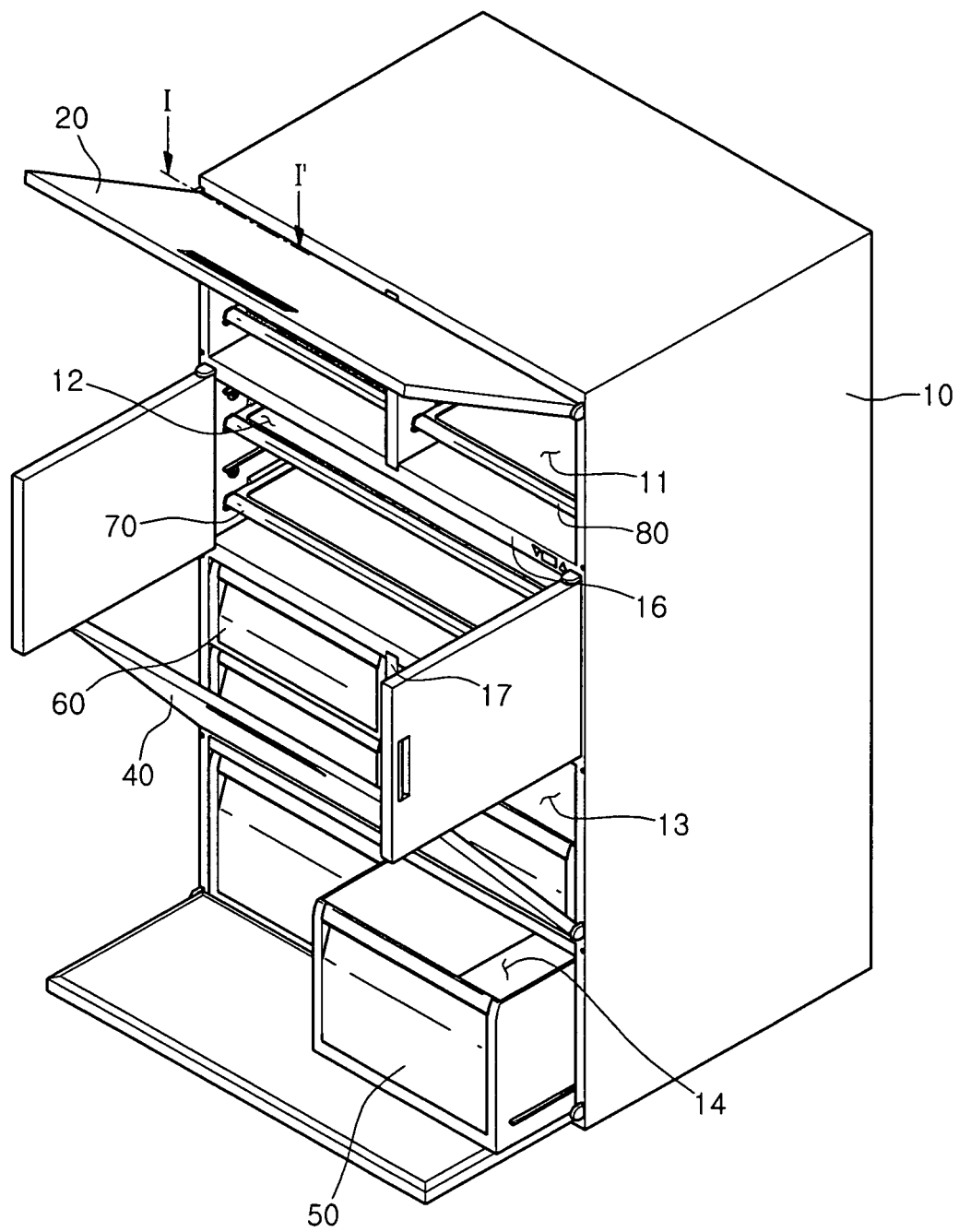


Fig. 3

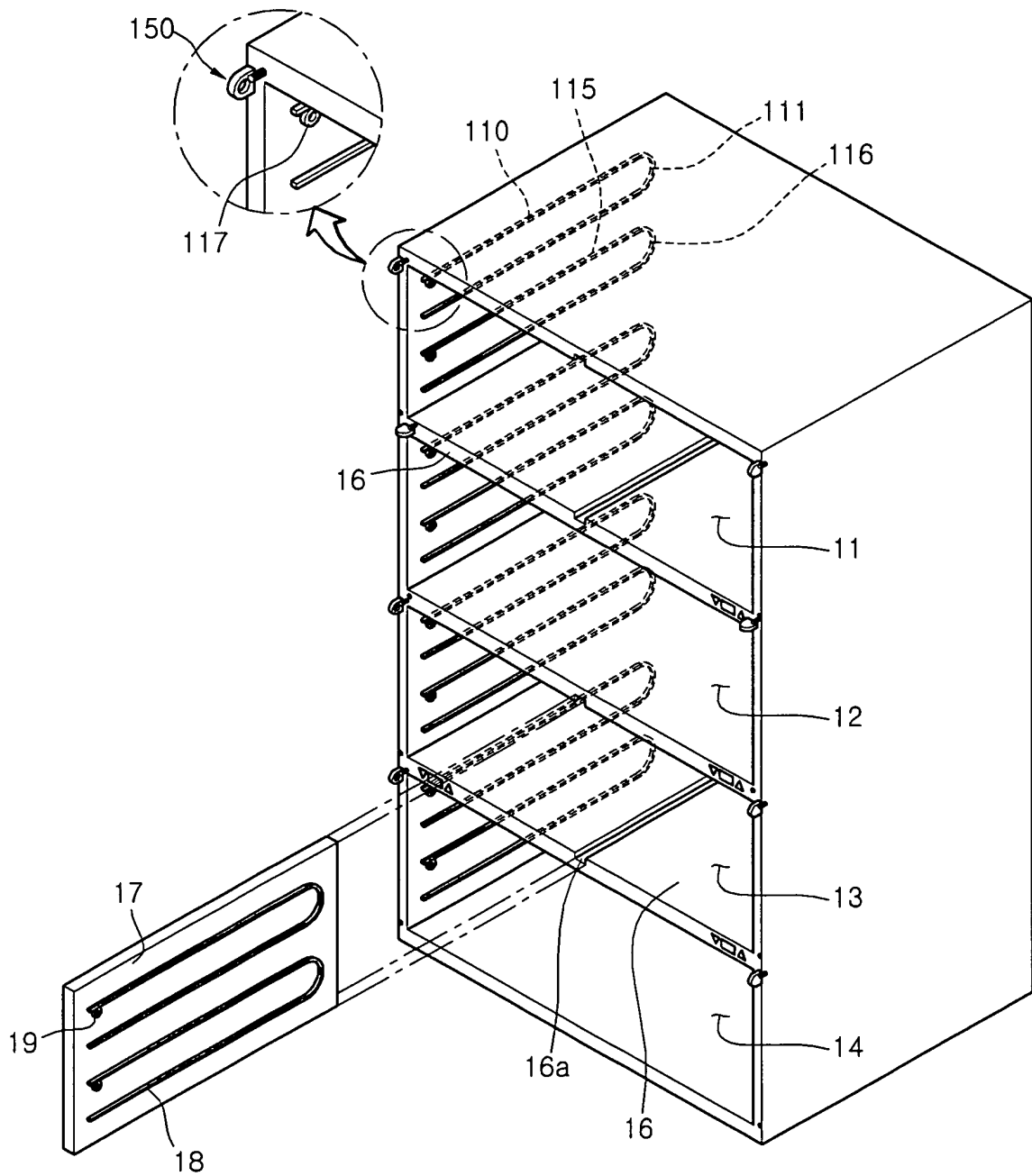


Fig. 4

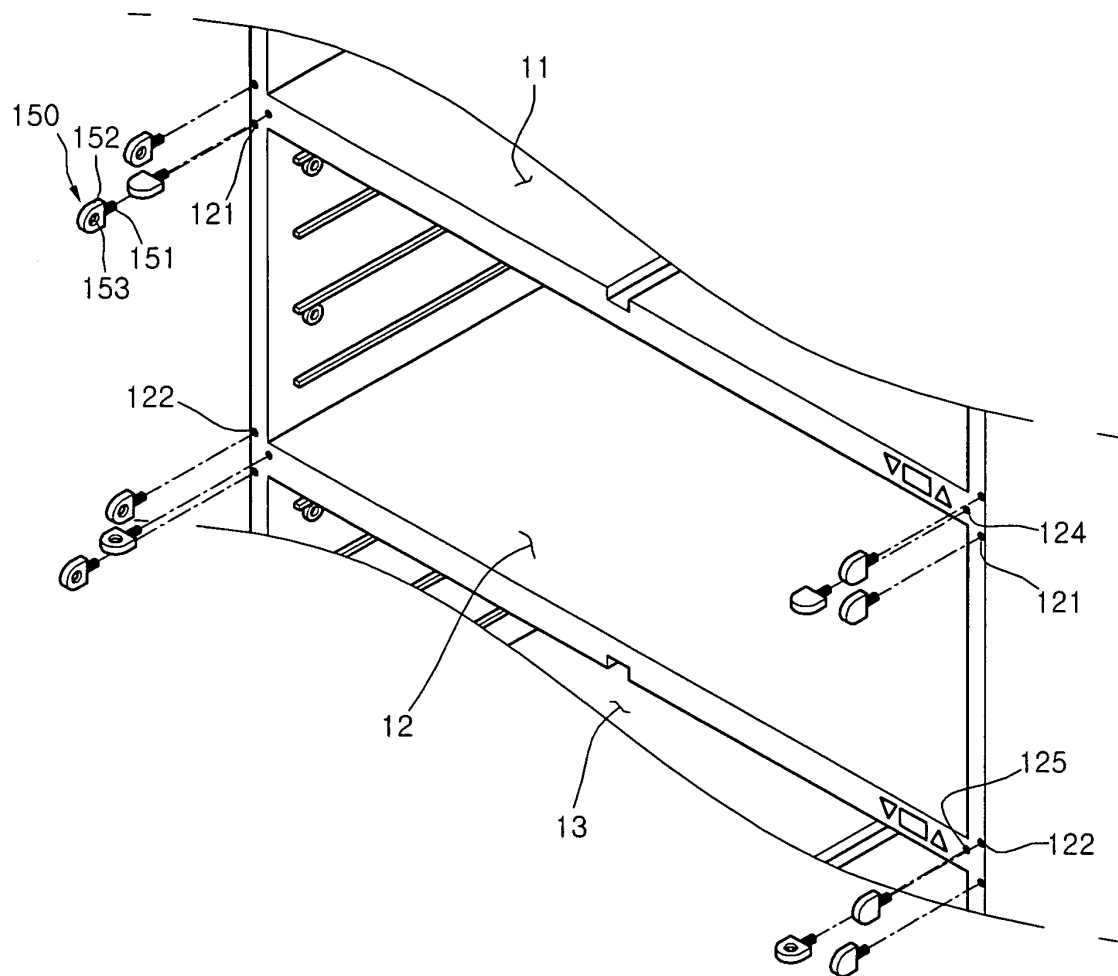


Fig. 5

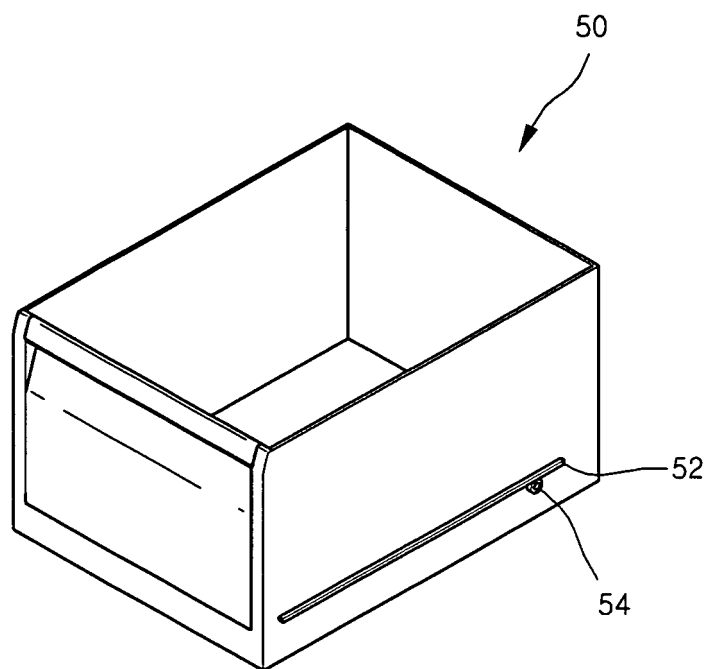


Fig. 6

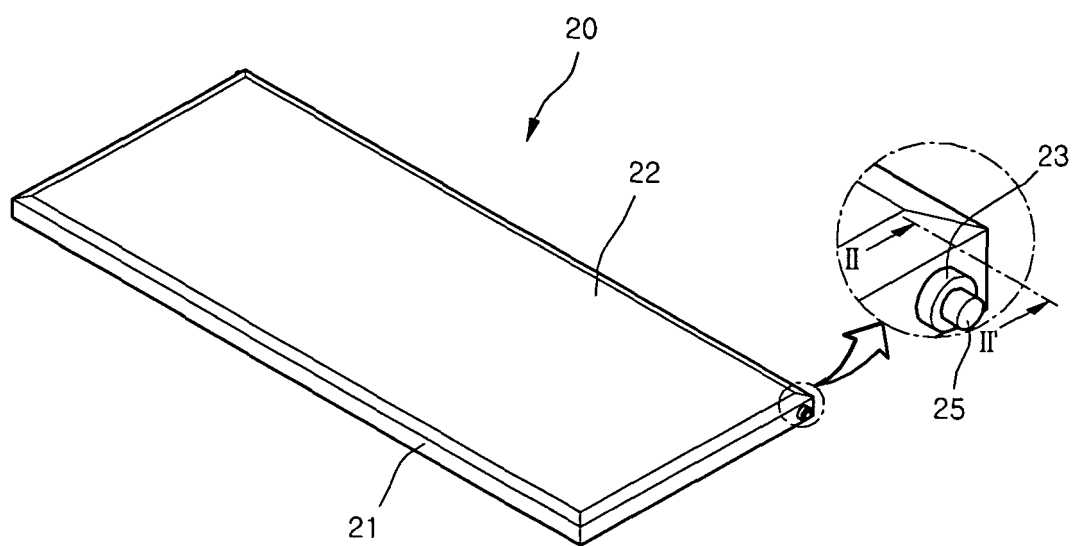


Fig. 7

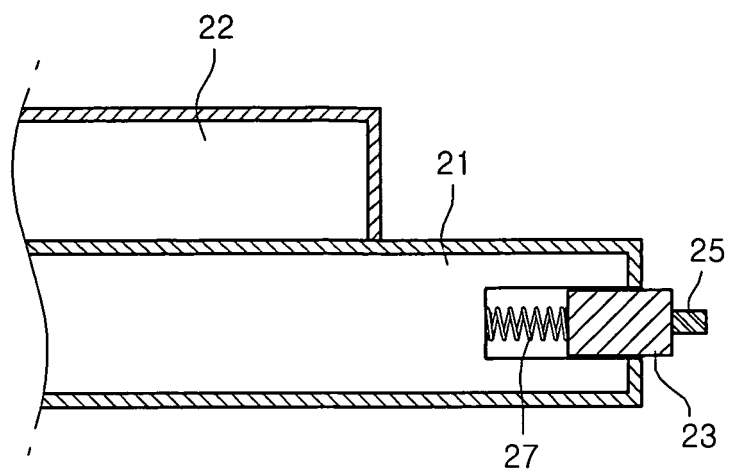


Fig. 8

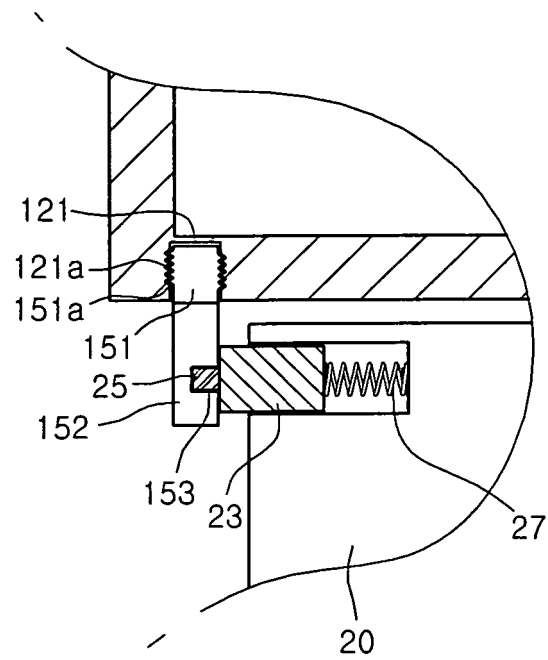


Fig. 9

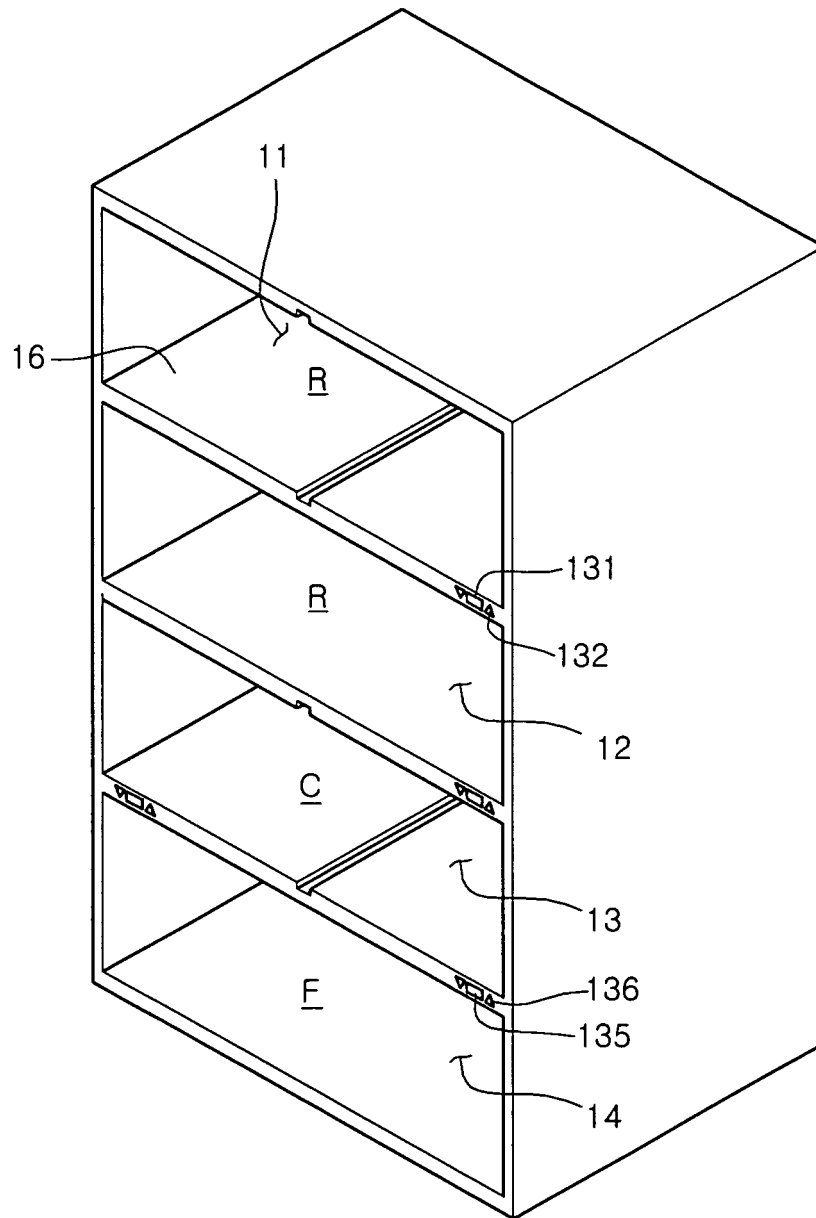


Fig. 10

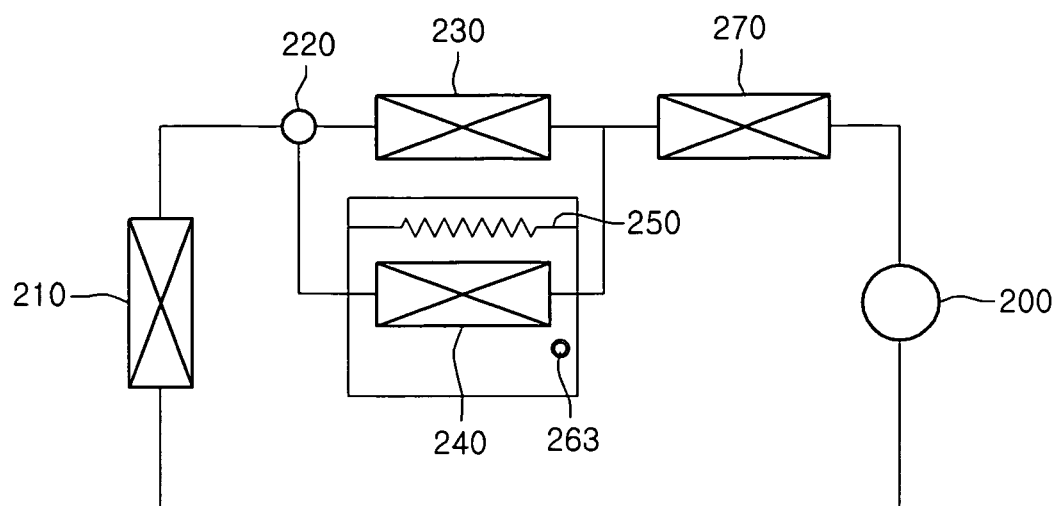
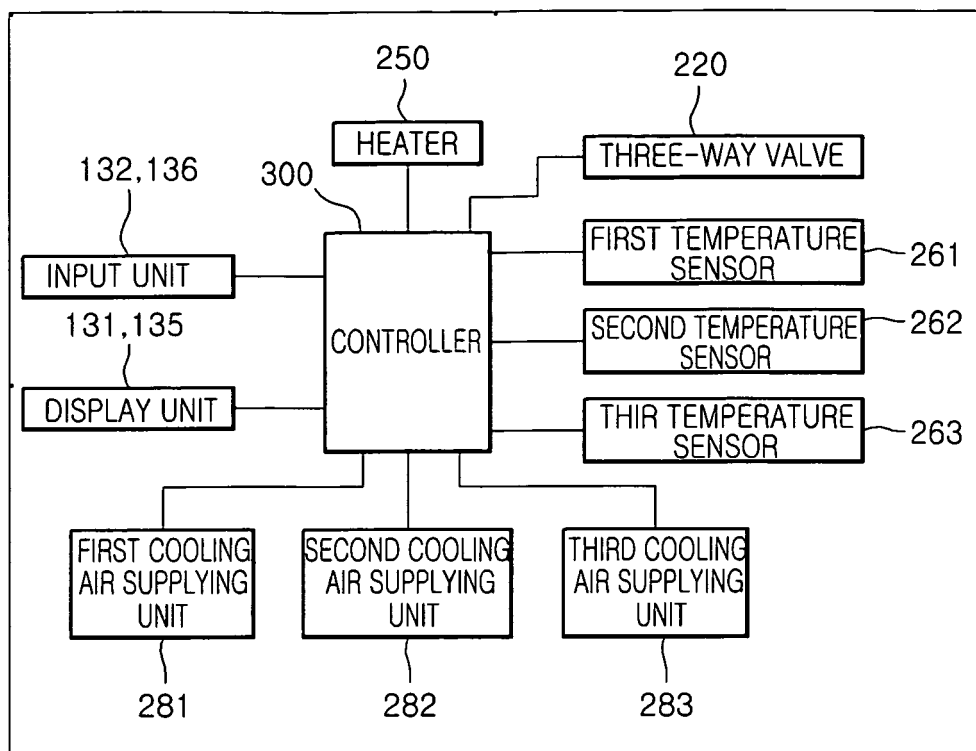


Fig. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2009/004969

A. CLASSIFICATION OF SUBJECT MATTER

F25D 23/02(2006.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F25D 23/02; F25D 11/00; F25D 23/00; F25D 23/04; F25D 25/02

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

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: refrigerator, door, hinge, drawer, spring

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 20-2008-0005869 U (SAMSUNG COM.,) 03 December 2008	1-4,8-11
Y	See paragraphs [0019] - [0046]; figures 1 - 5	5-7
Y	KR 10-1997-0047642 A (DAEWOO ELEC. INC.,) 26 July 1997	5-7
	See claims 1 - 2; figures 1 - 2	
A	KR 20-0113434 Y1 (SAMSUNG COM.,) 13 April 1998	1-11
	See page 2, lines 1 - 60; figures 1 - 6	
A	KR 10-0700776 B1 (LG ELECTRONIC INC.,) 27 March 2007	1-11
	See page 2, line 45 - page 6, line 45; figures 1 - 5	

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

24 MAY 2010 (24.05.2010)

Date of mailing of the international search report

24 MAY 2010 (24.05.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Daejeon 302-701,
Republic of Korea

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Authorized officer

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2009/004969

Patent document cited in search report	Publication date	Patent family member	Publication date
KR 20-2008-0005869 U	03.12.2008	NONE	
KR 10-1997-0047642 A	26.07.1997	NONE	
KR 20-0113434 Y1	13.04.1998	NONE	
KR 10-0700776 B1	27.03.2007	CN 1828200 A0 US 2006-0196198 A1	06.09.2006 07.09.2006

Form PCT/ISA/210 (patent family annex) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- KR 1020090041057 [0001]