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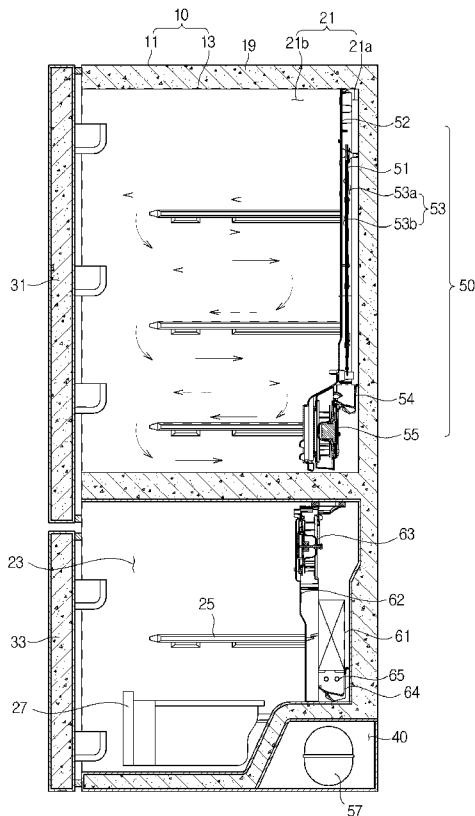
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(54) Title: REFRIGERATOR



(57) Abstract: The present disclosure relates to a refrigerator with an improved structure capable of improving cooling efficiency. A refrigerator according to an embodiment of the present disclosure includes a main body; a storage room formed in the main body, wherein a front part of the storage room is opened; a door configured to open or close the opened front part of the storage room; an evaporator installed in a back part of the storage room; an evaporator cover configured to partition the storage room into a storage area and a cool air generating area in which the evaporator is disposed; a first flow path formed between the evaporator and a back surface of the storage room; and a second flow path formed between the evaporator and the evaporator cover.

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## Description

### Title of Invention: REFRIGERATOR

#### Technical Field

- [1] The present disclosure relates to a refrigerator with an improved structure capable of improving cooling efficiency.

#### Background Art

- [2] In general, a refrigerator is used to maintain the freshness of various food for a long duration by supplying cool air generated by an evaporator to a storage room. The storage room of the refrigerator is partitioned into a refrigerating compartment that is maintained at about 3°C to keep food refrigerated, and a freezing compartment that is maintained at about -20°C to keep food frozen.
- [3] The freezing compartment stores food (for example, meat, fish, and frozen dessert) that needs to be maintained under a freezing temperature, and the refrigerating compartment stores food (for example, vegetables, fruits, and drinks) that needs to be maintained above a freezing temperature.
- [4] The refrigerator is driven in a cooling cycle in which refrigerant is successively compressed, condensed, expanded, and evaporated through a compressor, a condenser, an expander, and an evaporator, respectively. According to the kinds of refrigerators, a single evaporator placed in a freezing compartment cools both the freezing compartment and a refrigerating compartment, or evaporators are respectively placed in a freezing compartment and a refrigerating compartment to cool the freezing compartment and the refrigerating compartment independently.
- [5] In the evaporator, refrigerant in a liquid state is evaporated to take away evaporation heat from surrounding air to thereby cool the surrounding air. Evaporators are classified into a direct cooling type evaporator and an indirect cooling type evaporator. The direct cooling type evaporator has low consumption power and excellent cooling performance since it performs heat exchange directly inside a storage room. In contrast, in the indirect cooling type evaporator, cool air cooled in space spaced from a storage room moves to the storage room by a fan. The indirect cooling type evaporator has excellent heat exchange efficiency and can reduce the generation of frost around the evaporator since it can be entirely used. Comparing the indirect cooling type evaporator to the direct cooling type evaporator, the indirect cooling type evaporator requires a fan to circulate cool air into the storage room, and a defrosting heater to process defrost water that is generated from the evaporator and an evaporator cover.

#### Disclosure of Invention

#### Technical Problem

[6] An aspect of the present disclosure is to provide a refrigerator with an improved structure capable of improving the heat exchange efficiency of an evaporator.

[7] Another aspect of the present disclosure is to provide a refrigerator with an improved structure having advantages of a direct cooling type evaporator and an indirect cooling type evaporator.

### **Solution to Problem**

[8] In accordance with an aspect of the present disclosure, there is provided a refrigerator including: a main body; a storage room formed in the main body, wherein a front part of the storage room is opened; a door configured to open or close the opened front part of the storage room; an evaporator installed in a back part of the storage room; an evaporator cover configured to partition the storage room into a storage area and a cool air generating area in which the evaporator is disposed; a first flow path formed between the evaporator and a back surface of the storage room; and a second flow path formed between the evaporator and the evaporator cover.

[9] The refrigerator may further include a blow fan configured to blow cool air generated from the evaporator and to circulate the cool air in the storage room.

[10] The evaporator cover may include an inlet part formed in a lower part of the evaporator cover, and configured to make air flow into the cool air generating area.

[11] The blow fan may face the inlet part in the cool air generating area.

[12] The inlet part may be formed at a location that is lower than a lower end of the evaporator, in the evaporator cover.

[13] The blow fan may be installed below the evaporator to blow air upward through the first flow path and the second flow path in the cool air generating area.

[14] The evaporator cover may further include a first outlet part formed in a upper part of the evaporator cover, and configured to move cool air to the storage room.

[15] The first outlet part may be formed at a location that is higher than an upper end of the evaporator, in the evaporator cover.

[16] A part of a lower part of the evaporator cover may be bent forward to form space in which the blow fan is installed in the cool air generating area.

[17] The evaporator cover may further include a second outlet part formed between the first outlet part and the inlet part.

[18] The blow fan may face a first outlet part formed in a upper part of the evaporator cover, in the cool air generating area.

[19] In accordance with another aspect of the present disclosure, there is provided a refrigerator including: a main body; a storage room formed in the main body, wherein a front part of the storage room is opened; a door configured to open or close the opened front part of the storage room; an evaporator spaced forward from a back surface of the

storage room; an evaporator cover spaced forward from the evaporator; and a blow fan configured to blow cool air generated from front and rear parts of the evaporator, and to move the cool air upward.

[20] The evaporator cover may include an inlet part formed in a lower part of the evaporator cover, and an outlet part formed in an upper part of the evaporator cover, and the evaporator cover may be configured to partition the storage room into a storage area and a cool air generating area in which the evaporator is installed.

[21] The blow fan may face the inlet part in the cool air generating area.

[22] The inlet part may be formed at a location that is lower than a lower end of the evaporator, in the evaporator cover.

[23] The outlet part may include a first outlet part formed at a location that is higher than an upper end of the evaporator.

[24] The outlet part may further include a second outlet part formed between the first outlet part and the inlet part.

[25] In accordance with still another aspect of the present disclosure, there is provided a refrigerator including: a main body; a storage room formed in the main body, wherein a front part of the storage room is opened; a door configured to open or close the opened front part of the storage room; an evaporator spaced forward from a back surface of the storage room; an evaporator cover spaced forward from the evaporator; a flow path through which cool air generated from front and rear parts of the evaporator passes; and a blow fan configured to blow the cool air and to move the cool air upward through the flow path.

[26] The flow path may include: a first flow path formed between the evaporator and a back surface of the storage room; and a second flow path formed between the evaporator and the evaporator cover.

[27] The evaporator cover may include an inlet part formed below the evaporator, and the blow fan may face the inlet part behind the evaporator cover.

[28] The evaporator cover may further include an outlet part formed above the evaporator.

### **Advantageous Effects of Invention**

[29] The present disclosure has the following effects.

[30] According to the technical ideas of the present disclosure, it is possible to improve the cooling efficiency of a refrigerator.

[31] More specifically, by providing an evaporator having advantages of a direct cooling type evaporator and an indirect cooling type evaporator, it is possible to improve heat exchange efficiency, and to improve cooling efficiency due to efficient use of the entire evaporator.

### **Brief Description of Drawings**

- [32] FIG. 1 is a perspective view showing an external appearance of a refrigerator according to an embodiment of the present disclosure;
- [33] FIG. 2 is a cross-sectional view of the refrigerator including a cool air generator according to an embodiment of the present disclosure, cut along a line A-A' of FIG. 1;
- [34] FIG. 3 is a cross-sectional view showing a cool air generator installed in a first storage room, cut along a line B-B' of FIG. 1;
- [35] FIG. 4 is an exploded perspective view showing a coupling relationship between an evaporator, an evaporator cover, a blow fan unit, and a defrost water collecting member, which are installed inside a first storage room, in the cool air generator of FIG. 2;
- [36] FIG. 5 is an exploded perspective view showing the evaporator, the evaporator cover, the blow fan unit, and the defrost water collecting member of FIG. 4, when seen from behind;
- [37] FIG. 6 is an exploded perspective view showing a coupling relationship between the blow fan unit and the defrost water collecting member of FIG. 4;
- [38] FIG. 7 is a block diagram for describing a cooling cycle of a cool air generator, according to an embodiment of the present disclosure;
- [39] FIG. 8 is a block diagram for describing a cooling cycle of a cool air generator, according to another embodiment of the present disclosure;
- [40] FIG. 9 is a cross-sectional view briefly showing a configuration of a refrigerator including a modified example of the cool air generator of FIG. 2;
- [41] FIG. 10 is a cross-sectional view briefly showing a configuration of a refrigerator including another embodiment of the cool air generator of FIG. 2;
- [42] FIG. 11 is a cross-sectional view briefly showing a configuration of a refrigerator including a modified example of the cool air generator of FIG. 10; and
- [43] FIGS. 12 to 14 briefly show configurations of refrigerators which are different from the refrigerator of FIG. 2 and to which a cool air generator according to an embodiment of the present disclosure is applied.

### **Best Mode for Carrying out the Invention**

- [44] Hereinafter, embodiments of the present disclosure will be described in detail with reference to the accompanying drawings.
- [45] FIG. 1 is a perspective view showing an external appearance of a refrigerator according to an embodiment of the present disclosure, and FIG. 2 is a cross-sectional view of the refrigerator including a cool air generator according to an embodiment of the present disclosure, cut along a line A-A' of FIG. 1.
- [46] Referring to FIGS. 1 and 2, a refrigerator 1 may include a main body 10, a storage room 20, and a door 30.

- [47] The main body 10 may include an external body 11 and an internal body 13. The external body 11 may form an external appearance of the main body 10. The external body 11 may be made of a metal material having excellent durability and a sense of beauty.
- [48] The internal body 13 may be located in the inside of the external body 11. The internal body 13 may form an external appearance of the storage room 20. The internal body 13 may be made of a plastic material, and injection-molded into one body. Between the internal body 13 and the external body 11, an insulator 19 may be foamed to prevent cool air from escaping from the storage room 20.
- [49] The storage room 20 may have an opened front part to allow a user to put/take food in/out. According to an example, the storage room 20 may be partitioned into a plurality of storage rooms by at least one partition wall 17.
- [50] The storage room 20 may include a first storage room 21 and a second storage room 23. The first storage room 21 and the second storage room 23 may be partitioned by the partition wall 17. As shown in FIG. 1, the first storage room 21 may be located above the partition wall 17, and the second storage room 23 may be located below the partition wall 17.
- [51] The storage room 20 may include a refrigerating compartment and a freezing compartment. According to the kinds of refrigerators, the first storage room 21 may be provided as a refrigerating compartment, and the second storage room 32 may be provided as a freezing compartment. The refrigerator 1 according to an embodiment of the present disclosure may be a Bottom Mounted Freezer (BMF) type refrigerator in which the first storage room 21 provided as a refrigerating compartment is located above the second storage room 23 provided as a freezing compartment. The freezing compartment may be maintained at about -20°C, and the refrigerating compartment may be maintained at about 3°C. The freezing compartment and the refrigerating compartment may be insulated by the partition wall 17.
- [52] The storage room 20 may include a plurality of shelves 25 therein. The shelves 25 may be provided to support food, etc. stored in the storage room 20. A plurality of shelves 35 may be provided in each of the first and second storage rooms 21 and 23. The shelves 25 may be detachably arranged inside the storage room 20.
- [53] As shown in FIG. 2, in the storage room 20, a storage container 27 may be disposed. The storage container 27 may be provided in the shape of a box. The storage container 27 may form closed space to store food therein.
- [54] The storage room 20 may be opened or closed by the door 30. The door 30 may be rotatably coupled with the main body 10 to open or close the opened front part of the storage room 20. The first storage room 21 and the second storage room 23 may be opened and closed by a first door 31 and a second door 33 rotatably coupled with the

main body 10.

- [55] In the rear part of the door 30, a door guide 35 in which food, etc. can be accommodated may be provided. There may be provided a plurality of door guides 35.
- [56] The refrigerator 1 may further include a machine room 40. The machine room 40 may be disposed in the lower part of the main body 10. More specifically, the machine room 40 may be disposed in the back part of the main body 10, and provide space in which some components of a cool air generator 50 are installed.
- [57] Hereinafter, the cool air generator 50 according to an embodiment of the present disclosure will be described in detail.
- [58] FIG. 3 is a cross-sectional view showing the cool air generator 50 installed in the first storage room 21, cut along a line B-B' of FIG. 1, FIG. 4 is an exploded perspective view showing a coupling relationship between an evaporator, an evaporator cover, a blow fan unit, and a defrost water collecting member, which are installed inside the first storage room 21, in the cool air generator 50 of FIG. 2, FIG. 5 is an exploded perspective view showing the evaporator, the evaporator cover, the blow fan unit, and the defrost water collecting member of FIG. 4, when seen from behind, FIG. 6 is an exploded perspective view showing a coupling relationship between the blow fan unit and the defrost water collecting member of FIG. 4, and FIG. 7 is a block diagram for describing a cooling cycle of the cool air generator 50, according to an embodiment of the present disclosure.
- [59] Referring to FIGS. 2 to 7, the cool air generator 50 may include a compressor 57, a condenser 58, expansion valves 59 and 69, and evaporators 51 and 61. More specifically, in the cool air generator 50, a cooling cycle including the compressor 57, the condenser 58, a flow control valve 56, a first expansion valve 59, a first evaporator 51, a second expansion valve 69, and a second evaporator 61 may be provided. Refrigerant may circulate along the compressor 57, the condenser 58, the expansion valves 59 and 69, and the evaporators 51 and 61 to be compressed, condensed, expanded, and evaporated, which causes heat exchange to generate cool air in the storage room 20.
- [60] According to an embodiment of the present disclosure, the first expansion valve 59 and the first evaporator 51 may be installed in the first storage room 21, and the second expansion valve 69 and the second evaporator 61 may be installed in the second storage room 23. As such, separate expansion valves and separate evaporators may be respectively disposed in the first storage room 21 and the second storage room 23 to generate cool air independently in the first and second storage rooms 21 and 23.
- [61] The refrigerant may be compressed at high temperature and high pressure by the compressor 57, and then move to the condenser 58. The high-temperature, high-pressure refrigerant may be condensed to a liquid state by the condenser 58. The re-

refrigerant in the liquid state may move from the flow control valve 56 to the first evaporator 51 or the second evaporator 61. As shown in FIG. 7, the first evaporator 51 may be connected in parallel to the second evaporator 61. The pressure and temperature of the condensed refrigerant in the liquid state may be lowered by the expansion valve 59 or 69. Each of the expansion valves 59 and 69 may be a capillary tube. The low-temperature, low-pressure refrigerant passed through the expansion valve 59 or 69 may take away heat from surrounding air to be evaporated so as to exchange heat with the surrounding air. Thereby, air around the evaporator 51 or 61 may be cooled to generate cool air. The completely evaporated refrigerant may be again supplied to the compressor 57 so that a cooling cycle is circulated. The cooling cycle may be circulated to continuously generate cool air in the storage rooms 21 and 23.

[62] FIG. 8 is a block diagram for describing a cooling cycle of the cool air generator 50', according to another embodiment of the present disclosure.

[63] As shown in FIG. 8, in the cool air generator 50', the first evaporator 51' may be connected in series to the second evaporator 61'. The compressor 57', the condenser 58', the first expansion valve 59', the first evaporator 51', the second expansion valve 69', and the second evaporator 61' may be connected in this order. Also, a flow diverter valve 56' may be provided between the condenser 58' and the first evaporator 51'. The flow diverter valve 56' may divert a flow path so that refrigerant condensed by the condenser 58' moves to the first evaporator 51' through the first expansion valve 59' or to the second evaporator 61' through the second expansion valve 69'.

[64] Referring again to FIGS. 2 to 7, the compressor 57 and the condenser 58 may be installed in the machine room 40. The compressor 57 and the condenser 58 may be connected to move refrigerant to the first evaporator 51 and the second evaporator 61.

[65] The first evaporator 51 and the second evaporator 61 respectively installed in the first storage room 21 and the second storage room 23 may have different configurations. The first and second evaporators 51 and 61 will be described in detail, later.

[66] The cool air generator 50 may further include a first evaporator cover 52. The first evaporator cover 52 may be installed in the first storage room 21, together with the first evaporator 51.

[67] The first evaporator 51 may be disposed in the back part of the first storage room 21. The first evaporator 51 may be spaced forward from the back surface of the first storage room 21. More specifically, the first evaporator 51 may be spaced a first distance  $d_1$  from the back surface of the first storage room 21, as shown in FIG. 3. The first distance  $d_1$  may range from 3mm to 11.5mm. More preferably, the first distance  $d_1$  may range from 7.65mm to 9.4mm in consideration of movement of the first evaporator 51. The first evaporator 51 may be a plate evaporator of roll bond type, as

shown in FIGS. 5 and 6.

- [68] The first evaporator 51 may be screw-coupled with the back surface of the first storage room 21 to be fixedly installed in the first storage room 21. The first evaporator 51 may be screw-coupled with the back surface of the first storage room 71 by a plurality of screws 51b arranged at regular intervals. For example, the first evaporator 51 may be coupled with and fixed on the back surface of the first storage room 21 in the state that the plurality of screws 51b are respectively inserted into a plurality of grommets 51a. The grommets 51a may act to prevent noise from being generated between the screws 51b and the first evaporator 51 due to movement of the first evaporator 51. The grommets 51a may be made of an elastic material. The number of the grommets 51a may be equal to the number of the screws 51b for screw-coupling.
- [69] The first evaporator 51 may further include a buffer member 51c. The buffer member 51c may be coupled with the first evaporator 51 and the first evaporator cover 52 so as to reduce noise due to movement of the first evaporator 51. The buffer member 51c may be made of an elastic material.
- [70] The first evaporator cover 52 may be spaced forward from the first evaporator 51. The first evaporator cover 52 may be spaced a second distance  $d_2$  from the first evaporator 51, as shown in FIG. 3. The second distance  $d_2$  may range from 3mm to 11.5mm. More preferably, the second distance  $d_2$  may range from 7.65mm to 9.4mm in consideration of movement of the first evaporator 51.
- [71] In the rear part of the first evaporator cover 52, a spacing part 52g extending backward may be formed, as shown in FIG. 5. The spacing part 52g may be provided to maintain the first evaporator cover 52 spaced a predetermined distance forward from the rear surface of the first storage room 21 and the first evaporator 51. Also, a plurality of coupling members 52h may be formed on the spacing part 52g. The coupling members 52h may enable the spacing part 52g to be coupled with the back surface of the first storage room 21.
- [72] The first evaporator cover 52 may partition the first storage room 21 into a cool air generating area 21a and a storage area 21b (see FIG. 2). The cool air generating area 21a may correspond to space formed behind the evaporator cover 52 in the storage room 20. In the cool air generating area 21a, the evaporator 51 may be disposed, and heat exchange may occur by the evaporator 51 to generate cool air.
- [73] The storage area 21b may correspond to space formed in front of the evaporator cover 52 in the storage room 20. In the storage area 21b, the shelves 25 and the storage container 27 may be arranged. Cool air generated in the cool air generating area 21a may move to the storage area 21b to adjust the internal temperature of the storage area 21b.
- [74] As shown in FIG. 4, the lower part of the first evaporator cover 52 may be bent

forward. The first evaporator cover 52 may include a first plate 52a, a second plate 52b, and a third plate 52c.

- [75] The first plate 52a may extend vertically, and be in the shape of a flat plate. The first plate 52a may be attached on the storage room 20 in parallel to the back surface of the storage room 20.
- [76] The second plate 52b may be bent forward and extend from the lower end of the first plate 52a. The second plate 52b may connect the first plate 52a to the third plate 52c. The second plate 52b may be configured to locate the third plate 52c more forward than the first plate 52a.
- [77] The third plate 52c may extend downward from the lower end of the second plate 52b. The third plate 52c may be parallel to the first plate 52a. The third plate 52c may be connected to the second plate 52b bent forward and extending, and located more forward than the first plate 52a. The second plate 52b and the third plate 52c may provide space in which a blow fan unit 55 which will be described later can be installed, in the cool air generating area 21a.
- [78] The first evaporator cover 52 may include a first outlet part 52d. The first outlet part 52d may be formed in the upper part of the first evaporator cover 52. The first outlet part 52d may be located to correspond to the upper part of the first evaporator 51. The first outlet part 52d may function as a passage through which air including cool air in the first storage room 21 passes into or out of the inside of the first evaporator cover 52. The first outlet part 52d may function as a passage connecting the cool air generating area 21a to the storage area 21b. The first outlet part 52d may be in the shape of at least one slit hole formed in the upper part of the first evaporator cover 52. The first outlet part 52d may include one or more slit holes extending horizontally at the same height in the upper part of the first evaporator cover 52.
- [79] The first evaporator cover 52 may include a second outlet part 52e. The second outlet part 52e may be formed in the center area of the first plate 52a. The second outlet part 52e may be formed below the first outlet part 52d. The second outlet part 52e may also be in the shape of at least one slit hole. There may be formed a plurality of second outlet parts 52e at different heights.
- [80] The first evaporator cover 52 may further include an inlet part 52f. The inlet part 52f may be in the shape of a plurality of slit holes formed in the lower part of the first evaporator cover 52. The inlet part 52f may be formed in the third plate 52c. The inlet part 52f may face the blow fan unit 55 which will be described later.
- [81] The first evaporator cover 52 may be coupled with insulation members 52i and 52j at its both sides. In the insulation members 52i and 52j, a plurality of holes may be formed to correspond to the first outlet part 52d and the second outlet part 52e of the first plate 52a. The insulation members 52i and 52j may be coupled with the first

- evaporator cover 52 to prevent dew formation on the first evaporator cover 52.
- [82] As shown in FIGS. 2 and 3, the cool air generator 50 may further include a first flow path 53a. The first flow path 53a may correspond to space between the first evaporator 51 and the back surface of the storage room 20. The first flow path 53a may be spacing from the back surface of the first evaporator 51, and in the first flow path 53a, heat exchange with the first evaporator 51 may occur to generate cool air. Also, the first flow path 53a may function as a passage through which cool air generated behind the first evaporator 51 moves to the storage area 21b.
- [83] The first flow path 53a may be formed with a first distance  $d_1$  that is a distance between the first evaporator 51 and the back surface of the storage room 20. The first distance  $d_1$  may range from 3mm to 11.5mm. More preferably, the first distance  $d_1$  may range from 7.65mm to 9.4mm in consideration of movement of the first evaporator 51.
- [84] The cool air generator 50 may further include a second flow path 53b. The second flow path 53b may correspond to space between the first evaporator 51 and the evaporator cover 52. The second flow path 53b may be spacing from the first evaporator 51. In the second flow path 53b, heat exchange with the first evaporator 51 may occur to generate cool air. Also, the second flow path 53b may function as a passage through which cool air generated forward from the first evaporator 51 moves to the storage area 21b.
- [85] The second flow path 53b may be formed with a second distance  $d_2$  which is a distance between the first evaporator 51 and the evaporator cover 52. The second distance  $d_2$  may range from 3mm to 11.5mm. More preferably, the second distance  $d_2$  may range from 7.65mm to 9.4mm in consideration of movement of the first evaporator 51.
- [86] As such, through the first flow path 53a and the second flow path 53b, both the front and rear parts of the first evaporator 51 may be used to exchange heat and generate cool air. As a result, it is possible to improve the heat exchange efficiency of the first evaporator 51.
- [87] As shown in FIGS. 4 to 6, the cool air generator 50 may further include the blow fan unit 55. The blow fan unit 55 may move cool air generated in the cool air generating area 21a to the storage area 21b. Thereby, the blow fan unit 55 may circulate cool air in the first storage room 21.
- [88] For example, the blow fan unit 55 may be disposed below the first evaporator 51. The blow fan unit 55 may be disposed behind the first evaporator cover 52 such that the blow fan unit 55 faces the inlet part 52f formed in the first evaporator cover 52.
- [89] The blow fan unit 55 may include a first blow fan 55a, a blow fan resting member 55b, a front fan cover 55c, and a rear fan cover 55d. The first blow fan 55a may be

coupled with the blow fan resting member 55b, and installed in internal space formed by the front fan cover 55c and the rear fan cover 55d. The front fan cover 55c may include a protrusion part 55ca that protrudes forward and forms space in which the first blow fan 55a is installed, and an inlet hole 55cb facing the first blow fan 55a and functioning as a passage through which air in the storage area 21b enters the inside of the blow fan unit 55.

- [90] The first blow fan 55a may be a centrifugal fan. The first blow fan 55a may be located to face the inlet hole 55cb and the inlet part 2f so that air in the storage area 21b flows to the center area of the first blow fan 55a. Accordingly, the first blow fan 55a may blow air in the storage area 21b so that the air passes through the inlet part 52f and the inlet hole 55cb and moves to the inside of the blow fan unit 55.
- [91] As shown in FIG. 5, the blow fan unit 55 may be coupled with the lower part of the first evaporator cover 52. In the blow fan unit 55, a communication area 55e may be formed so that air flows to the space between the first evaporator cover 52 and the back surface of the first storage room 21. The communication area 55e may be provided as space formed between the blow fan unit 55 and the first evaporator cover 52.
- [92] When the first blow fan 55a rotates, air in the storage area 21b may flow to the inside of the blow fan unit 55, and then flow to the first flow path 53a and the second flow path 53b through the communication area 55e. The first blow fan 55a may rotate to generate a suction force to thereby make air in the storage area 21b flow to the inside of the blow fan unit 55. Also, the first blow fan 55a may rotate to make the air entered the inside of the low fan unit 55 move along the inside of the blow fan unit 55 to flow to the first flow path 53a and the second flow path 53b through the communication area 55e. The air entered the first flow path 53a and the second flow path 53b may move upward along the first flow path 53a and the second flow path 53b, together with cool air generated due to heat exchange with the first evaporator 51. Through the process, air in the cool air generating area 21, the air including cool air, may move to the storage area 21b through the first outlet part 52d and the second outlet part 52e.
- [93] The cool air generator 50 may further include a defrost water collecting member 54. The defrost water collecting member 54 may be coupled with the rear, upper part of the blow fan unit 55, as shown in FIG. 6. As shown in FIG. 2, the defrost water collecting member 54 may be disposed below the first evaporator 51 and the first evaporator cover 52.
- [94] The defrost water collecting member 54 may include a drain hole 54 and inclined parts 54b and 54c extending from both sides of the drain hole 54. The inclined parts 54b and 54c may be inclined down toward the drain hole 54a so as to move defrost water to the drain hole 54a. Collected defrost water may be drained out of the first storage room 21 through the drain hole 54a.

- [95] Referring again to FIG. 2, the cool air generator 50 may further include a second evaporator 61, a second evaporator cover 62, and a second blow fan 85. The second evaporator 61, the second evaporator cover 62, and the second blow fan 85 may be installed in the second storage room 23 to supply cool air to the second storage room 23.
- [96] The second evaporator 61 may be installed behind the second evaporator cover 62 in the second storage room 23. The second evaporator 61 may be a fin tube type evaporator.
- [97] The second evaporator cover 62 may be disposed in front of the second evaporator 61. The second evaporator cover 62 may partition space in which the second evaporator 61 is disposed from space in which food is stored, in the second storage room 23.
- [98] A second blow fan 63 may be disposed above the second evaporator 61. The second blow fan 63 may be installed above the second evaporator cover 62. The second blow fan 63 may move cool air generated by the second evaporator 61 to space in which food is stored. The cool air generated by the second evaporator 61 may be circulated in the second storage room 23 by the second blow fan 63.
- [99] A defrost water collecting member 64 may be installed below the second evaporator 61. The defrost water collecting member 64 may be disposed below the second evaporator 61 and the second evaporator cover 62 to collect defrost water generated in the evaporator 61 and the second evaporator cover 62.
- [100] The cool air generator 50 may further include a defrosting heater 65 below the second evaporator 61. The defrosting heater 65 may remove frost formed on the second evaporator 61 and the second evaporator cover 62.
- [101] As described above, the cool air generator 50 according to an embodiment of the present disclosure may provide the first and second evaporators 51 and 61 in the first and second storage rooms 21 and 23, respectively, to generate cool air.
- [102] The first storage room 21 may receive cool air from the first flow path 53a formed behind the first evaporator 51 and the second flow path 53b formed in front of the first evaporator 51. Due to a suction force generated by the blow fan unit 55, air may flow from the storage area 21b to the cool air generating area 21a through the inlet part 52f of the first evaporator cover 52.
- [103] Air entered the cool air generating area 21a may rise along the first flow path 53a and the second flow path 53b to exchange heat with the first evaporator 51. Accordingly, cool air generated from the first evaporator 51 may rise along the first flow path 53a and the second flow path 53b. Air including cool air moved to the upper part of the cool air generating area 21a may move to the storage area 21b through the first outlet part 52d. A part of the cool air moved along the second flow path 53b may move to the

storage area 21b through the second outlet part 52e. Through the process, cool air may circulate in the first storage room 21.

[104] Since the first evaporator 51 is a plate evaporator of roll bond type, and the first evaporator 51 entirely exchanges heat in the first flow path 53a and the second flow path 53b, the heat exchange efficiency of the first evaporator 51 may be improved.

[105] In the second storage room 23, the defrosting heater 65 may be used to remove frost formed on the second evaporator 61 and the second evaporator cover 62. In contrast, in the first storage room 21, the blow fan unit 55 may be used to remove frost formed on the first evaporator 51 and the first evaporator cover 52, without using any defrosting heater.

[106] More specifically, while the compressor 57 is driven, the blow fan unit 55 may operate to circulate cool air generated in the first evaporator 51 in the first storage room 21. Although the compressor 27 is no longer driven, the blow fan unit 55 may continue to operate to circulate air in the cool air generating area 21a through the first flow path 53a and the second flow path 53b. The blow fan unit 55 may operate for a predetermined time period even after driving of the compressor 57 stops, to circulate air in the cool air generating area 21a so as to remove frost formed on the first evaporator 51 and the first evaporator cover 52. For example, the blow fan unit 55 may be driven for at least 10 minutes even after driving of the compressor 57 stops. A time period for which the blow fan unit 55 is driven after driving of the compressor 57 stops may be set depending on an environmental condition of the first storage room 21, such as the temperature, size, etc. of the first storage room 21. Through the process, frost formed on the first evaporator 51 and the first evaporator cover 52 may be removed.

[107] FIG. 9 is a cross-sectional view briefly showing a configuration of a refrigerator including a modified example of the cool air generator 50 of FIG. 2.

[108] Referring to FIG. 9, a cool air generator 70 is different from the cool air generator 50 of FIG. 2 in view of the location of a first blow fan 75, and the remaining components of the cool air generator 70 are the same as the corresponding ones of the cool air generator 50 of FIG. 2. Hereinafter, differences between the cool air generator 70 of FIG. 9 and the cool air generator 50 of FIG. 2 will be described, and descriptions about the same components will be omitted.

[109] The first blow fan 75 may be disposed in the upper part of the cool air generating area 21a. The first blow fan 75 may be installed above a first evaporator 71. The first blow fan 75 may blow air in the cool air generating area 21a above the first evaporator 71 to move the air to the storage area 21b through an outlet part 72a of the first evaporator cover 72. The first blow fan 75 may move air in the upper part of the cool air generating area 21a to the storage area 21b so that air in the lower part of the cool air generating area 21a moves upward through the first and second flow paths 73a and

73b. Accordingly, air in the storage area 21b may enter the lower part of the cool air generating area 21a through an inlet part 72b.

[110] As such, in the cool air generator 70, the first blow fan 75 may be installed above the first evaporator 71 so that air including cool air generated in the cool air generating area 21a can move to the storage area 21b. Also, the cool air generator 70 may be configured such that air can circulate between the cool air generating area 21a and the storage area 21b in the storage room 21.

[111] The present disclosure discloses a cool air generator according to another embodiment. Hereinafter, a cool air generator according to another embodiment of the present disclosure will be described.

[112] FIG. 10 is a cross-sectional view briefly showing a configuration of a refrigerator including another embodiment of the cool air generator 50 of FIG. 2.

[113] Referring to FIG. 10, a cool air generator 80 may include a first evaporator 81, a first evaporator cover 82, a first flow path 83a, a second flow path 83b, and a first blow fan 85. The cool air generator 80 is different from the cool air generator 50 of FIG. 2 in view of the configurations of the first evaporator 82 and the first blow fan 85, and the remaining components of the cool air generator 80 are the same as the corresponding ones of the cool air generator 50 of FIG. 2. Hereinafter, differences between the cool air generator 80 of FIG. 10 and the cool air generator 50 of FIG. 2 will be described, and descriptions about the same components will be omitted.

[114] The first evaporator cover 82 may be spaced forward from the first evaporator 81. Both lateral ends of the first evaporator cover 82 may be attached on both lateral surfaces of the first storage room 21. Thereby, the first evaporator cover 82 may be spaced forward from the first evaporator 81 and fixed.

[115] The first evaporator cover 82 may partition the first storage room 21 into the cool air generating area 21a and the storage area 21b. The cool air generating area 21a may correspond to space behind the first evaporator cover 82 in the first storage room 21. In the cool air generating area 21a, the first evaporator 81 may be disposed, and heat exchange may occur by the first evaporator 81 to generate cool air.

[116] The storage area 21b may correspond to space formed in front of the first evaporator cover 82 in the first storage room 21. Cool air generated in the cool air generating area 21a may move to the storage area 21b to adjust the internal temperature of the storage area 21b.

[117] The first evaporator cover 82 may include an outlet part 82a and an inlet part 82b. The outlet part 82a may be formed in the upper part of the first evaporator cover 82. The outlet part 82a may function as a passage through which air including cool air generated in the cool air generating area 21a passes, in the first storage room 21. In other words, the outlet part 82a may function as a passage connecting the cool air

generating area 21a to the storage area 21b.

- [118] The inlet part 82b may be formed in the lower part of the first evaporator cover 82. The inlet part 82b may function as a passage through which air in the first storage room 21, the air including cool air generated in the cool air generating area 21a, passes. In other words, the inlet part 82b may function as a passage connecting the cool air generating area 21a to the storage area 21b.
- [119] The first evaporator cover 82 may further include a cool air passing hole 82d. There may be provided a plurality of cool air passing holes 82d. The cool air passing holes 82d may be arranged at regular intervals, as seen from the front part of the first evaporator cover 82. For example, the cool air passing holes 82d may be arranged between the plurality of shelves arranged in the storage room 21, and function as passages through which cool air passes.
- [120] The first evaporator cover 82 may further include a cool air blocking part 82e. The cool air blocking part 82e may be disposed in the lower end of the first evaporator cover 82. The cool air blocking part 82e may extend perpendicularly toward the first evaporator 81 from the lower end of the first evaporator cover 82. The cool air blocking part 82e may block a part of the lower part of the second flow path 83b which will be described later.
- [121] The cool air generator 80 may further include the first flow path 83a. The first flow path 83a may be provided as space between the first evaporator 81 and the back surface of the first storage room 21. In the first flow path 83a which is space spaced from the first evaporator 81, heat exchange with the first evaporator 81 may occur to generate cool air.
- [122] The cool air generator 80 may further include the second flow path 83b. The second flow path 83b may be provided as space between the first evaporator 81 and the first evaporator cover 82. In the second flow path 83b which is space spaced from the first evaporator 81, heat exchange with the first evaporator 81 may occur to generate cool air. As such, through the first flow path 83a and the second flow path 83b, both the front and rear parts of the first evaporator 81 may be used to exchange heat and generate cool air. As a result, it is possible to improve the heat exchange efficiency of the first evaporator 81.
- [123] The first blow fan 85 may be disposed in the upper part of the cool air generating area 21a. The first blow fan 85 may be fixed at the upper part of the first evaporator 81. The first blow fan 85 may move air including cool air in the cool air generating area 21a to the storage area 21b. In order to move the air to the storage area 21b, the first blow fan 85 may be configured to blow air toward the first storage room 21.
- [124] For example, the outlet part 82a may be configured to block a part of cool air moving from the first blow fan 85 toward the first storage room 21. The outlet part 82a may

partially overlap with the first blow fan 85, as seen from the front of the storage room 21. For example, the lower end 82c of the outlet part 82a may be at the same height as the center part of the first blow fan 85.

- [125] Accordingly, the first evaporator cover 82 may block a part of air blown forward by the first blow fan 85. The outlet part 82a may move a part of air blown by the first blow fan 85 to the storage area 21b, and the remaining part of the air to the lower part of the second flow path 83b along the first evaporator cover 82.
- [126] In the cool air generator 80, the first flow path 83a and the second flow path 83b may correspond to space formed in front of the first evaporator 81 and space formed behind the first evaporator 81, respectively. In the first flow path 83a corresponding to space formed in front of the first evaporator 81 and the second flow path 83b corresponding to space formed behind the first evaporator 81, heat exchange may occur to generate cool air.
- [127] The cool air generated in the first and second flow paths 83a and 83b may move to the storage area 21b. The cool air generated in the first flow path 83a may move to the storage area 21b through the outlet part 82a by the first blow fan 85. Meanwhile, the cool air generated in the second flow path 83b may move to the storage area 21b through the cool air passing holes 82d. Since a part of air blown by the first blow fan 85 in the upper part of the cool air generating area 21a moves downward along the second flow path 83b, the part of air may move to the storage area 21b through the cool air passing holes 82d, together with cool air generated in the second flow path 83b.
- [128] The cool air blocking part 82e may block cool air generated in the second flow path 83b from moving downward from the second flow path 83b. Thereby, the cool air blocking part 82e may block cool air generated in the second flow path 83b from moving downward from the second flow path 83b without circulating in the first storage room 21.
- [129] Accordingly, the cool air generator 80 can cause cool air generated in the first flow path 83a to indirectly cool the first storage room 21 through the first blow fan 85, and cool air generated in the second flow path 83b to directly cool the first storage room 21 through the cool air passing holes 82d. In this way, it is possible to improve the cooling efficiency of the cool air generator 80.
- [130] FIG. 11 is a cross-sectional view briefly showing a configuration of a refrigerator including a modified example of the cool air generator 80 of FIG. 10.
- [131] Referring to FIG. 11, a cool air generator 90 is different from the cool air generator 80 of FIG. 10 in view of the configuration of a first evaporator cover 82, and the remaining components of the cool air generator 90 are the same as the corresponding ones of the cool air generator 80 of FIG. 10. Hereinafter, differences between the cool

air generator 90 of FIG. 11 and the cool air generator 80 of FIG. 10 will be described, and descriptions about the same components will be omitted.

[132] According to an embodiment, a first evaporator cover 92 may include an outlet part 92a, an inlet part 92b, a cool air passing hole 92d, a cool air blocking part 92e, and an upper cover 92c.

[133] The outlet part 92a may be formed in the upper part of the first evaporator cover 92. The outlet part 92a may function as a passage through which air in the first storage room 21, the air including cool air generated in the cool air generating area 21a, passes. In other words, the outlet part 92a may function as a passage connecting the cool air generating area 21a to the storage area 21b.

[134] The inlet part 92b may function as a passage through which air in the first storage room 21, the air including cool air generated in the cool air generating area 21a, passes. In other words, the inlet part 92b may function as a passage connecting the cool air generating area 21a to the storage area 21b.

[135] There may be provided a plurality of cool air passing holes 92d. The cool air passing holes 92d may be arranged at regular intervals, as seen from the front of the first evaporator cover 92. For example, the cool air passing holes 92d may be arranged between the plurality of shelves 25 arranged in the storage room 21, and function as passages through which cool air passes.

[136] The cool air blocking part 92e may be disposed in the lower end of the first evaporator cover 92. The cool air blocking part 92e may extend perpendicularly toward the first evaporator 91 from the lower end of the first evaporator cover 92. The cool air blocking part 92e may block a part of the lower part of a second flow path 93b which will be described later.

[137] The upper cover 92c may extend perpendicularly toward an evaporator 91 from the upper end of the first evaporator cover 92. The upper cover 92c may block the upper part of the second flow path 93b. Thereby, the upper cover 92c may block air from the first blow fan 95 from entering the second flow path 93b.

[138] Accordingly, cool air generated in the first flow path 93a may indirectly move to the storage area 21b through the first blow fan 95, and cool air generated in the second flow path 93b may move to the storage area 21b through the cool air passing holes 92d. More specifically, the cool air generated in the second flow path 93b may directly move to the storage area 21b only through the cool air passing holes 92d due to the cool air blocking part 92e and the upper cover 92c. As such, since the cool air generator 90 can have advantages of the direct cooling type evaporator and the indirect cooling type evaporator, it is possible to improve the efficiency of the cool air generator 90.

[139] The refrigerator 1 including the cool air generator 50 according to an embodiment of

the present disclosure, as described above, is a Bottom Mounted Freezer (BMF) type refrigerator in which the first storage room 21 provided as a refrigerating compartment is located above the second storage room 23 provided as a freezing compartment. However, the cool air generator 50 may be applied to a Top Mounted Freezer (TMF) type refrigerator, a Side by Side (SBS) type refrigerator, and a French Door Refrigerator (FDR) type refrigerator.

[140] Hereinafter, embodiments in which the cool air generator 50 is applied to a TMF type refrigerator, a SBS type refrigerator, and a FDR type refrigerator will be described.

[141] FIGS. 12 to 14 briefly show configurations of refrigerators which are different from the refrigerator 1 of FIG. 2 and to which a cool air generator according to an embodiment of the present disclosure is applied.

[142] Referring to FIG. 12, a refrigerator 110 including a cool air generator 120 may be a TMF type refrigerator. The TMF type refrigerator 110 may include a first storage room 111 provided at its upper part, and a second storage room 113 provided below the first storage room 111. The first storage room 111 may be provided as a freezing compartment, and the second storage room 113 may be provided as a refrigerating compartment.

[143] The refrigerator 110 of FIG. 12 is different from the refrigerator 1 of FIG. 2 in view of the installation locations of individual components of a cool air generator 120. More specifically, in the cool air generator 120, a first evaporator 121, a first evaporator cover 122, a first flow path 123a, a second flow path 123b, and a first blow fan 125 may be installed in the second storage room 113 provided as a refrigerating compartment, and a second evaporator 127, a second evaporator cover 128, and a second blow fan 129 may be installed in the first storage room 111.

[144] Although the individual components of the cool air generator 120 are installed in different storage rooms compared to the cool air generator 50 of FIG. 2, the cool air generator 120 may have the same configuration as the cool air generator 50 of FIG. 2. Accordingly, descriptions about the same components as those of the cool air generator 50 of FIG. 2 will be omitted.

[145] Referring to FIG. 13, a refrigerator 130 including a cool air generator 140 may be a SBS type refrigerator. The SBS type refrigerator 130 may include a first storage room 131 and a second storage room (not shown), wherein the first storage room 131 and the second storage room may be disposed from side to side. Also, the first storage room 131 may be provided as a refrigerating compartment, and the second storage room may be provided as a freezing compartment.

[146] The cool air generator 140 may have the same configuration as the cool air generator 50 of FIG. 2, although the individual components of the cool air generator 140 are

installed in different storage rooms compared to the cool air generator 50 of FIG. 2. Accordingly, descriptions about the same components as those of the cool air generator 50 of FIG. 2 will be omitted.

- [147] The cool air generator 140 may include a first evaporator 121, a first evaporator cover 122, a first flow path 123a, a second flow path 123b, a first blow fan 125, a second evaporator (not shown), a second evaporator cover (not shown), and a second blow fan (not shown). In the first storage room 131, the first evaporator 121, the first evaporator cover 122, the first flow path 123a, the second flow path 123b, and the first blow fan 125 may be installed. Although not shown in FIG. 13, in the second storage room, the second evaporator, the second evaporator cover, and the second blow fan may be installed.
- [148] Referring to FIG. 14, a refrigerator 150 including a cool air generator 160 may be a FDR type refrigerator. The FDR type refrigerator 160 may include a first storage room 151 provided at its upper part, and a second storage room 153 provided below the first storage room 151, wherein the first storage room 151 may be provided as a refrigerating compartment, and the second storage room 153 may be provided as a freezing compartment. The first storage room 151 may be opened/closed by rotating a side-by-side door 152, and the second storage room 153 may be opened/closed by sliding a sliding door 154 forward/backward.
- [149] The cool air generator 160 may have the same configuration as the cool air generator 50 of FIG. 2, although the individual components of the cool air generator 160 are installed in different storage rooms compared to the cool air generator 50 of FIG. 2. Accordingly, descriptions about the same components as those of the cool air generator 50 of FIG. 2 will be omitted.
- [150] The cool air generator 160 may include a first evaporator 161, a first evaporator cover 162, a first flow path 163a, a second flow path 163b, a first blow fan 165, a second evaporator 167, a second evaporator cover 168, and a second blow fan 169. In the first storage room 131, the first evaporator 161, the first evaporator cover 162, the first flow path 163a, the second flow path 163b, and the first blow fan 165 may be installed. In the second storage room 153, the second evaporator 167, the second evaporator cover 168, and the second blow fan 169 may be installed.
- [151] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the inventions. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

## Claims

- [Claim 1] A refrigerator comprising:  
a main body;  
a storage room formed in the main body, wherein a front part of the storage room is opened;  
a door configured to open or close the opened front part of the storage room;  
an evaporator installed in a back part of the storage room;  
an evaporator cover configured to partition the storage room into a storage area and a cool air generating area in which the evaporator is disposed;  
a first flow path formed between the evaporator and a back surface of the storage room; and  
a second flow path formed between the evaporator and the evaporator cover.
- [Claim 2] The refrigerator according to claim 1, further comprising a blow fan configured to blow cool air generated from the evaporator and to circulate the cool air in the storage room.
- [Claim 3] The refrigerator according to claim 2, wherein the evaporator cover comprises an inlet part formed in a lower part of the evaporator cover, and configured to make air flow into the cool air generating area.
- [Claim 4] The refrigerator according to claim 3, wherein the blow fan faces the inlet part in the cool air generating area.
- [Claim 5] The refrigerator according to claim 3, wherein the inlet part is formed at a location that is lower than a lower end of the evaporator, in the evaporator cover.
- [Claim 6] The refrigerator according to claim 3, wherein the blow fan is installed below the evaporator to blow air upward through the first flow path and the second flow path in the cool air generating area.
- [Claim 7] The refrigerator according to claim 3, wherein the evaporator cover further comprises a first outlet part formed in an upper part of the evaporator cover, and configured to move cool air to the storage room.
- [Claim 8] The refrigerator according to claim 7, wherein the first outlet part is formed at a location that is higher than an upper end of the evaporator, in the evaporator cover.
- [Claim 9] The refrigerator according to claim 7, wherein a part of a lower part of the evaporator cover is bent forward to form space in which the blow

- fan is installed in the cool air generating area.
- [Claim 10] The refrigerator according to claim 7, wherein the evaporator cover further comprises a second outlet part formed between the first outlet part and the inlet part.
- [Claim 11] The refrigerator according to claim 2, wherein the blow fan faces a first outlet part formed in a upper part of the evaporator cover, in the cool air generating area.
- [Claim 12] A refrigerator comprising:  
a main body;  
a storage room formed in the main body, wherein a front part of the storage room is opened;  
a door configured to open or close the opened front part of the storage room;  
an evaporator spaced forward from a back surface of the storage room;  
an evaporator cover spaced forward from the evaporator; and  
a blow fan configured to blow cool air generated from front and rear parts of the evaporator, and to move the cool air upward.
- [Claim 13] The refrigerator according to claim 12, wherein the evaporator cover comprises an inlet part formed in a lower part of the evaporator cover, and an outlet part formed in a upper part of the evaporator cover, and the evaporator cover is configured to partition the storage room into a storage area and a cool air generating area in which the evaporator is installed.
- [Claim 14] The refrigerator according to claim 13, wherein the blow fan faces the inlet part in the cool air generating area.
- [Claim 15] The refrigerator according to claim 13, wherein the inlet part is formed at a location that is lower than a lower end of the evaporator, in the evaporator cover.
- [Claim 16] The refrigerator according to claim 13, wherein the outlet part comprises a first outlet part formed at a location that is higher than an upper end of the evaporator.
- [Claim 17] The refrigerator according to claim 16, wherein the outlet part further comprises a second outlet part formed between the first outlet part and the inlet part.
- [Claim 18] A refrigerator comprising:  
a main body;  
a storage room formed in the main body, wherein a front part of the storage room is opened;

a door configured to open or close the opened front part of the storage room;  
an evaporator spaced forward from a back surface of the storage room;  
an evaporator cover spaced forward from the evaporator;  
a flow path through which cool air generated from front and rear parts of the evaporator passes; and  
a blow fan configured to blow the cool air and to move the cool air upward through the flow path.

[Claim 19]

The refrigerator according to claim 18, wherein the flow path comprises:

a first flow path formed between the evaporator and a back surface of the storage room; and

a second flow path formed between the evaporator and the evaporator cover.

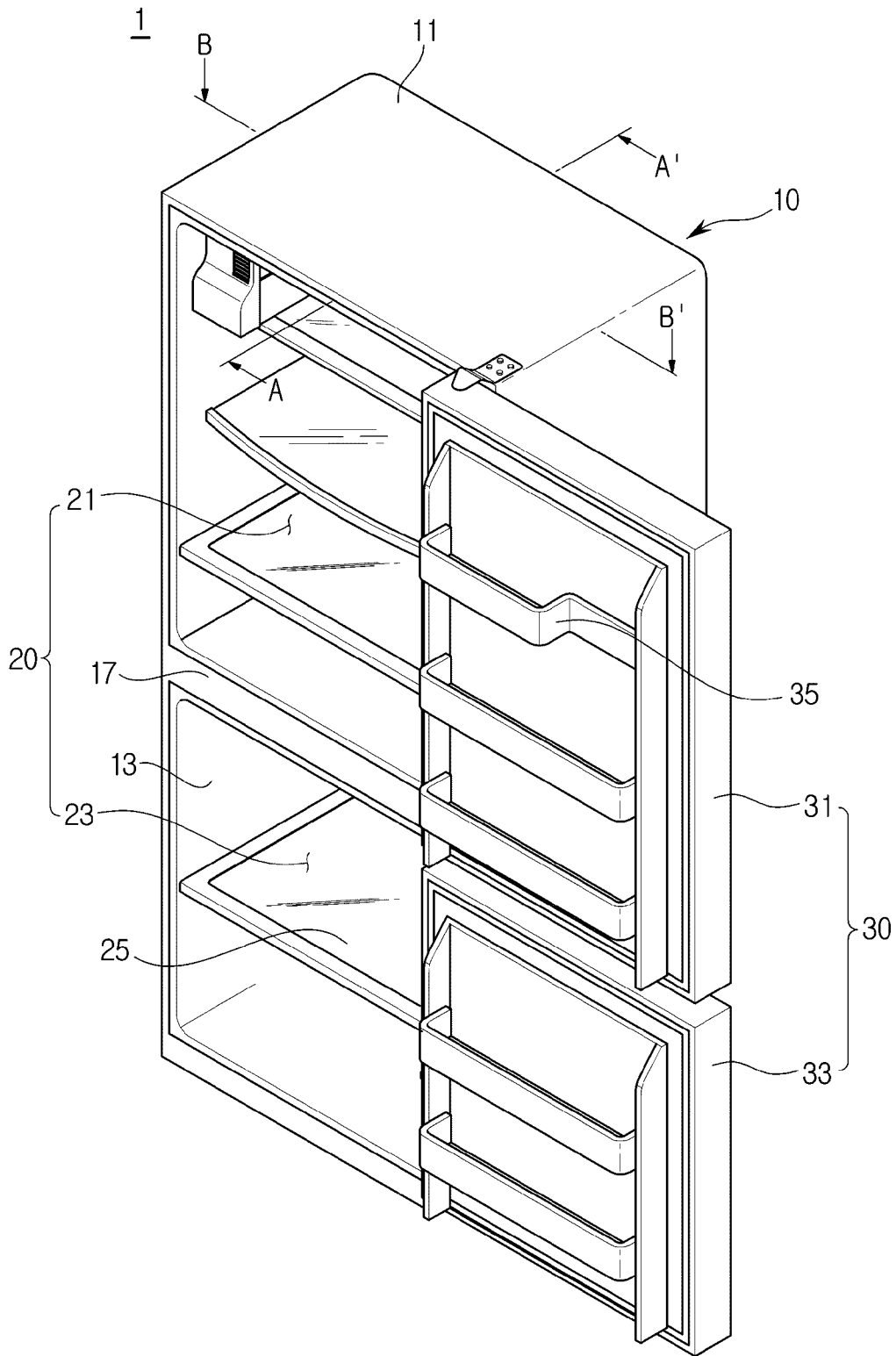
[Claim 20]

The refrigerator according to claim 18, wherein the evaporator cover comprises an inlet part formed below the evaporator, and wherein the blow fan faces the inlet part behind the evaporator cover.

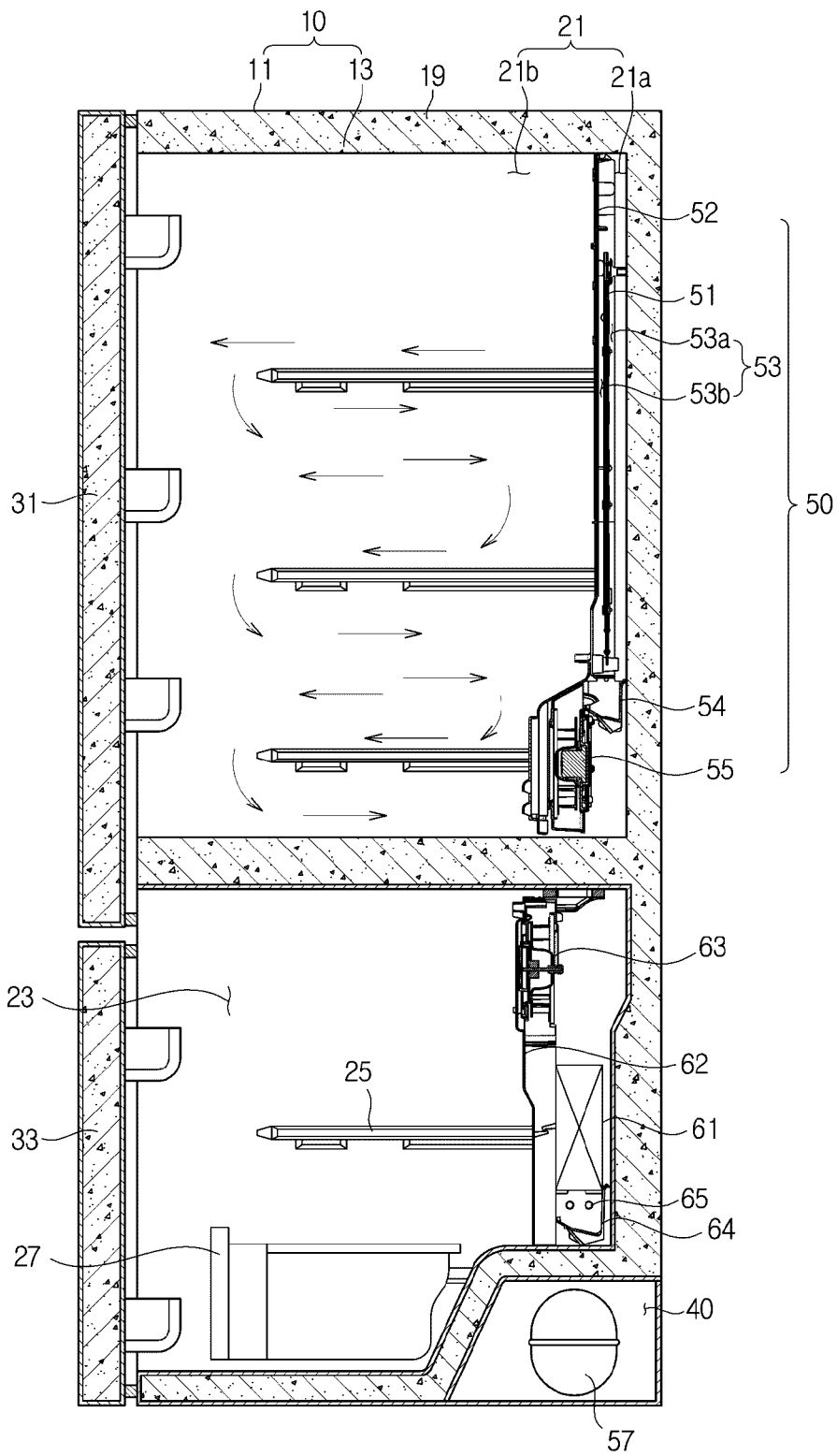
[Claim 21]

The refrigerator according to claim 18, wherein the evaporator cover further comprises an outlet part formed above the evaporator.

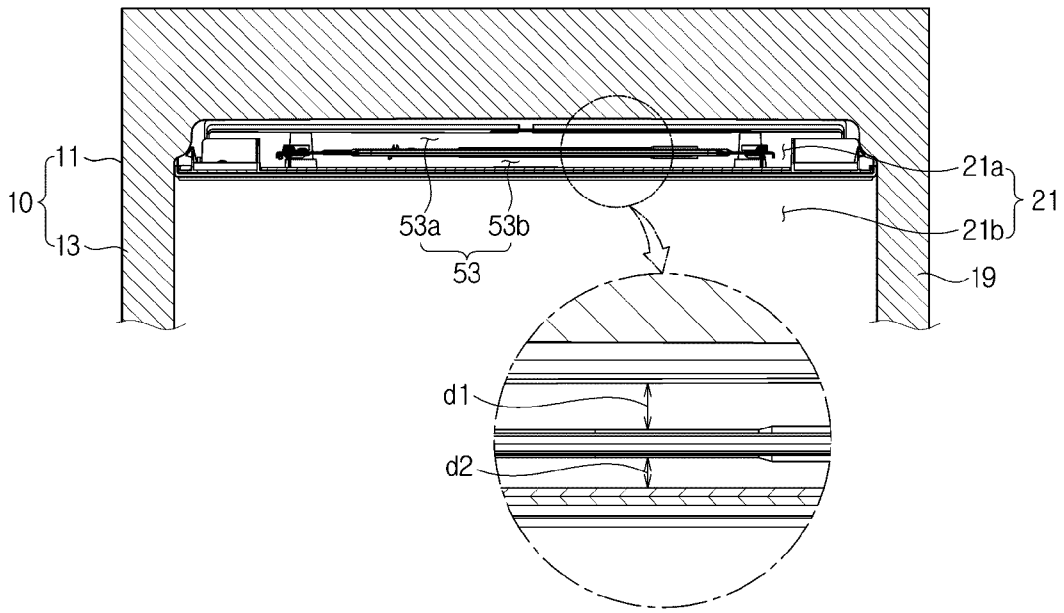
[Fig. 1]



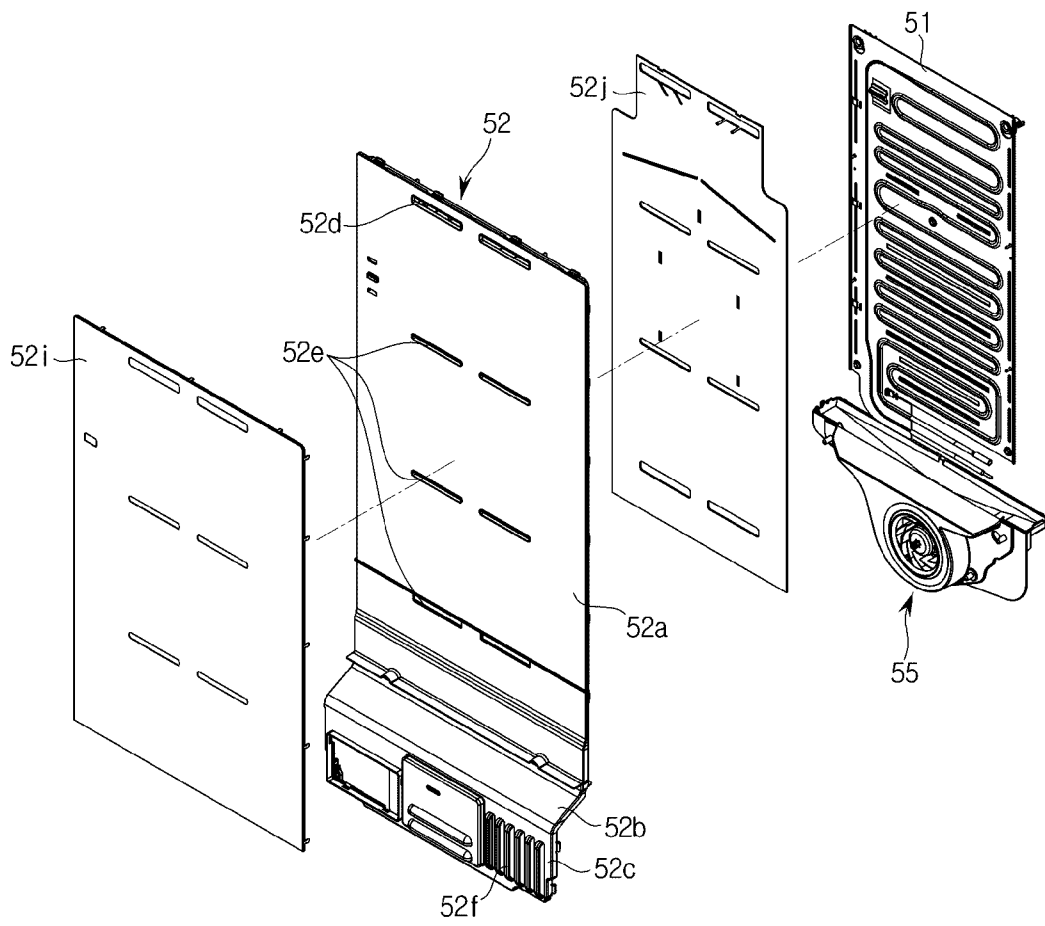
[Fig. 2]



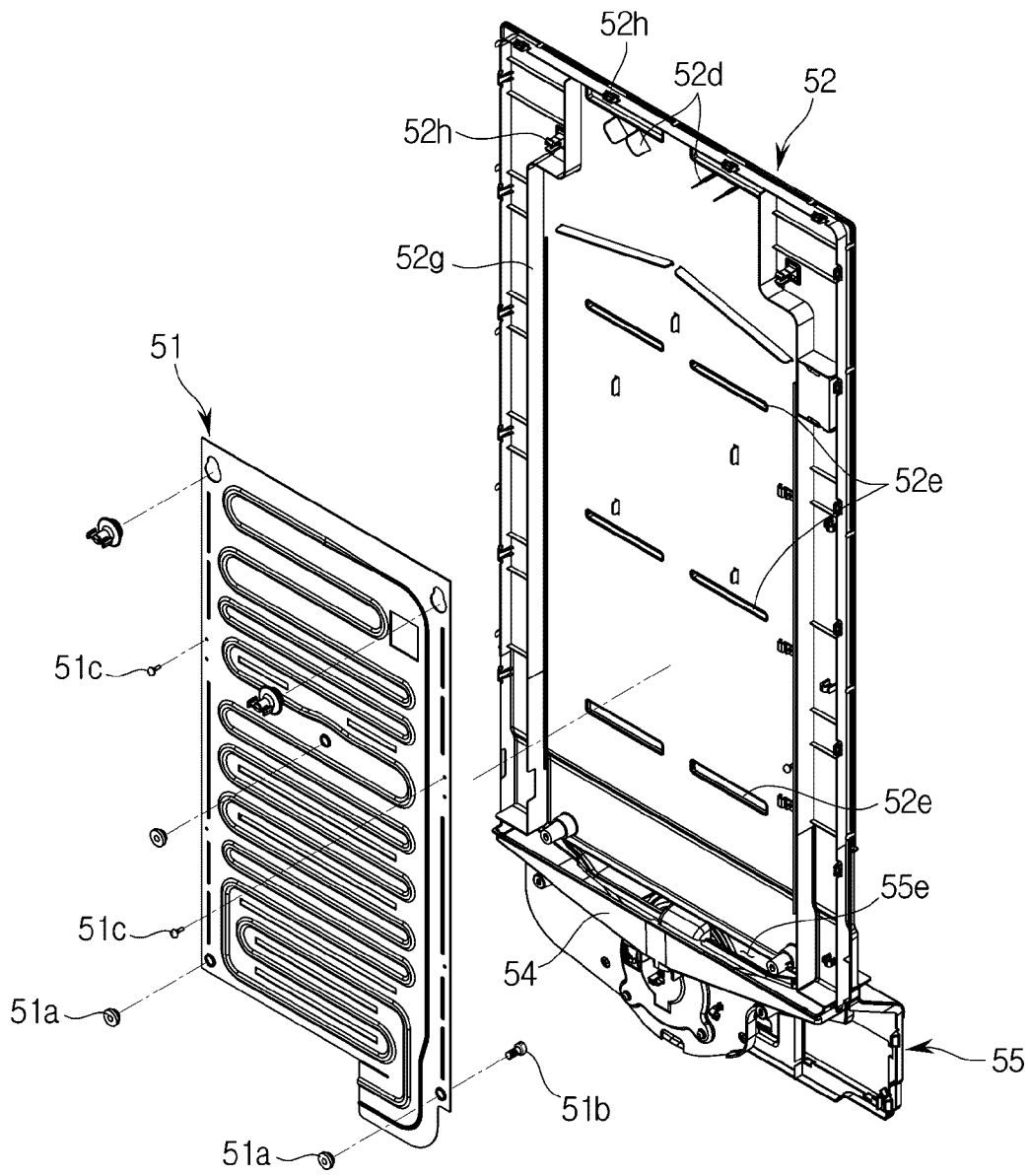
[Fig. 3]



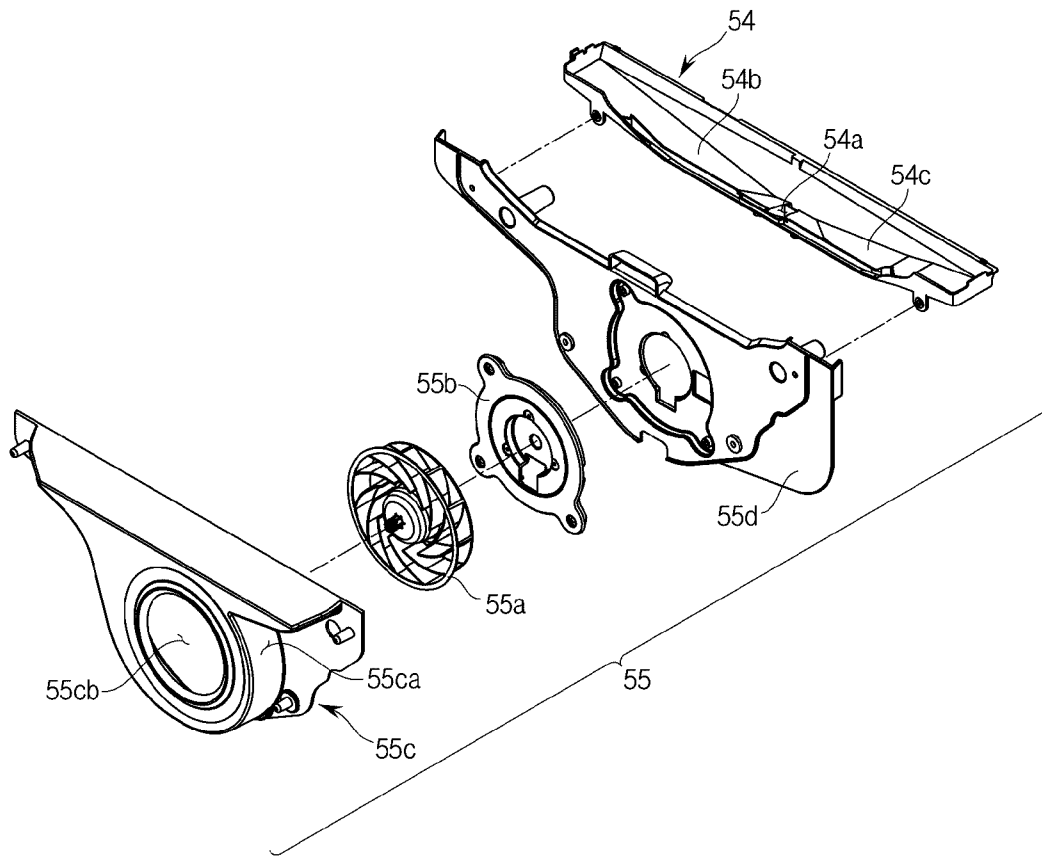
[Fig. 4]



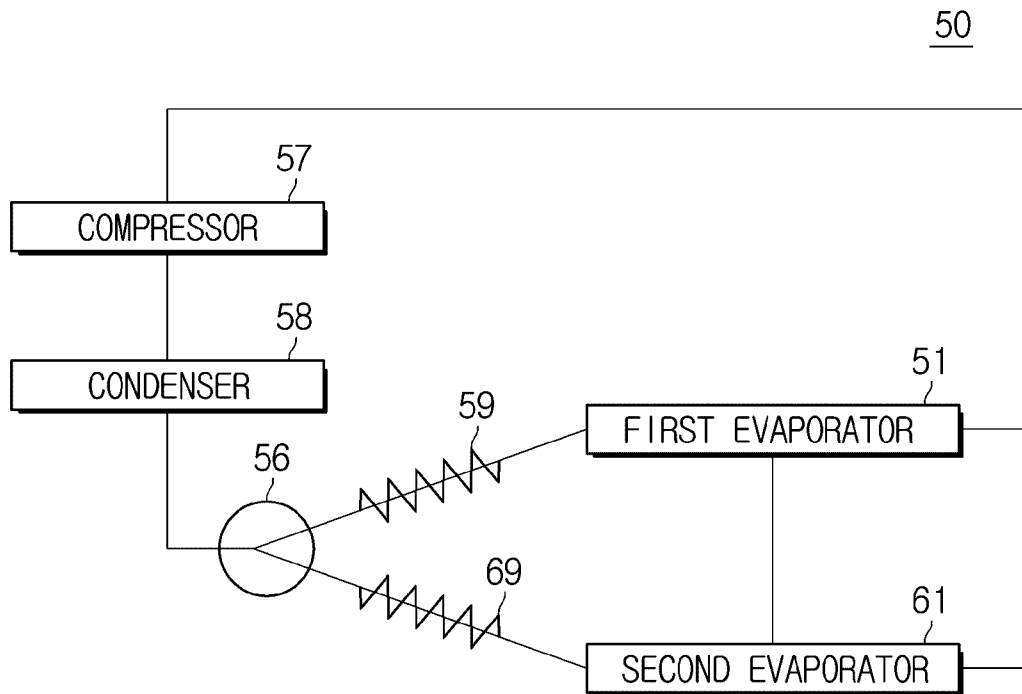
[Fig. 5]



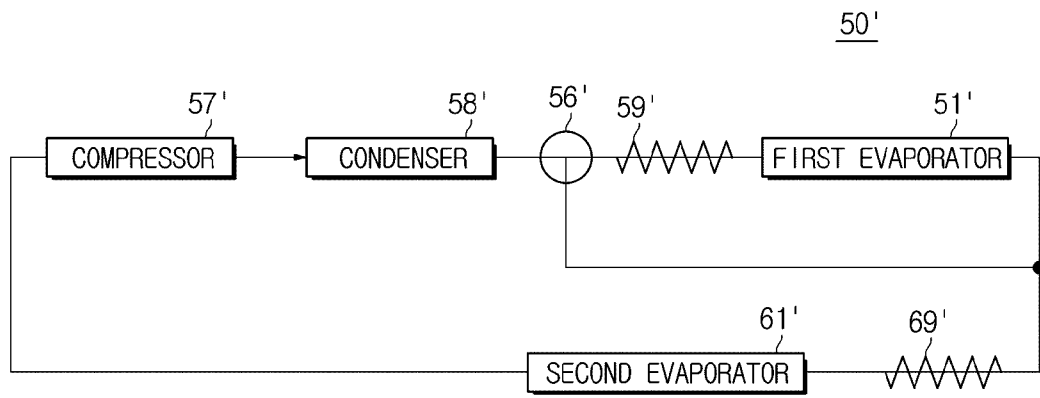
[Fig. 6]



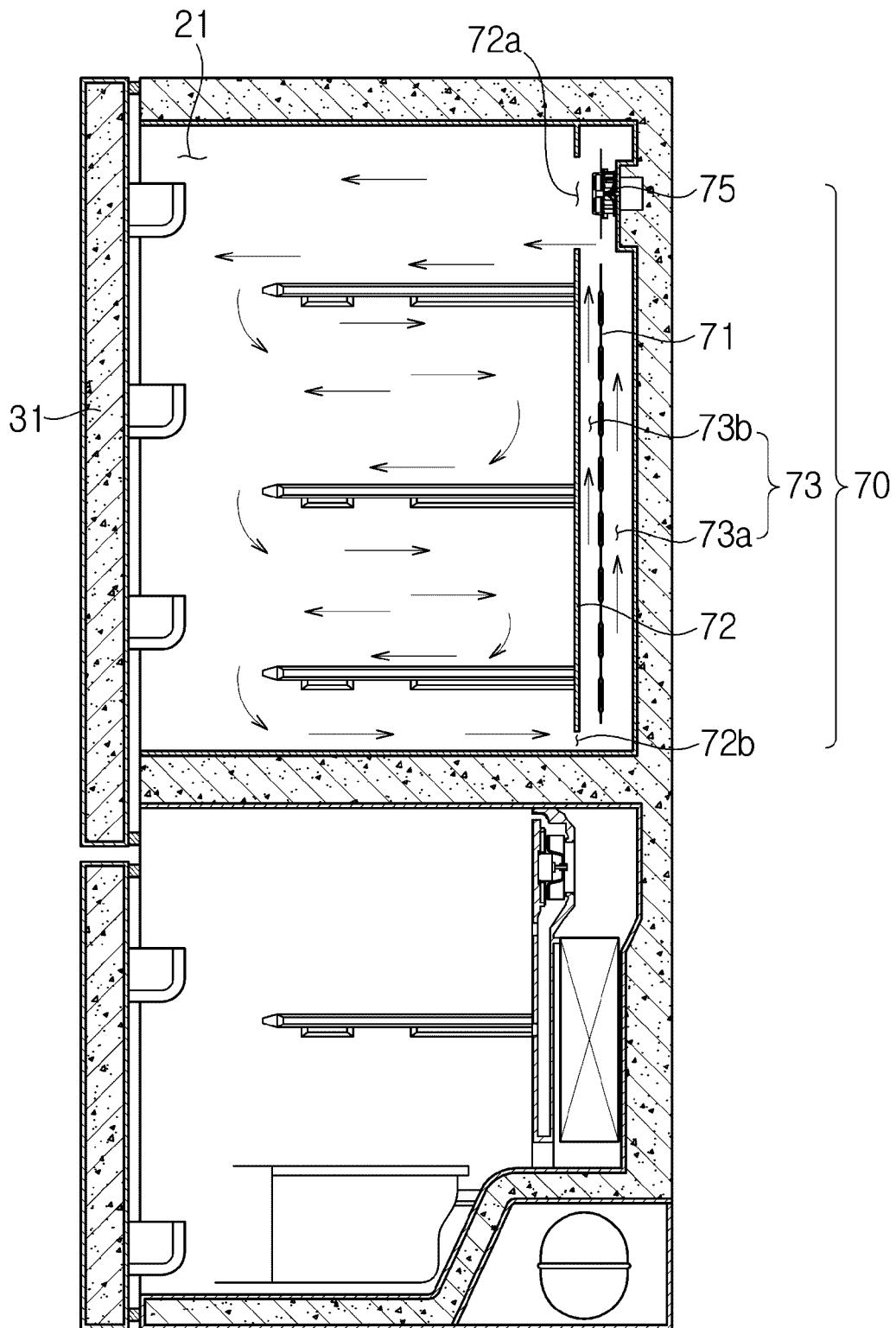
[Fig. 7]



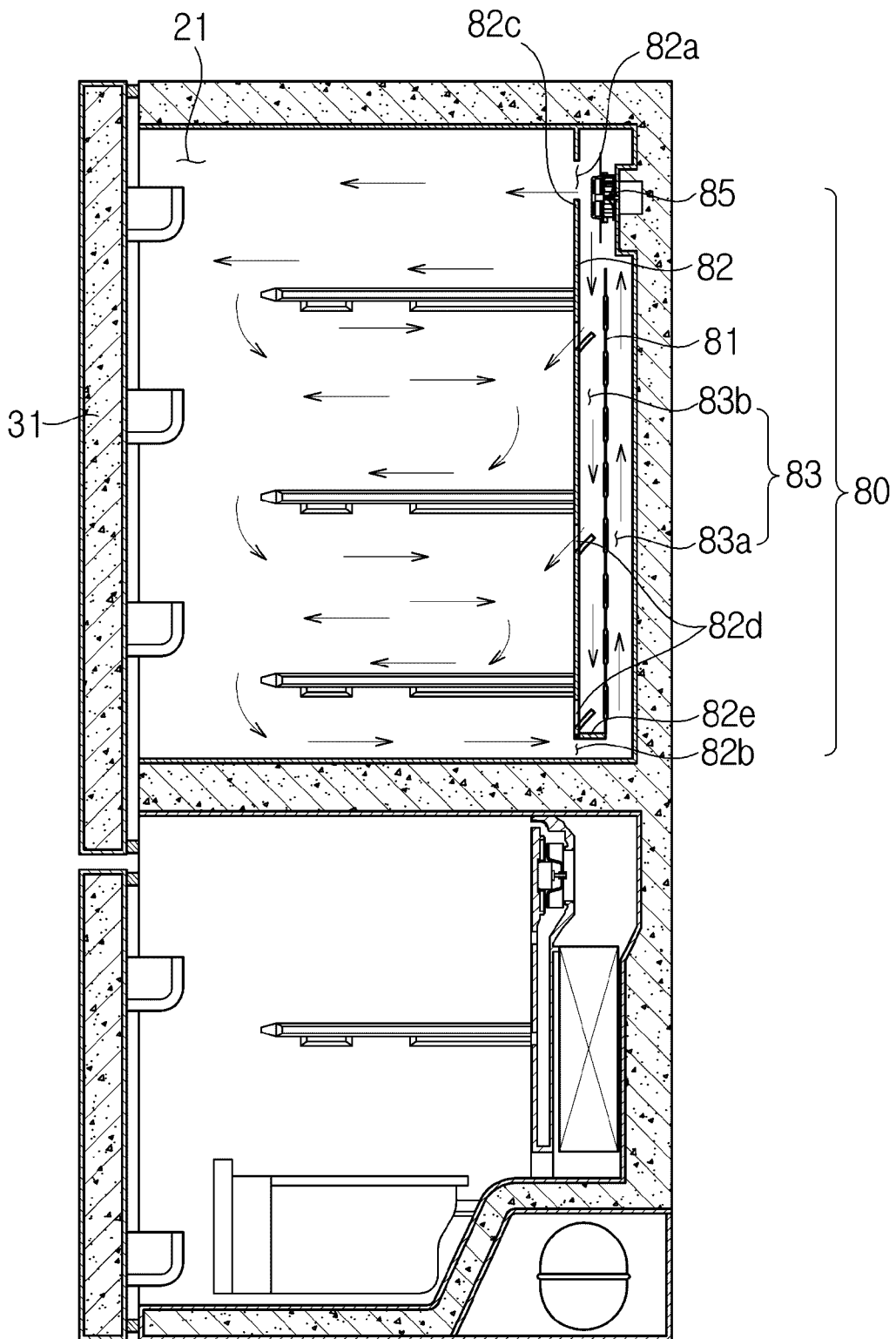
[Fig. 8]



[Fig. 9]

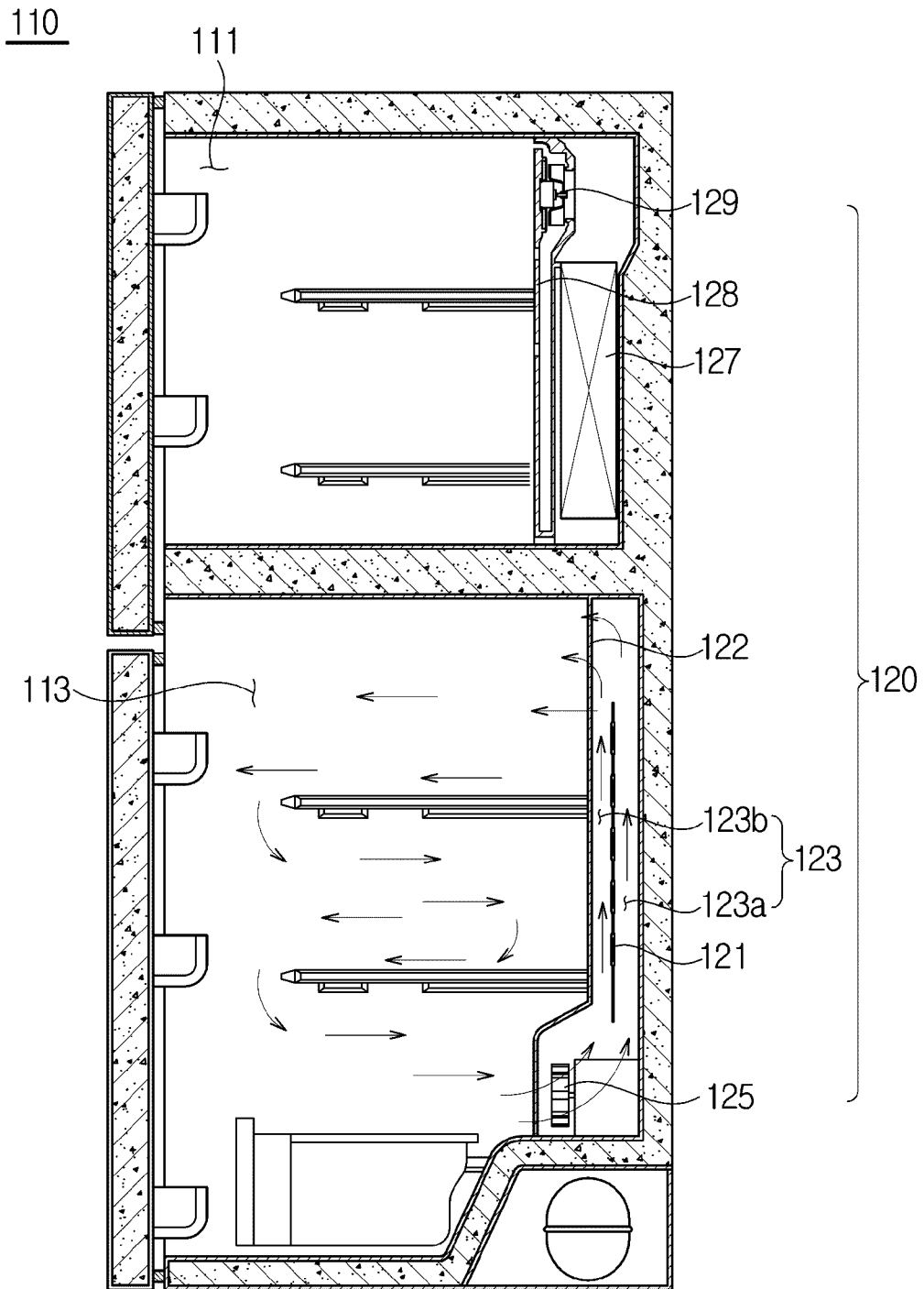


[Fig. 10]



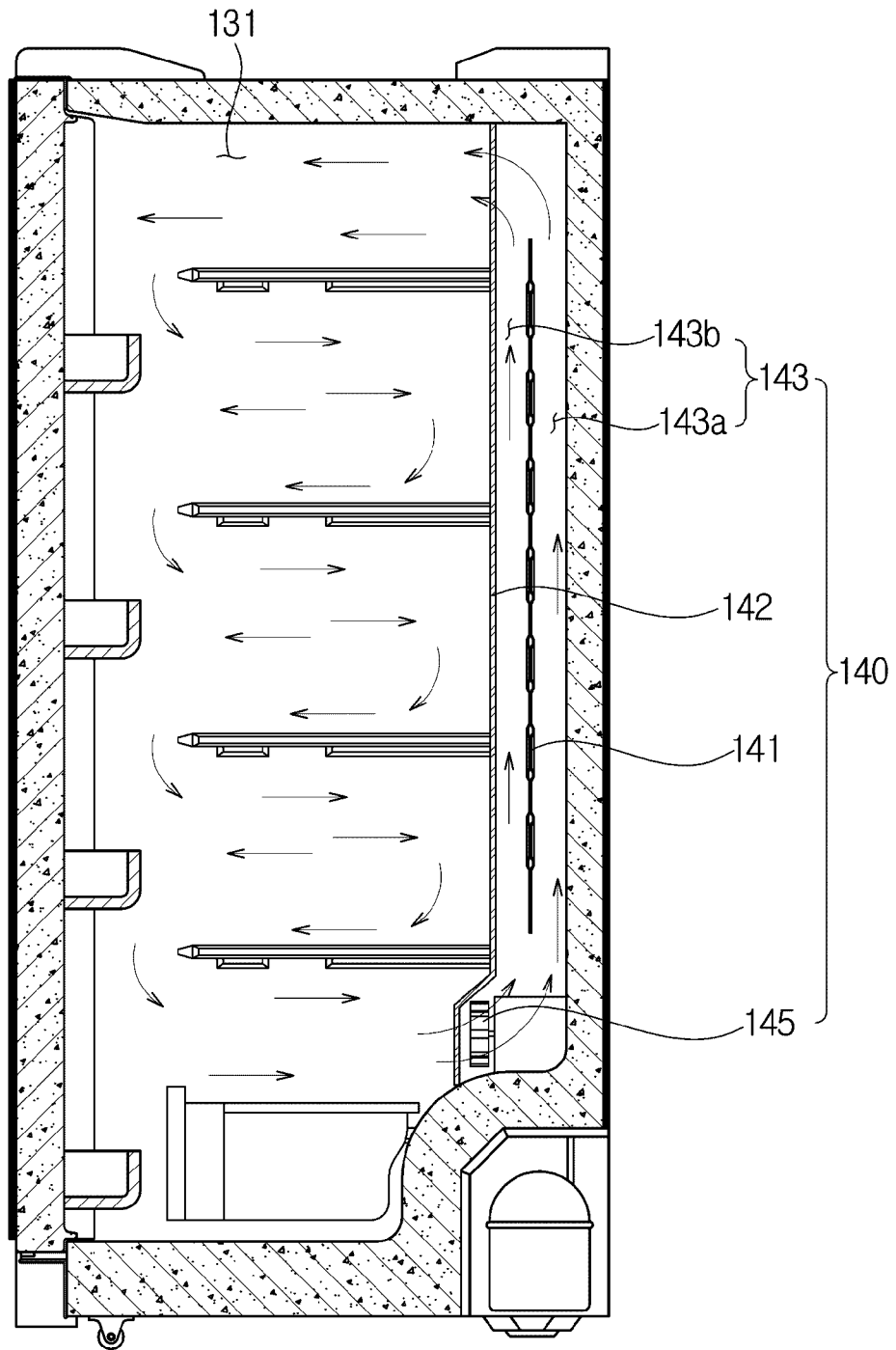


[Fig. 12]

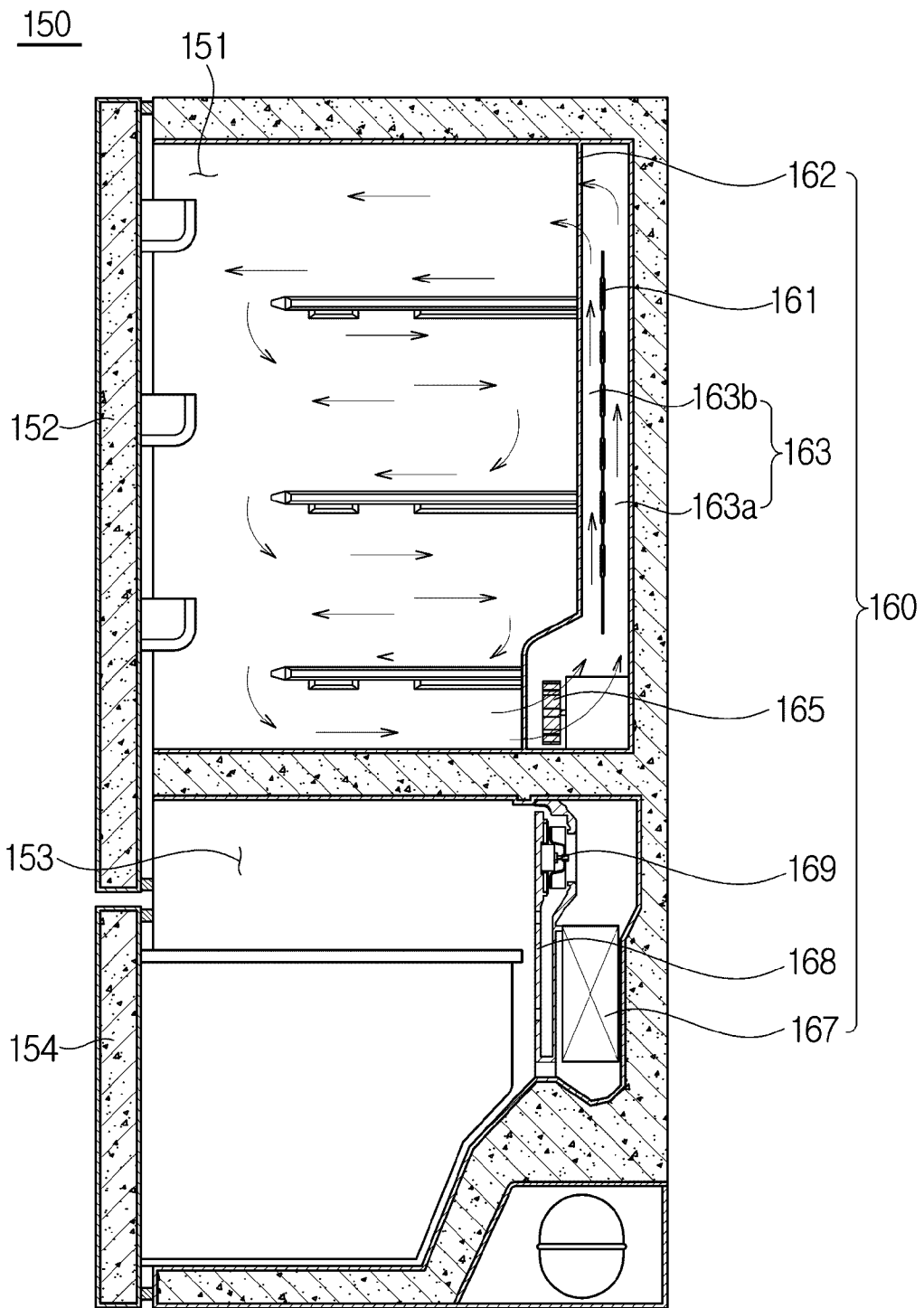


[Fig. 13]

130



[Fig. 14]



**A. CLASSIFICATION OF SUBJECT MATTER****F25D 11/00(2006.01)i, F25D 11/04(2006.01)i, F25D 23/02(2006.01)i, F25B 39/02(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 11/00; F25D 19/00; F25D 17/04; A47F 3/04; G01K 13/00; F25D 11/04; F25D 23/02; F25B 39/02

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

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: refrigerator, evaporator cover, flow path, blow fan, inlet, outlet, and partition

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2004-0105029 A (SAMSUNG ELECTRONICS CO., LTD.) 14 December 2004 See page 2, line 52 - page 3, line 19 and figure 1.	1-21
A	US 5911750 A (MANDEL et al.) 15 June 1999 See column 4, line 49 - column 5, line 23 and figure 3.	1-21
A	US 6293122 B1 (CHANG, HEON JAE) 25 September 2001 See column 4, lines 11-59 and figure 3.	1-21
A	US 2007-0006604 A1 (BEHR, JOHN ARTHUR) 11 January 2007 See paragraphs [0016]-[0021] and figure 1.	1-21
A	US 6058734 A (LEE, JUNG OWAN) 09 May 2000 See column 2, lines 1-60 and figure 3.	1-21

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

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

12 October 2015 (12.10.2015)

Date of mailing of the international search report

**13 October 2015 (13.10.2015)**

Name and mailing address of the ISA/KR

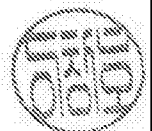
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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/KR2015/007699**

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