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(54) **REFRIGERATOR**

(57) Disclosed herein is a refrigerator (1). The refrigerator (1) includes a body (10) including a storage room (20) therein, a machine room (40) formed in the body (10) and separated from the storage room (20), and a cool air generating unit (50) including a compressor (51) and a condenser (60) arranged inside the machine room (40) and providing cool air to the storage room (20). Here, the condenser (60) includes a first condensing portion (60a, 160a) which faces a rear surface of the machine room (40) and a second condensing portion (60b, 160b) which is bent from the first condensing portion (60a, 160a) and faces a first side of the machine room (40).

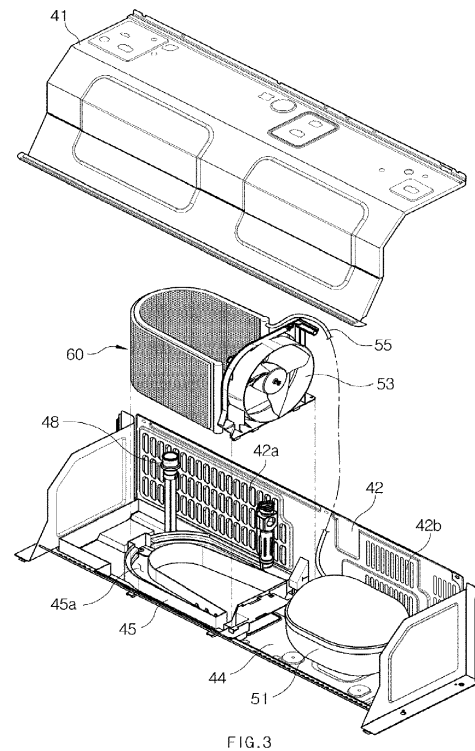


FIG. 3

Description

BACKGROUND

[0001] Embodiments of the present disclosure relate to a refrigerator including a condenser with improved heat exchange efficiency.

[0002] Generally, a refrigerator is a home appliance for storing fresh food that includes a storage room for storing food and a cool air generating unit for supplying cool air to the storage room.

[0003] The cool air generating unit drives a freezing cycle and supplies the cool air to the storage room. The cool air generating unit includes a compressor for compressing a vapor phase refrigerant to a high temperature and high pressure, a condenser for condensing the compressed refrigerant into a liquid phase, an expander for expanding the condensed refrigerant, and an evaporator for generating cool air by evaporating the liquid phase refrigerant.

[0004] The condenser dissipates heat outward while condensing the vapor phase refrigerant compressed to the high temperature and high pressure into the liquid phase. Due to heat dissipation of the condenser, a temperature of air around the condenser increases. Accordingly, the cool air generating unit further includes a blower fan to discharge the hot air around the condenser and to continuously allow outside air to flow into the condenser.

[0005] Since a space for the condenser in the refrigerator is limited, condensers in various positions and shapes have been developed. Generally, the condenser is installed in a machine room separated and partitioned from the storage room. However, heat exchange efficiency of the condenser may deteriorate due to a drop in air pressure and air resistance, while air which flows into the machine room is passing through the condenser.

SUMMARY

[0006] Therefore, it is an aspect of the embodiments of the present disclosure to provide a refrigerator having an improved structure to increase the efficiency of a cool air generating unit.

[0007] It is an aspect of the embodiments of the present disclosure to provide a refrigerator having an improved structure to increase the heat exchange efficiency of a condenser.

[0008] It is an aspect of embodiments of the present disclosure to provide a condenser having an improved structure to prevent heat exchange fins from being damaged or deformed and simultaneously to increase the heat exchange efficiency thereof.

[0009] It is an aspect of embodiments of the present disclosure to provide a refrigerator having an improved structure to efficiently utilize a space of a machine room in which a condenser is disposed.

[0010] Additional aspects of the invention will be set forth in part in the description which follows and, in part,

will be obvious from the description, or may be learned by practice of the invention.

[0011] In accordance with one aspect of embodiments of the present disclosure, a refrigerator includes a body comprising a storage room therein, a machine room formed in the body and separated from the storage room, and a cool air generating unit comprising a compressor and a condenser arranged inside the machine room and configured to provide cool air to the storage room, in which the condenser includes a first condensing portion which faces a rear surface of the machine room and a second condensing portion which is bent from the first condensing portion and faces a first side of the machine room.

[0012] The machine room may include a first inlet into which air flows in the rear surface, and the first inlet may be provided in an area at least partially overlapped by the first condensing portion in a rear view. The condenser may further include a third condensing portion which extends from the second condensing portion and is disposed in parallel with a front surface of the machine room. The machine room may include a second inlet into which air flows in a bottom front surface, and the second inlet may be provided to partially face the third condensing portion.

[0013] The compressor may be disposed in a position which faces a second side of the machine room, and the cool air generating unit may further include a blower fan which is installed between the compressor and the condenser and sends air in a direction from the first side to the second side. The compressor may be disposed between the first condensing portion and the second condensing portion, and the cool air generating unit may further include a blower fan which is installed on a lateral side of the condenser and sends air around the condenser to the other side.

[0014] The machine room may include a fixing member which fixes the condenser to a bottom surface, and the fixing member may include a fixing groove into which one side of the condenser is fixedly inserted. The fixing member may include a fixing portion which grips the condenser in the fixing groove.

[0015] The machine room may include a defrosted water pipe through which defrosted water generated in the storage room is moved, and the fixing member may be provided to prevent the condenser from coming in contact with the defrosted water moved through the defrosted water pipe.

[0016] The fixing member may include a defrosted water flow channel provided to allow the defrosted water to be moved to one side and the other side of the fixing member. The condenser may be provided as a parallel flow condenser.

[0017] In accordance with another aspect of embodiments of the present disclosure, a refrigerator includes a body comprising a storage room formed therein, a machine room formed in the body and separated from the storage room, and a cool air generating unit which com-

prises a condenser disposed inside the machine room and provides cool air to the storage room. Here, the condenser includes a header pipe comprising an inlet pipe and an outlet pipe through which a refrigerant flows in and out, a plurality of tubes which connect the inlet pipe with the outlet pipe to allow the refrigerant to be moved and are provided in parallel in a longitudinal direction of the header pipe, and a heat exchange fin installed between the plurality of tubes to come in contact therewith. Here, at least one of a first tube and a second tube arranged on both ends of the plurality of tubes has a width identical to or greater than a width of the heat exchange fin. Here, at least one third tube disposed between the first tube and the second tube has a width smaller than the width of the heat exchange fin.

[0018] The condenser may include a first heat exchange portion disposed to face an outside air inlet portion formed in the rear of the machine room, a second heat exchange portion disposed to face an outside air inlet portion in front of the machine room, and a third heat exchange portion having a bent shape to connect the first heat exchange portion with the second heat exchange portion. The outside air inlet portion may include a first inlet formed in one side of a rear surface of the machine room.

[0019] The machine room may include a front cover dividing the machine room inside the body, a rear cover which is coupled with the front cover and forms a rear surface of the machine room, and a bottom plate which extends from one side of a bottom of the rear cover to the front cover, and the outside air inlet portion may include a second inlet portion provided in a space between the front cover and the bottom plate.

[0020] The outside air inlet portion may further include a third inlet portion which comprises a plurality of holes formed in one side of a front of the bottom plate. The cool air generating unit may further include a compressor which compresses the refrigerant and a blower fan installed inside the machine room, the compressor and the condenser may be disposed to be opposite to each other, and the blower fan may be disposed between the compressor and the condenser.

[0021] The refrigerator may further include a supporting member which supports the condenser to be spaced from a bottom surface of the machine room at a certain interval. The supporting member may include at least one connecting portion which connects an inside and an outside of the condenser.

[0022] The refrigerator may further include a header coupling portion installed in the supporting member for the inlet pipe and the outlet pipe to be fixedly inserted, the header coupling portion may include an internal space into which the header pipe is inserted, an opening formed on one side to allow the third tube to be disposed, and a fixing slit formed to allow the second tube disposed below the third tube to be inserted. The header coupling portion may be formed of a material having a restoring force. The refrigerator may further include a fixing mem-

ber installed in the supporting member to grip and fix a part of the condenser between the plurality of header coupling portions.

5 BRIEF DESCRIPTION OF THE DRAWINGS

[0023] These and/or other aspects of the invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a perspective front view of a refrigerator in accordance with one embodiment of the present disclosure;

FIG. 2 is a rear exploded perspective view illustrating a configuration of a machine room and a cool air generating unit of the refrigerator of FIG. 1;

FIG. 3 is an exploded perspective view illustrating the configuration of the cool air generating unit disposed inside the machine room of FIG. 2;

FIG. 4 is a perspective view illustrating a state in which the cool air generating unit is coupled inside the machine room of FIG. 2;

FIG. 5 is a top view of the cool air generating unit coupled inside the machine room of FIG. 4;

FIG. 6 is a perspective view of a condenser in accordance with one embodiment of the present disclosure;

FIG. 7 is a view of a fixing member which fixes the condenser in accordance with one embodiment of the present disclosure;

FIG. 8 is a view of a condenser supporting member which fixes the condenser in accordance with a modified embodiment of the present disclosure;

FIG. 9 is a view illustrating a state in which the condenser is coupled with the condenser supporting member of FIG. 8;

FIG. 10 is a rear exploded perspective view illustrating a configuration of a machine room and a cool air generating unit of the refrigerator of FIG. 1 in accordance with another embodiment of the present disclosure;

FIG. 11 is a perspective view illustrating the configuration of the cool air generating unit disposed inside the machine room of FIG. 10;

FIG. 12 is an exploded perspective view of the machine room and the cool air generating unit of FIG.

11;

FIG. 13 is a top view of the machine room and the cool air generating unit of FIG. 11;

FIG. 14 is a cross-sectional view of the machine room including a condenser, which illustrates a part taken along line A-A' of FIG. 11;

FIG. 15 is a view of the condenser of the cool air generating unit of FIG. 11 in accordance with another embodiment of the present disclosure;

FIG. 16 is an enlarged view illustrating an X area of FIG. 14;

FIG. 17 is a view illustrating a modified example of the condenser of FIG. 15;

FIG. 18 is an enlarged cross-sectional view of the condenser of FIG. 17;

FIG. 19 is a view of a header coupling portion and a fixing member which fix the condenser of the cool air generating unit of FIG. 11;

FIG. 20 is an enlarged view illustrating a state in which the condenser supported by a supporting member of FIG. 19 is coupled with the header coupling portion;

FIG. 21 is a perspective view illustrating a configuration of a machine room and a cool air generating unit in accordance with a first modified embodiment of the present disclosure;

FIG. 22 is a top view of the machine room and the cool air generating unit of FIG. 21;

FIG. 23 is a perspective view illustrating a configuration of a machine room and a cool air generating unit in accordance with a second modified embodiment of the present disclosure; and

FIG. 24 is a top view of the machine room and the cool air generating unit of FIG. 23.

DETAILED DESCRIPTION

[0024] Reference will now be made in detail to embodiments of the present disclosure, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout.

[0025] Hereinafter, embodiments of the present disclosure will be described in detail with reference to the attached drawings.

[0026] FIG. 1 is a perspective front view of a refrigerator 1 in accordance with one embodiment of the present dis-

closure. Referring to FIG. 1, the refrigerator 1 includes a body 10, a storage room 20, and a door 30.

[0027] The body 10 includes an outer side 11 and an inner side 13. The outer side 11 forms an exterior of the body 10. The outer side 11 may be formed of a metallic material having excellent durability and aesthetic.

[0028] The inner side 13 is located inside the outer side 11. The inner side 13 forms an exterior of the storage room 20. The inner side 13 may be formed of a plastic material and may be integrally injection-molded. An insulator is foamed between the outer side 11 and the inner side 13 to prevent cool air inside the storage room 20 from being discharged.

[0029] A front of the storage room 20 is provided to open such that food can be taken out or put in. For example, the storage room 20 may be divided into a plurality of storage rooms 20 by a partition 17.

[0030] The storage room 20 divided into plural numbers by the partition 17 may include an upper storage room 21 and a lower storage room 23. The upper storage room 21 and the lower storage room 23 may be divided by a first partition 17a. The lower storage room 23 may be divided into a left storage room 23a and a right storage room 23b by a second partition 17b.

[0031] The storage room 20 may include a refrigerating compartment and a freezing compartment. Depending on a type of the refrigerator, the upper storage room 21 may be provided as the refrigerating compartment and the lower storage room 23 may be provided as the freezing compartment. Alternatively, the upper storage room 21 may be provided as the freezing compartment and the lower storage room 23 may be provided as the refrigerating compartment. The freezing compartment may be maintained at approximately -20 °C, and the refrigerating compartment may be maintained at approximately 3 °C. The freezing compartment and the refrigerating compartment may be insulated by the first partition 17a.

[0032] A shelf 25 and a storage container 27 may be installed inside the storage room 20.

[0033] The shelf 25 may be provided to support food stored in the storage room 20. A plurality of such shelves 25 may be provided for each storage room 20. The shelves 25 may be detachably provided in the storage room 20.

[0034] The storage container 27 may have a box shape. The storage container 27 may be provided to store food in a sealed inner space.

[0035] The storage room 20 is closed and opened by the door 30. The door 30 is pivotably coupled with the body 10 to close or open the open front of the storage room 20. The upper storage room 21 and the lower storage room 23 are closed and opened by an upper door 31 and a lower door 33, respectively, which are pivotably coupled with the body 10. The upper door 31 and the lower door 33 may each be provided as double doors.

[0036] A plurality of door guards 35 able to store food and the like may be provided in rear surfaces of the upper door 31 and the lower door 33.

[0037] FIG. 2 is a rear exploded perspective view illustrating a configuration of a machine room 40 and a cool air generating unit 50 of the refrigerator 1 of FIG. 1. FIG. 3 is an exploded perspective view illustrating the configuration of the cool air generating unit 50 disposed inside the machine room 40 of FIG. 2. FIG. 4 is a perspective view illustrating a state in which the cool air generating unit 50 is coupled inside the machine room 40 of FIG. 2. FIG. 5 is a top view of the cool air generating unit 50 coupled inside the machine room 40 of FIG. 4. FIG. 6 is a perspective view of a condenser 60 in accordance with one embodiment of the present disclosure.

[0038] Referring to FIGS. 2 to 6, the refrigerator 1 may include the machine room 40 provided inside the body 10. The machine room 40 may be located at a rear bottom of the body 10. The machine room 40 may have a shape which extends along a rear surface of the body 10 to both sides thereof. The machine room 40 may be separated and divided from the storage room 20. A space in which a part of the cool air generating unit 50 that will be described below may be located may be provided in the machine room 40.

[0039] The machine room 40 may include a rear cover 42. The rear cover 42 may be provided to close and open a rear surface of the machine room 40. The rear cover 42 may include a first inlet 42a through which air flows into the machine room 40 and a first outlet 42b through which air inside the machine room 40 flows outward. A plurality of such first inlets 42a and a plurality of such first outlets 42b may be provided. The first inlet 42a and the first outlet 42b may each be provided in the rear cover 42 at different positions.

[0040] The machine room 40 may further include a second inlet 44a. The second inlet 44a may be provided at one side of a front of the machine room 40. The second inlet 44a may be formed at a front bottom of the machine room 40 and may function as a path through which outside air flows from a bottom surface of the body 10. The second inlet 44a may include a plurality of holes.

[0041] The machine room 40 may further include a second outlet 44b. The second outlet 44b may be provided at the one side of the front of the machine room 40. The second outlet 44b may be formed at the front bottom of the machine room 40 and may function as a path for discharging the air inside the machine room 40 to the bottom surface of the body 10. The second outlet 44b may be formed in a different area from the second inlet 44a.

[0042] Although not shown in the drawings, the machine room 40 may include an inlet and an outlet in both sides 43b and 43b. The inlet may be formed in a first side 43b in which the first inlet 42a and the second inlet 44a are located, and the outlet may be formed in a second side 43b in which the first outlet 42b and the second outlet 44b are located. Selectively, the inlet and the outlet may not be formed in both of the sides 43a and 43b of the machine room 40.

[0043] The refrigerator 1 may further include the cool

air generating unit 50 for supplying cool air to the storage room 20. The cool air generating unit 50 may include a compressor 51, the condenser 60, an expansion valve (not shown), and an evaporator (not shown). The cool air generating unit 50 may drive a freezing cycle using the compressor 51, the condenser 60, the expansion valve, and the evaporator, thereby generating the cool air.

[0044] The compressor 51 compresses a refrigerant to a high temperature and high pressure. The compressor 51 may receive electric energy from the outside and may compress the refrigerant in a vapor phase to a high temperature and high pressure using torque of an electric motor (not shown). The compressor 51 may be provided to be connected to the condenser 60 and to move the compressed refrigerant to the condenser 60. The compressor 51 may be located inside the machine room 40.

[0045] The compressor 51 compresses and pushes the refrigerant to the condenser 60, and operates a freezing cycle of compression, condensing, expansion, and evaporation. Accordingly, when the compressor 51 is operated, cool air generated by the evaporator is supplied to the storage room 20.

[0046] The condenser 60 condenses the refrigerant compressed by the compressor 51 to the high temperature and high pressure. The condenser 60 dissipates heat generated while condensing the refrigerant. The refrigerant condensed while passing through the condenser 60 is moved to the expansion valve.

[0047] The refrigerant condensed by the condenser 60 becomes a liquid with a low temperature and low pressure while passing through the expansion valve. The refrigerant in the liquid phase passes through the expansion valve and is moved to the evaporator.

[0048] The evaporator evaporates the liquid refrigerant with the low temperature and low pressure which passes through the expansion valve. The evaporator performs heat exchange with a peripheral gas when the liquid refrigerant is evaporated. The liquid refrigerant absorbs peripheral latent heat while evaporating, thereby cooling the peripheral gas surrounding the evaporator to generate the cool air. The completely evaporated refrigerant is supplied to the compressor 51, thereby allowing the cooling cycle to circulate.

[0049] A part of the cool air generating unit 50 may be located inside the machine room 40. In accordance with one embodiment of the present disclosure, the compressor 51, the condenser 60, and a blower fan 53 may be located inside the machine room 40.

[0050] The condenser 60 in accordance with one embodiment of the present disclosure may be provided to extend and be bent along an edge area inside the machine room 40. The condenser 60 may include a first condensing portion 60a, a second condensing portion 60b, and a third condensing portion 60c.

[0051] The first condensing portion 60a may be provided in a position which faces the rear surface of the machine room 40. The first condensing portion 60a may

be provided to extend from an edge area of a first area A1 along the rear cover 42. The first condensing portion 60a may be provided in parallel with the rear cover 42.

[0052] The first condensing portion 60a may be provided to face a part of the first inlet 42a provided in the rear cover 42. The first condensing portion 60a may be provided to allow the entire surface to face the first inlet 42a. Through this, air which flows into the machine room 40 through the first inlet 42a comes in contact with the first condensing portion 60a, thereby performing heat exchange.

[0053] The second condensing portion 60b may be provided to be bent and extend from one side of the first condensing portion 60a. The second condensing portion 60b may be disposed to face the first side 43b of the machine room 40. The second condensing portion 60b may be disposed a certain interval apart from the first side 43b of the machine room 40. Alternatively, the second condensing portion 60b may be provided in an edge area of the side of the machine room 40.

[0054] Although not shown in the drawings, the second condensing portion 60b may be disposed to face the inlet formed on the first side 43b of the machine room 40. The second condensing portion 60b may be provided to perform heat exchange with outside air which flows from the inlet formed on the first side 43b of the machine room 40. Also, the second condensing portion 60b may perform heat exchange with air which flows into the machine room 40 through the first inlet 42a or the second inlet 44a.

[0055] The third condensing portion 60c may be provided to extend from one side of the second condensing portion 60b. The third condensing portion 60c may be provided in a position which faces a front surface of the machine room 40. The third condensing portion 60c may be provided in parallel with the first condensing portion 60a. The third condensing portion 60c may be provided a certain interval apart from the first condensing portion 60a.

[0056] The third condensing portion 60c may be provided in a position which faces a part of the second inlet 44a. Through this, the third condensing portion 60c may come in contact with air which flows into the machine room 40 through the second inlet 44a and may perform heat exchange therewith.

[0057] For example, the condenser 60 may be provided as a parallel flow condenser. As shown in FIG. 6, the parallel flow condenser 60 may include header pipes 65 provided at both ends, a plurality of tubes 66 provided as a path along which the refrigerant is moved, and a plurality of fins 67 which are in contact with the plurality of tubes 66 and perform heat exchange of the refrigerant and air. Hereinafter, it will be described that the condenser 60 includes the parallel flow condenser described above.

[0058] In the parallel flow condenser 60, the plurality of tubes 66 may be arranged in a vertical stack. The plurality of tubes 66 may be provided at regular intervals. The plurality of tubes 66 perform heat exchange while

the refrigerant transferred to the header pipes 65 is circulating. A connecting pipe 55 connected to the compressor 51 may be provided to be connected to one side of a top of the header pipe 65 located in the first condensing portion 60a.

[0059] The plurality of fins 67 may be located in a space between the plurality of tubes 66. Each of the fins 67 may be provided to have a shape bent a plurality of times to come in contact with both the tube 66 located thereabove and the tube 66 located therebelow in the space between the plurality of tubes 66. The fins 67 have small bending intervals to increase an area of the fins 67 in contact with air. As the areas of the fins 67 in contact with the air increase, heat exchange efficiency of the condenser 60 may be improved.

[0060] The fins 67 may be provided with parts thereof protruding outward from the tubes 66 in a top view. Due to this, the fins 67 may improve the heat exchange efficiency of the condenser 60 by increasing the area in contact with the air.

[0061] FIG. 7 is a view of a fixing member 45 which fixes the condenser 60 in accordance with one embodiment of the present disclosure.

[0062] Referring to FIGS. 2 to 7, the machine room 40 may further include the fixing member 45 formed at one side of a bottom surface. The fixing member 45 may be configured to fix the condenser 60. The fixing member 45 may have a shape corresponding to the condenser 60.

[0063] The fixing member 45 may include a fixing groove 45a formed therein. The fixing groove 45a may be provided such that one side of a bottom of the condenser 60 can be fixedly inserted. The fixing groove 45a may be provided in a shape corresponding to the fixing member 45. The fixing groove 45a may fix a position of the condenser 60 inserted therein.

[0064] The fixing member 45 may be divided by separating the fixing groove 45a from the bottom surface of the machine room 40. The fixing member 45 may separate the condenser 60 inserted into the fixing groove 45a from the bottom surface of the machine room 40. The fixing member 45 may shut off not to allow defrosted water provided on the bottom surface of the machine room 40 to come in contact with the condenser 60 using a barrier surrounding a bottom of the condenser 60. Due to this, the fixing member 45 may prevent damage to the condenser 60 which may occur when the condenser 60 comes in contact with the defrosted water.

[0065] The fixing member 45 may further include a fixing portion 45b. The fixing portion 45b may be formed on a bottom surface of the fixing groove 45a. The fixing portion 45b may fix the condenser 60 by gripping a bottom surface of the condenser 60 inserted into the fixing groove 45a. The condenser 60 may be fixed by the fixing member 45 by inserting the bottom of the condenser 60 into the fixing groove 45a and gripping one side of the condenser 60 inserted into the fixing groove 45a using the fixing portion 45b.

[0066] The fixing portion 45b may be provided to have

an elastic material. The fixing portion 45b may be configured to buffer oscillation which is generated by the condenser 60. Due to this, the fixing portion 45b may prevent damage to the condenser 60. A plurality of such fixing portions 45b may be provided in the fixing groove 45a.

[0067] A defrosted water pipe 48 may be formed on one side of the machine room 40. The defrosted water pipe 48 may guide the defrosted water generated in the storage room 20 to be moved to the machine room 40. The defrosted water generated in the refrigerator 1 may be moved to the bottom surface of the machine room 40 through the defrosted water pipe 48. The machine room 40 of the refrigerator 1 in accordance with one embodiment of the present disclosure includes the fixing member 45, thereby preventing the defrosted water moved to the bottom surface of the machine room 40 from coming in contact with the condenser 60.

[0068] The fixing member 45 may be provided to form a defrosted water flow channel 49 on one side. The defrosted water flow channel 49 may be provided to allow the defrosted water to move inside and outside of the fixing member 45 having a partially bent shape. Although not shown in the drawings, the defrosted water flow channel 49 may be formed on a bottom surface of the fixing member 45 and may be divided and separated from the condenser 60 to shut off contact therebetween. Also, a plurality of such defrosted water flow channels 49 may be provided.

[0069] In accordance with one embodiment of the present disclosure, the condenser 60 may be located in the first area A1 of the machine room 40. The compressor 51 may be located in a different area from the condenser 60 in the machine room 40. The compressor 51 may be located in a second area A2 in the machine room 40. The blower fan 53 may be located on the border between the first area A1 and the second area A2. The blower fan 53 may be provided to move air in the machine room 40 from the first area A1 to the second area A2. Alternatively, the condenser 60 may be provided in the second area A2 and the compressor 51 may be provided in the first area A1. In this case, the blower fan 53 may be provided to move the air in the machine room 40 from the second area A2 to the first area A1.

[0070] FIG. 8 is a view of a condenser supporting member 70 which fixes the condenser 60 in accordance with a modified embodiment of the present disclosure. FIG. 9 is a view illustrating a state in which the condenser 60 is coupled with the condenser supporting member 70 of FIG. 8.

[0071] Referring to FIGS. 8 and 9, in accordance with the modified embodiment of the present disclosure, the condenser supporting member 70 which supports the condenser 60 may be provided in the machine room 40.

[0072] The condenser supporting member 70 may be provided to support the condenser 60. The condenser supporting member 70, unlike the fixing member 45 of FIG. 7, may be configured to space the condenser 60 from the bottom surface of the machine room 40. The

condenser supporting member 70 may have a shape which protrudes upward from the bottom surface of the machine room 40. The condenser supporting member 70 may be provided to support the bottom surface of the condenser 60. The condenser supporting member 70 may be disposed in a position overlapped by the condenser 60 in a top view to support the bottom surface of the condenser 60.

[0073] The condenser supporting member 70 may include a flow channel groove 71 formed on one side. The flow channel groove 71 may be provided as a path in which the defrosted water moved to the bottom surface of the machine room 40 is moved. The flow channel groove 71 may be provided to move the defrosted water on the bottom surface of the machine room 40 from the one side to the other side of the condenser supporting member 70. The flow channel groove 71 may be formed to extend from one surface to the other surface of the condenser supporting member 70. A plurality of such flow channel grooves 71 may be formed in the condenser supporting member 70.

[0074] The condenser supporting member 70 may include a condenser fixing portion 73 which fixes the condenser 60, on a top surface. The condenser fixing portion 73 may be configured to be coupled with a bottom of the header pipe 65 of the condenser 60. The condenser fixing portion 73 may be provided in positions coupled with the header pipe 65 of the condenser 60. Due to this, the condenser 60 may be fixedly installed on a top of the condenser supporting member 70.

[0075] Hereinafter, a process in which the condenser 60 performs heat exchange inside the machine room 40 in which the condenser 60 is provided will be described.

[0076] As shown in FIGS. 4 and 5, in the case of the refrigerator 1, outside air may flow into the machine room 40 through the first inlet 42a and second inlet 44a. The outside air may flow into the machine room 40 from the rear surface of the body 10 through the first inlet 42a and may flow into the machine room 40 from the bottom surface of the body 10 through the second inlet 44a.

[0077] The outside air which flows into the machine room 40 through the first inlet 42a or the second inlet 44a comes in contact with the condenser 60, thereby performing heat exchange. Since the condenser 60 is disposed in an edge area of the first area A1 of the machine room 40, the heat exchange may be performed while the air which flows through the first inlet 42a or the second inlet 44a is passing through one surface of the condenser 60.

[0078] Since the condenser 60 includes the plurality of vertically stacked fins 67 which perform heat exchange, it is possible to reduce resistance which occurs in the air which passes through the condenser 60. Also, since the air which passes through the fin 67 and increases in temperature comes in contact with the other fin 67, the heat exchange does not occur, thereby improving heat exchange efficiency. Also, the parallel flow condenser applied to one embodiment of the present disclosure may

improve heat exchange efficiency more than general condensers due to the configuration described above. As described above, the heat exchange efficiency may be improved more using the configuration of the condenser 60 described above and an arrangement of the cool air generating unit 50 inside the machine room 40 including the condenser 60 than when the same condenser 60 is used.

[0079] The air in which heat exchange is performed is moved to the second area A2 by the blower fan 53. The air moved to the second area A2 may be moved outside the machine room 40 through the first outlet 42b or the second outlet 44b.

[0080] FIG. 10 is a rear exploded perspective view illustrating configurations of a machine room 140 and a cool air generating unit 150 of the refrigerator 1 of FIG. 1 in accordance with another embodiment of the present disclosure. FIG. 11 is a perspective view illustrating the configuration of the cool air generating unit 150 disposed inside the machine room 140 of FIG. 10. FIG. 12 is an exploded perspective view of the machine room 140 and the cool air generating unit 150 of FIG. 11. FIG. 13 is a top view of the machine room 140 and the cool air generating unit 150 of FIG. 11. FIG. 14 is a cross-sectional view of the machine room 140 including a condenser 160, which illustrates a part taken along line A-A' of FIG. 11. FIG. 15 is a view of the condenser 160 in the cool air generating unit 150 of FIG. 11 in accordance with another embodiment of the present disclosure. FIG. 16 is an enlarged view illustrating an X area of FIG. 14.

[0081] Referring to FIGS. 10 to 16, the refrigerator 1 may include the machine room 140 provided inside the body 10. The machine room 140 may be located at a rear bottom of the body 10. The machine room 140 may have a shape which extends along a rear surface of the body 10 to both sides thereof. The machine room 140 may be separated and divided from a storage room. A space in which a part of the cool air generating unit 150 that will be described below may be located may be provided in the machine room 40.

[0082] The machine room 140 may include a front cover 141, a rear cover 142, a side cover 143, and a bottom plate 144. The machine room 140 may be formed of an internal space formed by coupling the front cover 141, the rear cover 142, the side cover 143, and the bottom plate 144 with one another.

[0083] The front cover 141 may be formed to divide the machine room 140 in the body 10. The front cover 141 may be provided to be bent to form a front surface and a top surface of the machine room 140.

[0084] The rear cover 142 may be coupled with the front cover 141 to form a rear surface of the machine room 140. The rear cover 142 may include an outside air inlet portion and an outside air outlet portion. The outside air inlet portion may include a first inlet portion 142a formed of a plurality of holes on one side of the rear cover 142. The first inlet portion 142a may be disposed to face a part of the condenser 160 that will be described below.

The outside air outlet portion may be formed in a position opposite to the first inlet portion 142a. The outside air outlet portion may include a first outlet portion 142b formed of a plurality of holes.

[0085] Between the front cover 141 and the rear cover 142, the side cover 143 and the bottom plate 144 may be coupled with each other. Side covers 143a and 143b may be coupled with both ends of the front cover 141 and the rear cover 142. Although not shown in the drawings, the side covers 143a and 143b may each include an outside air inlet portion and an outside air outlet portion.

[0086] The bottom plate 144 may form a bottom surface of the machine room 140. The bottom plate 144 may extend from the rear cover 142 toward the front cover 141. As shown in FIG. 14, a front end of the bottom plate 144 may be spaced a certain interval apart from the front cover 141. A space 141a formed between the bottom plate 144 and the front cover 141 may be provided as an outside air inlet portion and an outside air outlet portion through which air flows into or out of the machine room 140. The space 141a formed between the bottom plate 144 and the front cover 141 may be formed along the front cover 141. The space 141a formed between the bottom plate 144 and the front cover 141 may be provided as a second inlet portion 144a through which outside air flows into the machine room 140.

[0087] The bottom plate 144 may further include a third inlet portion 144c. As shown in FIG. 13, the bottom plate 144 may include the third inlet portion 144c formed on one side of a front thereof. The third inlet portion 144c may be provided as a plurality of holes. The third inlet portion 144c may be formed in a position adjacent to the condenser 160. The bottom plate 144 may further include a third outlet portion 144d formed in a position opposite to the third inlet portion 144c.

[0088] One side of a defrosted water pipe 148 may be installed in the machine room 140. The one side of the defrosted water pipe 148 may be located in the machine room 140 and the other side may be connected to the inside of the storage room 120. The defrosted water pipe 148 may function as a path through which defrosted water generated by the evaporator of the storage room is moved to the machine room 140.

[0089] A partition 149 may be provided on the bottom surface of the machine room 140 to surround the condenser 160. The partition 149 may be configured to allow the condenser 160 and a blower fan 153 to be disposed therein.

[0090] The refrigerator 1 may further include the cool air generating unit 150 for supplying cool air to the storage room. The cool air generating unit 150 may include a compressor 151, the condenser 160, an expansion valve (not shown), and an evaporator (not shown). The cool air generating unit 150 may drive a freezing cycle using the compressor 151, the condenser 160, the expansion valve, and the evaporator, thereby generating the cool air.

[0091] The compressor 151 compresses a refrigerant to a high temperature and high pressure. The compressor 151 may receive electric energy from the outside and may compress a vapor phase refrigerant to a high temperature and high pressure using torque of an electric motor. The compressor 151 may be provided to be connected to the condenser 160 and to move the compressed refrigerant to the condenser 160. The compressor 151 may be located inside the machine room 140.

[0092] The compressor 151 compresses and pushes the refrigerant to the condenser 60 and operates a freezing cycle of compression, condensing, expansion, and evaporation. Accordingly, when the compressor 151 is operated, the freezing cycle may be driven and the cool air generated by the evaporator may be supplied to the storage room. The compressor 151 and the condenser 160 are connected through a connecting pipe 155, thereby allowing the refrigerant to move.

[0093] The condenser 160 condenses the refrigerant compressed by the compressor 151 to the high temperature and high pressure. The condenser 160 dissipates heat generated while condensing the refrigerant. The refrigerant condensed while passing through the condenser 160 is moved to the expansion valve.

[0094] The refrigerant condensed by the condenser 160 becomes a liquid with a low temperature and low pressure while passing through the expansion valve. The refrigerant in the liquid phase passes through the expansion valve and is moved to the evaporator.

[0095] The evaporator (not shown) evaporates the liquid refrigerant with the low temperature and low pressure which passes through the expansion valve. The evaporator performs heat exchange with a peripheral gas when the liquid refrigerant is evaporated. The liquid refrigerant absorbs peripheral latent heat while evaporating, thereby cooling the peripheral gas surrounding the evaporator to generate the cool air. The completely evaporated refrigerant is supplied to the compressor 151, thereby allowing the cooling cycle to circulate.

[0096] A part of the cool air generating unit 150 may be located inside the machine room 140. In accordance with one embodiment of the present disclosure, the compressor 151, the condenser 160, and the blower fan 153 may be located inside the machine room 140.

[0097] The condenser 160 in accordance with another embodiment of the present disclosure may be provided to extend along a rear cover 142, a side cover 143b, and a front cover 141 inside the machine room 140. The condenser 160 may have a shape bent along the side cover 143b inside the machine room 140. The condenser may be disposed in a position to face the outside air inlet portions 142a, 144a, and 144c formed in the machine room 140. As shown in FIGS. 13 and 15, the condenser 160 may include a first heat exchange portion 160a, a second heat exchange portion 160c, and a third heat exchange portion 160b.

[0098] The first heat exchange portion 160a may be provided in a position corresponding to the rear surface

of the machine room 140. The first heat exchange portion 160a may be provided to extend from an edge area of a first area A1 of the machine room 140 along the rear cover 142. The first heat exchange portion 160a may be provided in parallel with the rear cover 142.

[0099] The first heat exchange portion 160a may be provided to correspond to a part of the first inlet portion 142a provided in the rear cover 142. The first heat exchange portion 160a may be provided to allow the entire area to face the first inlet portion 142a. Through this, air which flows into the machine room 140 through the first inlet portion 142a comes in contact with the first heat exchange portion 160a, thereby performing heat exchange.

[0100] The second heat exchange portion 160c may be provided in a position corresponding to a front surface of the machine room 140. The second heat exchange portion 160c may be provided in parallel with the first heat exchange portion 160a. The second heat exchange portion 160c may be provided a certain interval apart from the first heat exchange portion 160a. The second heat exchange portion 160c may be provided in a position which faces a part of the second inlet portion 144a. Through this, the second heat exchange portion 160c may come in contact with air which flows into the machine room 140 through the second inlet portion 144a, thereby performing heat exchange therewith. The second heat exchange portion 160c may be provided in a position which faces the third inlet portion 144c.

[0101] The third heat exchange portion 160b may have a bent shape to allow the first heat exchange portion 160a and the second heat exchange portion 160c to be connected with each other. The third heat exchange portion 160b may have a U shape which connects the first heat exchange portion 160a with the second heat exchange portion 160c disposed in the rear and front of the machine room 140 respectively. The third heat exchange portion 160b may be provided in a position which faces the side cover 143b in the first area A1.

[0102] As shown in FIG. 15, the condenser 160 may include a header pipe 161, tubes 163, and heat exchange fins 165. The condenser 160 may be provided as a parallel flow condenser configured to allow a refrigerant to be moved in parallel in a plurality of tubes 163.

[0103] The header pipe 161 may include an inlet pipe 161a through which the refrigerant flows in and an outlet pipe 161b through which the refrigerant flows out. The header pipe 161 may be formed to allow the refrigerant to be moved therein and may be configured to allow the refrigerant to be moved to the tubes 163 coupled with one side. The inlet pipe 161a may be connected to the compressor 151 through the connecting pipe 155, thereby allowing the refrigerant compressed by the compressor 151 to flow into the inlet pipe 161a.

[0104] The header pipe 161 may include one or more baffle inlet portions 161c, 161d, and 161e into which a baffle 162 is inserted. For example, the header pipe 161 may include a first baffle inlet portion 161c formed on one

side of a top and a second baffle inlet portion 161d formed on one side of a bottom. The first baffle inlet portion 161c and the second baffle inlet portion 161 d may each include the baffles 162 and may form a border of the header pipe 161. Between the first baffle inlet portion 161c and the second baffle inlet portion 161 d, a third baffle inlet portion 161 e for controlling a flow direction of the refrigerant may be formed.

[0105] The tubes 163 may be provided to connect the inlet pipe 161 a with the outlet pipe 161 b. The tubes 163 may include a space to allow the refrigerant to be moved therein. Through this, the refrigerant which flows into the inlet pipe 161 a may be moved to the outlet pipe 161 b through the tubes 163. As shown in FIG. 16, the tubes 163 may be provided as a multi-channel tube in which the space in which the refrigerant is moved is plurally divided.

[0106] The plurality of tubes 163 may be provided. The plurality of tubes 163 may be arranged in parallel with one another. The plurality of tubes 163 may be arranged in parallel at certain intervals vertical to the bottom surface of the machine room 140. The plurality of tubes 163 may be arranged to overlap in a top view.

[0107] The heat exchange fins 165 may be arranged in spaces among the plurality of tubes 163. The heat exchange fins 165 may extend along the spaces among the plurality of tubes 163. The heat exchange fins 165 may have a plurally bent shape to come in contact with the tubes 163 arranged above and below. Due the shape described above, the heat exchange fins 165 may enlarge a contact area with the tubes 163 and may increase an area in contact with the air moved into the machine room 140. Due to this, heat exchange efficiency may be increased.

[0108] As shown in FIGS. 15 and 16, the heat exchange fins 165 may have a greater width D3 than one tube 163c of the plurality of tubes 163a, 163b, and 163c. Due to this, the heat exchange fins 165 may have a shape which protrudes to one side of the plurality of tubes 163 arranged in parallel in a direction vertical to the bottom surface of the machine room 140. As shown in areas B and C in FIG. 15 and FIG. 16, the heat exchange fins 165 may be configured to protrude outward from the condenser 160. Alternatively, the heat exchange fins 165 may be configured to protrude inside the condenser 160.

[0109] For example, the plurality of tubes 163 may include a first tube 163a and a second tube 163b disposed on both ends and a third tube 163c disposed between the first tube 163a and the second tube 163b.

[0110] The first tube 163a may be disposed on a top end of the condenser 160, and the second tube 163b may be disposed on a bottom end of the condenser 160. At least one of the first tube 163a and the second tube 163b may have a width identical to or greater than a width D3 of the heat exchange fins 165. For example, the first tube 163a has a width D1 which is identical to or greater than the width D3 of the heat exchange fins 165 and the second tube 163b has a width D1 which is identical to or

smaller than the width D3 of the heat exchange fins 165. Alternatively, the second tube 163b may have the width D1 which is identical to or greater than the width D3 of the heat exchange fins 165 and the first tube 163a may have the width D1 which is identical to or smaller than the width D3 of the heat exchange fins 165. Also, both the first tube 163a and the second tube 163b may have the width D1 which is identical to or greater than the width D3 of the heat exchange fins 165. The first tube 163a and the second tube 163b may have the same width D1.

[0111] Due to this, the first tube 163a and the second tube 163b may be arranged in a position overlapped by the heat exchange fins 165 in a top view. The first tube 163a and the second tube 163b are disposed on the top end and the bottom end of the condenser 160, respectively, thereby preventing the heat exchange fins 165 from being damaged or deformed by an external shock.

[0112] Although not shown in the drawings, the condenser 160 may include protection plates having a shape identical to the first tube 163a and the second tube 163b instead of the first tube 163a and the second tube 163b. In the case of the protection plate, unlike the tubes 163, a refrigerant does not flow therein but the tubes 163 and the heat exchange fins 165 arranged between the protection plates may be protected. Here, the protection plates may be formed of a material having excellent rigidity.

[0113] A width D2 of the third tube 163c may be smaller than the width D3 of the heat exchange fins 165. In detail, the width D3 of the heat exchange fins 165 may be about 16 mm, the widths D1 of the first tube 163a and the second tube 163b may be about 16 mm or more, and the width D2 of the third tube 163c may be about 10 mm.

[0114] Through the configuration described above, the condenser 160 in accordance with one embodiment of the present disclosure may improve heat exchange efficiency in a limited space. While the heat exchange efficiency is improved by increasing an area of the heat exchange fins 165, the first tube 163a and the second tube 163b prevent the heat exchange fins 165 which protrude from being damaged or deformed, thereby increasing durability of products.

[0115] FIG. 17 is a view illustrating a modified example of the condenser 160 of FIG. 15. FIG. 18 is an enlarged cross-sectional view of a condenser 160' of FIG. 17.

[0116] Referring to FIGS. 17 and 18, the condenser 160' in accordance with the modified example may include header pipes 161, tubes 166, and heat exchange fins 167. In the condenser 160', compared with the condenser 160 of FIG. 15, the tubes 166 and the heat exchange fins 167 may differ therefrom and the header pipes 161 may be identical thereto. Hereinafter, only configurations different from those of the condenser 160 of FIG. 15 will be described.

[0117] The heat exchange fins 167 may have a width D3 greater than a width D2 of one tube 166c of a plurality of tubes 166. The heat exchange fins 167 may have a shape which protrudes from both sides of the third tube

166c of the plurality of tubes 166 arranged in parallel in a direction vertical to the bottom surface of the machine room 140.

[0118] The plurality of tubes 166 may include a first tube 166a and a second tube 166b arranged on both ends of the condenser 160' and at least one third tube 166c disposed between the first tube 166a and the second tube 166b. At least one of the first tube 166a and the second tube 166b may have a width D1 identical to or greater than the width D3 of the heat exchange fins 167. For example, both the first tube 166a and the second tube 166b may have the width D1 which is identical to or greater than the width D3 of the heat exchange fins 167. The first tube 166a and the second tube 166b may have the same width D1.

[0119] The heat exchange fins 167 may have the width D3 identical to or smaller than the widths D1 of the first tube 166a and the second tube 166b. Also, the heat exchange fins 167 may have the width D3 greater than the width D2 of the third tube 166c. In detail, the width D3 of the heat exchange fins 167 may be about 16 mm, the widths D1 of the first tube 166a and the second tube 163b may be about 16 mm or more, and the width D2 of the third tube 163c may be about 10 mm.

[0120] FIG. 19 is a view of a header coupling portion 146 and a fixing member 147 which fix the condenser 160 of the cool air generating unit 150 of FIG. 11. FIG. 20 is an enlarged view illustrating a state in which the condenser 160 supported by a supporting member 145 of FIG. 19 is coupled with the header coupling portion 146.

[0121] Referring to FIGS. 11 to 20, the supporting member 145 may be formed on the bottom surface of the machine room 140. The supporting member 145 may be provided to support the condenser 160 with the condenser 160 spaced a certain interval apart from the bottom surface of the machine room 140. Defrosted water may be moved from the defrosted water pipe 148 on the bottom surface of the machine room 140, which may cause damage such as corrosion to the condenser 160. The supporting member 145 may space the condenser 160 from the bottom surface of the machine room 140, thereby preventing damage, such as corrosion, to the condenser 160.

[0122] As shown in FIG. 19, the supporting member 145 may include a connecting portion 145a formed on one side. The connecting portion 145a may have a groove shape which connects an inside with an outside of the condenser 160. The connecting portion 145a may be formed to allow the defrosted water to move along the inside and the outside of the condenser 160. A plurality of such connecting portions 145a may be provided.

[0123] The supporting member 145 may include the header coupling portion 146 capable of fixing the condenser 160. The header coupling portion 146 may have an internal space corresponding to the header pipe 161 to allow the header pipe 161 to be fixedly inserted thereinto. The header coupling portion 146 may include an

opening in one side to allow the tubes 163 to extend while coupled with the header pipe 161.

[0124] In accordance with one embodiment of the present disclosure, as described above, since the second tube 163b disposed at the bottom of the condenser 160 has a greater width than the third tube 163c, the header coupling portion 146 may include a fixing slit 146a into which the second tube 163b may be fixedly inserted. The fixing slit 146a may be formed at a bottom end of the header coupling portion 146 and may be a slit-shaped groove into which the second tube 163b can be inserted. The header coupling portion 146 may be formed of a material having a restoring force to allow the header pipe 161 and the tubes 163 to be easily coupled.

[0125] The supporting member 145 may further include the fixing member 147 capable of fixing the condenser 160. The fixing member 147 may fix the condenser 160 by gripping a part of the condenser 160. The fixing member 147 may be configured to grip a part of the second tube 163b. As shown in FIG. 19, the fixing member 147 may include an insertion space 147a into which the second tube 163b may be inserted. As shown in FIG. 13, the fixing member 147 may fix the condenser 160 while the second tube 163b is inserted into the insertion space 147a. A plurality of such fixing members 147 may be provided on a top surface of the supporting member 145.

[0126] As shown in FIG. 13, through the configuration described above, the air which flows into the machine room 140 through the first inlet portion 142a, the second inlet portion 144a, and the third inlet portion 144c passes through the condenser 160, thereby performing heat exchange. The condenser 160 performs heat exchange while the heat exchange fins 165 in contact with the tubes 163 come in contact with the air. Due to the configuration described above, a contact area with the air increases, thereby improving heat exchange efficiency. Also, the first tube 163a and the second tube 163b may prevent the protruding heat exchange fins 165 from being damaged. Also, the condenser 160 including the first tube 163a and the second tube 163b may be stably fixed to the supporting member 145.

[0127] Hereinafter, a modified example of the cool air generating unit provided in the machine room of the refrigerator 1 will be described.

[0128] FIG. 21 is a perspective view illustrating a configuration of a machine room 40 and a cool air generating unit 50 in accordance with a first modified embodiment of the present disclosure. FIG. 22 is a top view of the machine room 40 and the cool air generating unit 50 of FIG. 21.

[0129] Referring to FIGS. 21 and 22, the cool air generating unit 50 in accordance with the first modified embodiment of the present disclosure may include a compressor 51, the condenser 60, an expansion valve (not shown), and an evaporator (not shown). In the cool air generating unit in accordance with the first modified embodiment of the present disclosure, compared with the cool air generating unit 50 of FIG. 2, only the compressor

51 may differ therefrom and other components may be identically provided. Hereinafter, differences from the cool air generating unit 50 of FIG. 2 will be described.

[0130] The compressor 51 may be located together with the condenser 60 in the first area A1 of the machine room 40. The compressor 51 may be disposed between the first condensing portion 60a and the third condensing portion 60c. The compressor 51 may be provided in a position surrounded by an inner surface of the condenser 60.

[0131] As described above, the compressor 51 may be located in an inner space of the condenser 60 so that the internal space of the machine room 40 is efficiently utilized. Since both the compressor 51 and the condenser 60 are located in the first area A1, the second area A2 may be available.

[0132] FIG. 23 is a perspective view illustrating a configuration of a machine room 40 and a cool air generating unit 50 in accordance with a second modified embodiment of the present disclosure. FIG. 24 is a top view of the machine room 40 and the cool air generating unit 50 of FIG. 23.

[0133] Referring to FIGS. 23 and 24, the cool air generating unit 50 in accordance with the second modified embodiment of the present disclosure may include a compressor 51, a condenser 60, an expansion valve (not shown), and an evaporator (not shown). In the cool air generating unit in accordance with the second modified embodiment of the present disclosure, compared with the cool air generating unit 50 of FIG. 2, only the condenser 60 and the second inlet 44a may differ therefrom and other components may be identically provided. Hereinafter, differences from the cool air generating unit 50 of FIG. 2 will be described.

[0134] The condenser 60 may include a first condensing portion 60a and a second condensing portion 60b.

[0135] The first condensing portion 60a may be provided to face a part of the first inlet 42a provided in the rear cover 42. The first condensing portion 60a may be provided to allow the entire surface thereof to face the first inlet 42a. Through this, air which flows into the machine room 40 through the first inlet 42a comes in contact with the first condensing portion 60a, thereby performing heat exchange.

[0136] The second condensing portion 60b may be provided to be bent and extend from one side of the first condensing portion 60a. The second condensing portion 60b may be disposed to face the first side 43b of the machine room 40. The second condensing portion 60b may be disposed a certain interval apart from the first side 43b of the machine room 40. Alternatively, the second condensing portion 60b may be provided in an edge area of the side of the machine room 40.

[0137] The condenser 60, compared with the condenser 60 of FIG. 2, may be provided without a part corresponding to the third condensing portion 60c. Corresponding to this, as shown in FIG. 23, the second inlet 44a may be installed from the first side 43b of the machine

room 40 to a position which faces the second condensing portion 60b. Also, the fixing member 45 may have a shape corresponding to the condenser 60.

[0138] As is apparent from the above description, in a refrigerator 1 in accordance with one embodiment of the present disclosure, the efficiency of a cool air generating unit is increased. Also, the heat exchange efficiency of a condenser may be increased. Heat exchange fins included in the condenser are formed to protrude from a tube, thereby increasing heat exchange efficiency. Top ends and bottom ends of a plurality of tubes are provided to have widths corresponding to the heat exchange fins, thereby preventing the condenser from being damaged or deformed.

[0139] Also, an inner space of a machine room may be efficiently utilized, and an area of the condenser in contact with outside air may be increased using a parallel flow condenser whose one side is bent, thereby improving the efficiency of the condenser.

[0140] Although a few embodiments of the present disclosure have been shown and described, it would be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

Claims

1. A refrigerator comprising:

a body comprising a storage room therein;
a machine room formed in the body and separated from the storage room; and
a cool air generating unit comprising a compressor and a condenser arranged inside the machine room and configured to provide cool air to the storage room,
wherein the condenser comprises:

a first condensing portion which faces a rear surface of the machine room; and
a second condensing portion which is bent from the first condensing portion and faces a first side of the machine room.

2. The refrigerator of claim 1, wherein the machine room comprises a first inlet into which air flows in the rear surface, and
wherein the first inlet is provided in an area at least partially overlapped by the first condensing portion in a rear view.

3. The refrigerator of claim 1, wherein the condenser further comprises a third condensing portion which extends from the second condensing portion and is disposed in parallel with a front surface of the machine room.

4. The refrigerator of claim 3, wherein the machine room comprises a second inlet into which air flows in a bottom front surface, and wherein the second inlet is provided to partially face the third condensing portion. 5
5. The refrigerator of claim 1, wherein the compressor is disposed in a position which faces a second side of the machine room, and wherein the cool air generating unit further comprises a blower fan which is installed between the compressor and the condenser and sends air in a direction from the first side to the second side. 10
6. The refrigerator of claim 1, wherein the compressor is disposed between the first condensing portion and the second condensing portion, and wherein the cool air generating unit further comprises a blower fan which is installed on a lateral side of the condenser and sends air around the condenser to the other side. 15
20
7. The refrigerator of claim 1, wherein the machine room comprises a fixing member which fixes the condenser to a bottom surface, and wherein the fixing member comprises a fixing groove into which one side of the condenser is fixedly inserted. 25
8. The refrigerator of claim 7, wherein the fixing member comprises a fixing portion which grips the condenser in the fixing groove. 30
9. The refrigerator of claim 7, wherein the machine room comprises a defrosted water pipe through which defrosted water generated in the storage room is moved, and wherein the fixing member is provided to prevent the condenser from coming in contact with the defrosted water moved through the defrosted water pipe. 35
40
10. The refrigerator of claim 9, wherein the fixing member comprises a defrosted water flow channel provided to allow the defrosted water to be moved to one side and the other side of the fixing member. 45
11. The refrigerator of claim 1, wherein the machine room comprises a condenser supporting member, which supports the condenser on a top surface and has a shape protruding upward to space the condenser from a bottom surface of the machine room. 50
12. The refrigerator of claim 11, wherein the condenser supporting member comprises a flow channel groove provided to allow a defrosted water moved to the bottom surface of the machine room to be moved through the condenser supporting member. 55
13. The refrigerator of claim 1, wherein the condenser is provided as a parallel flow condenser.

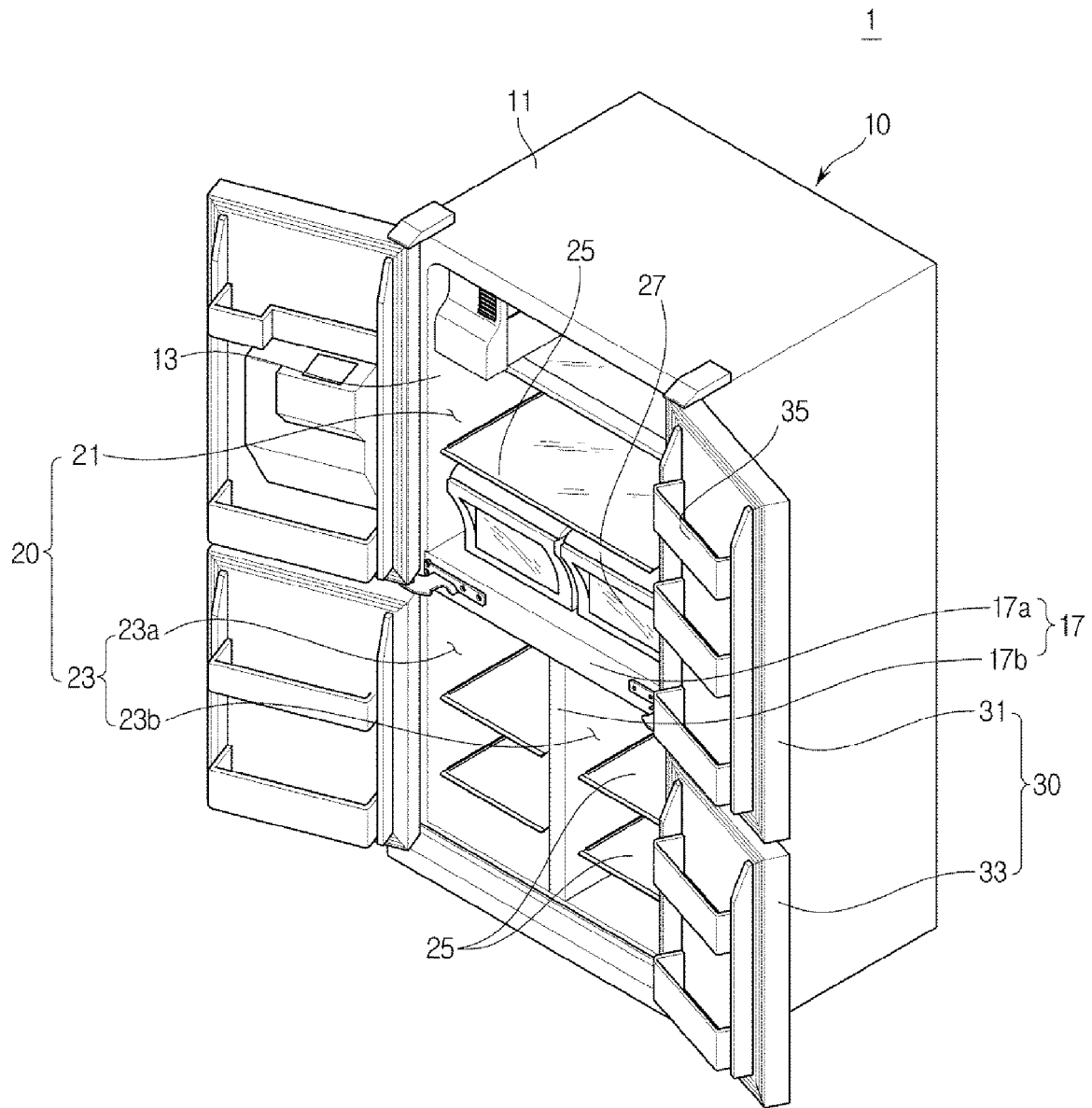


FIG. 1

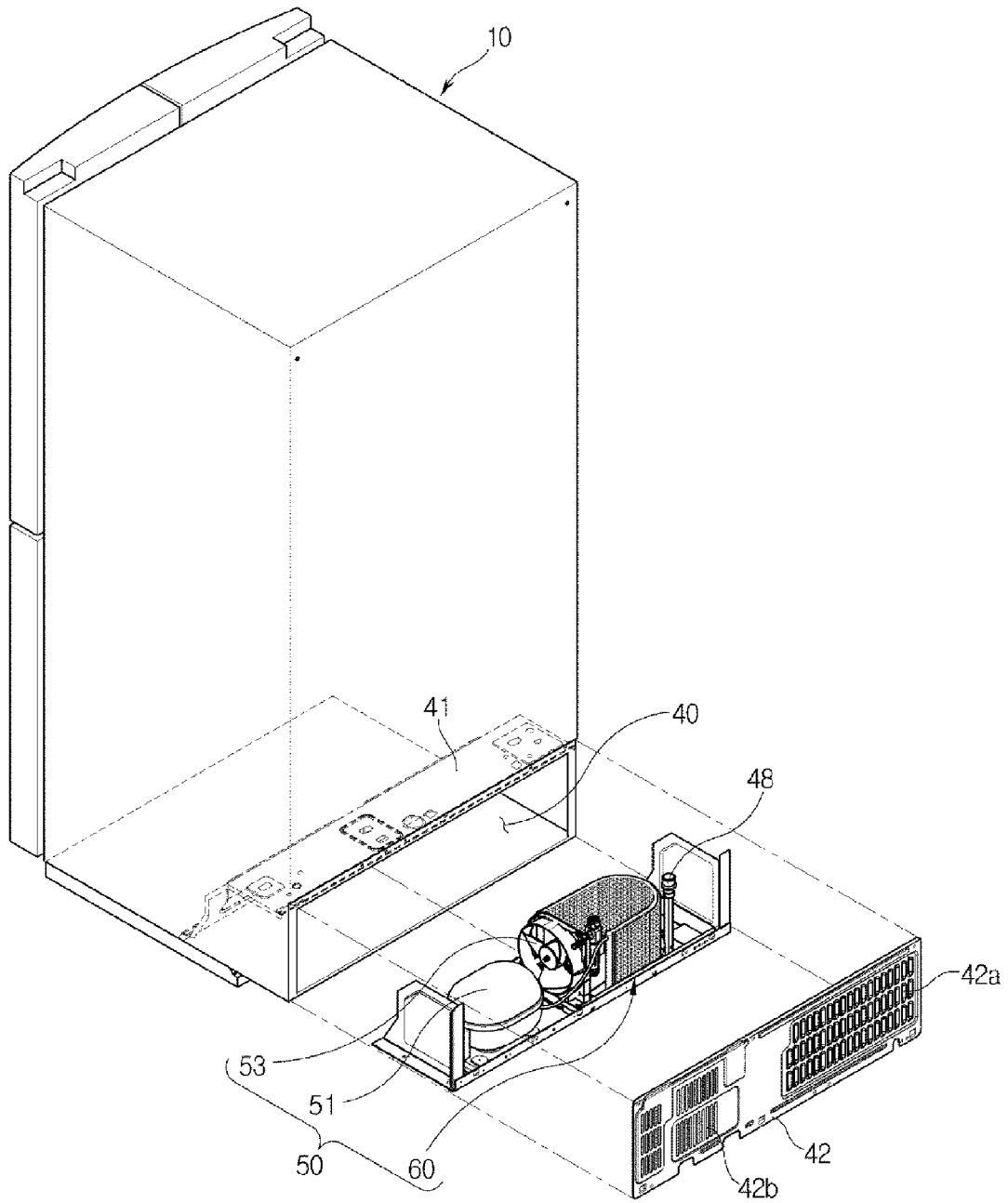


FIG.2

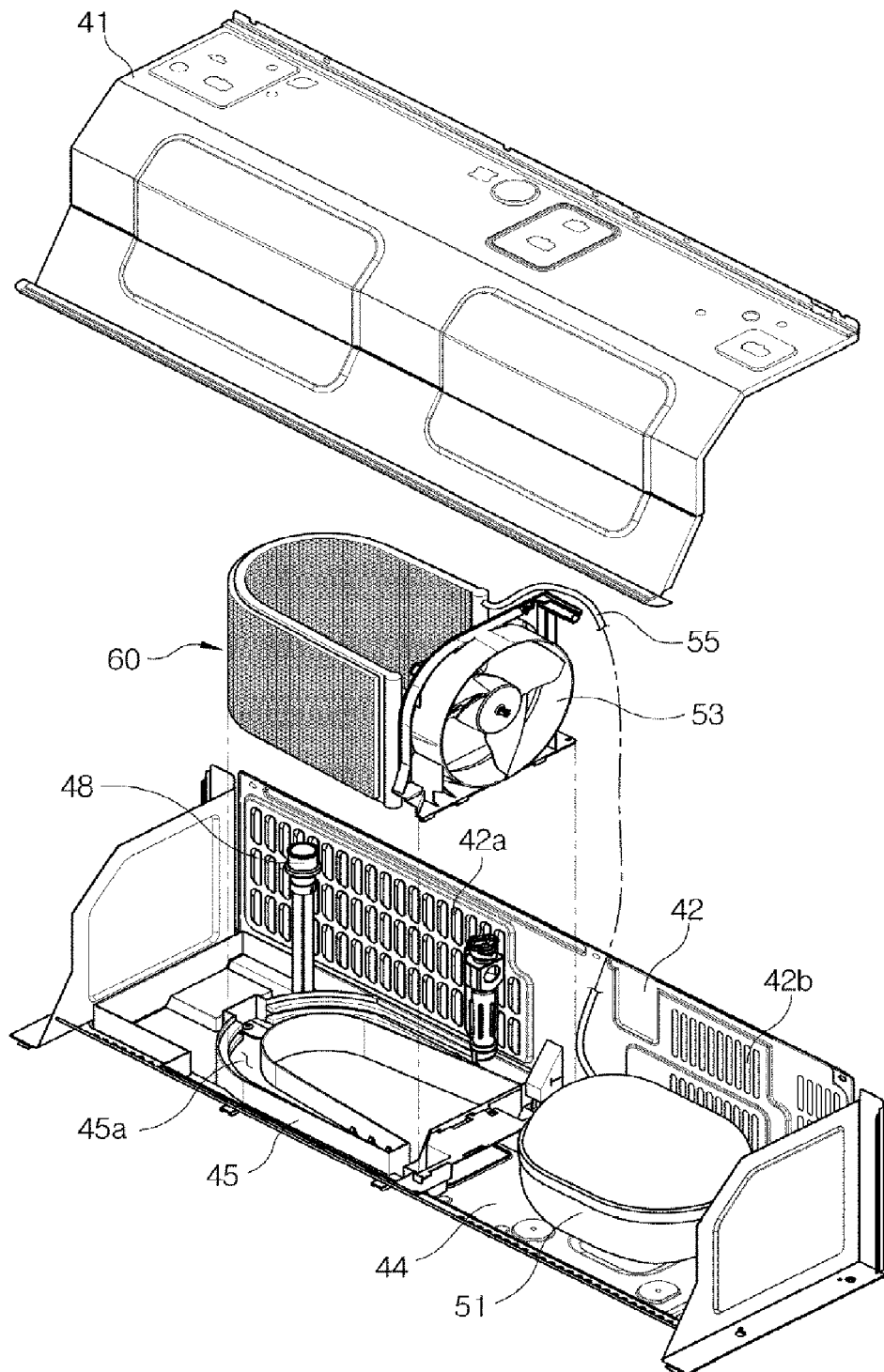


FIG.3

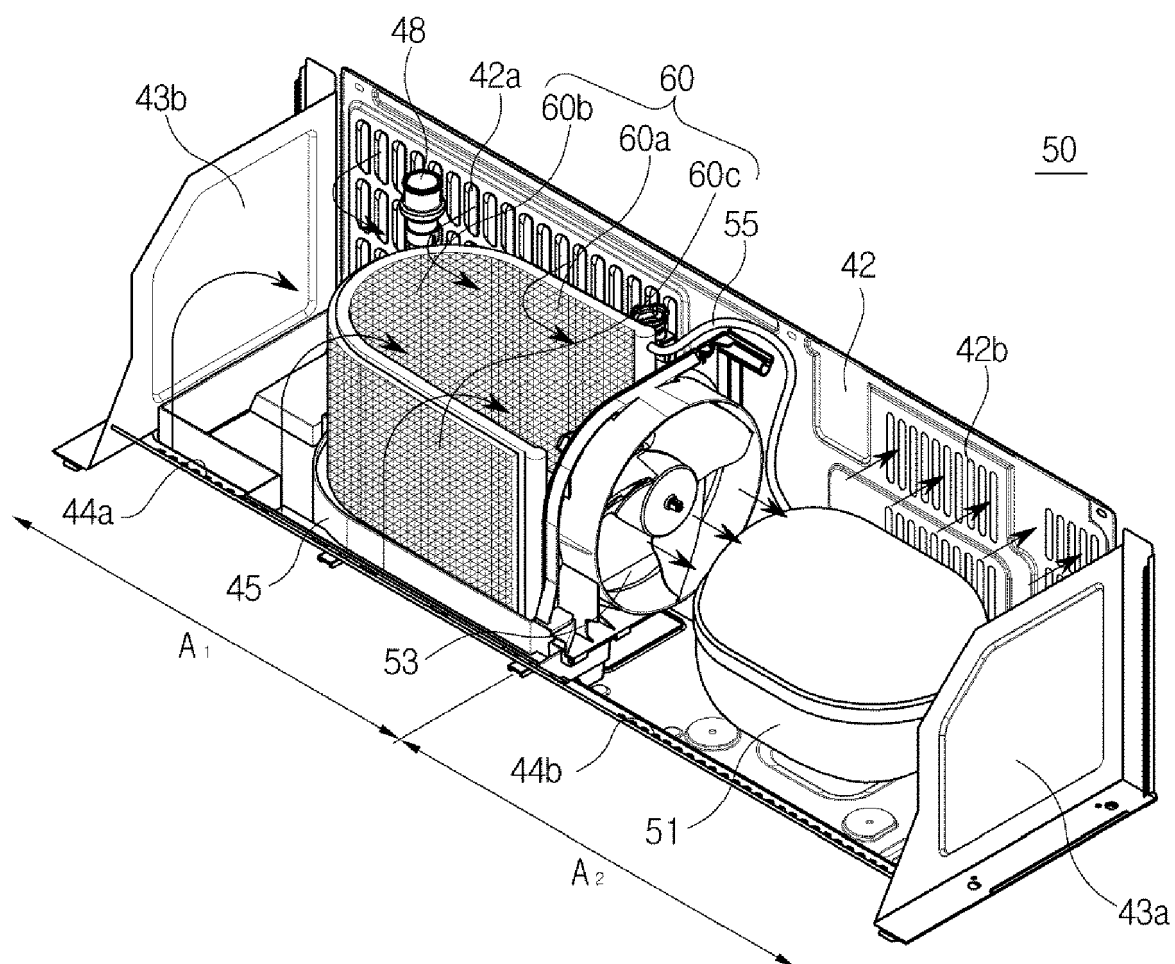


FIG. 4

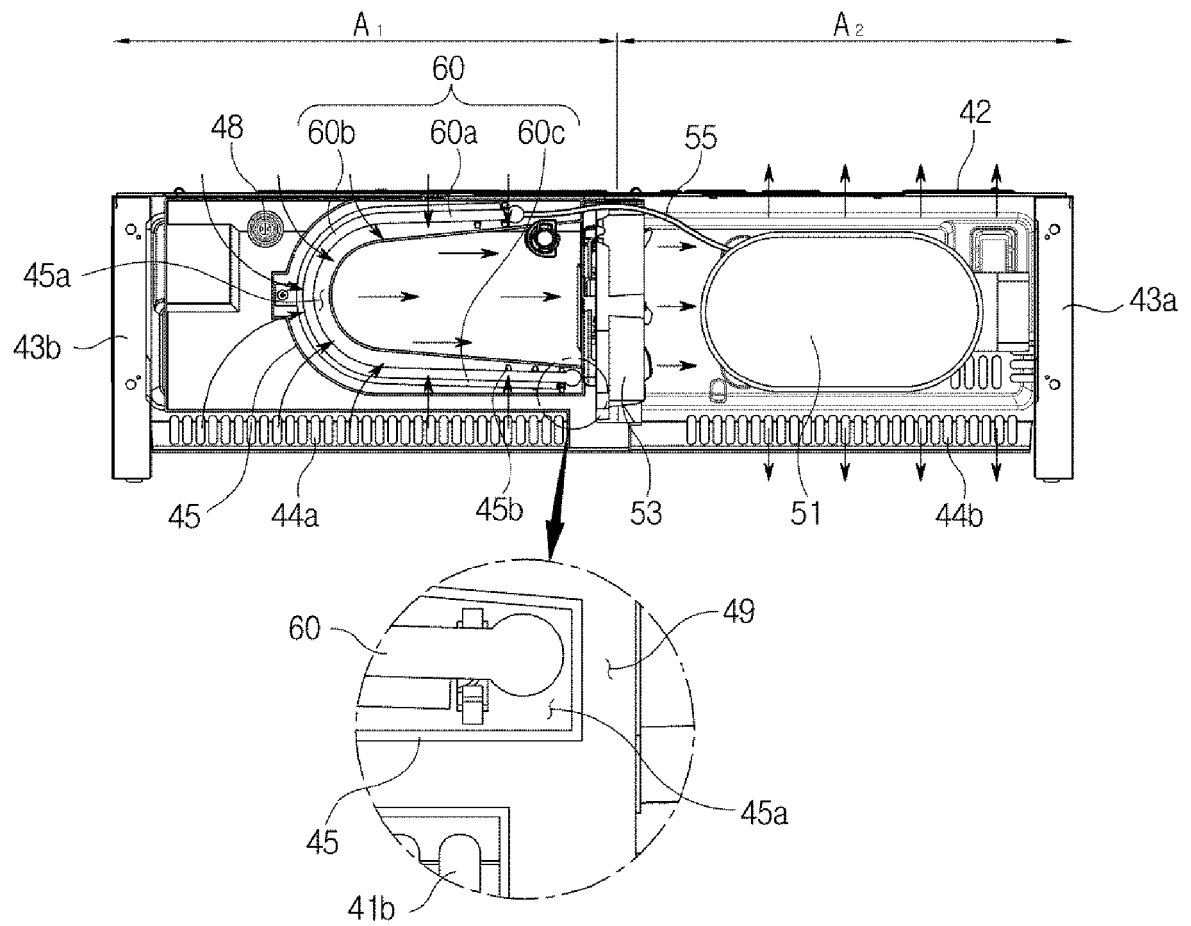


FIG.5

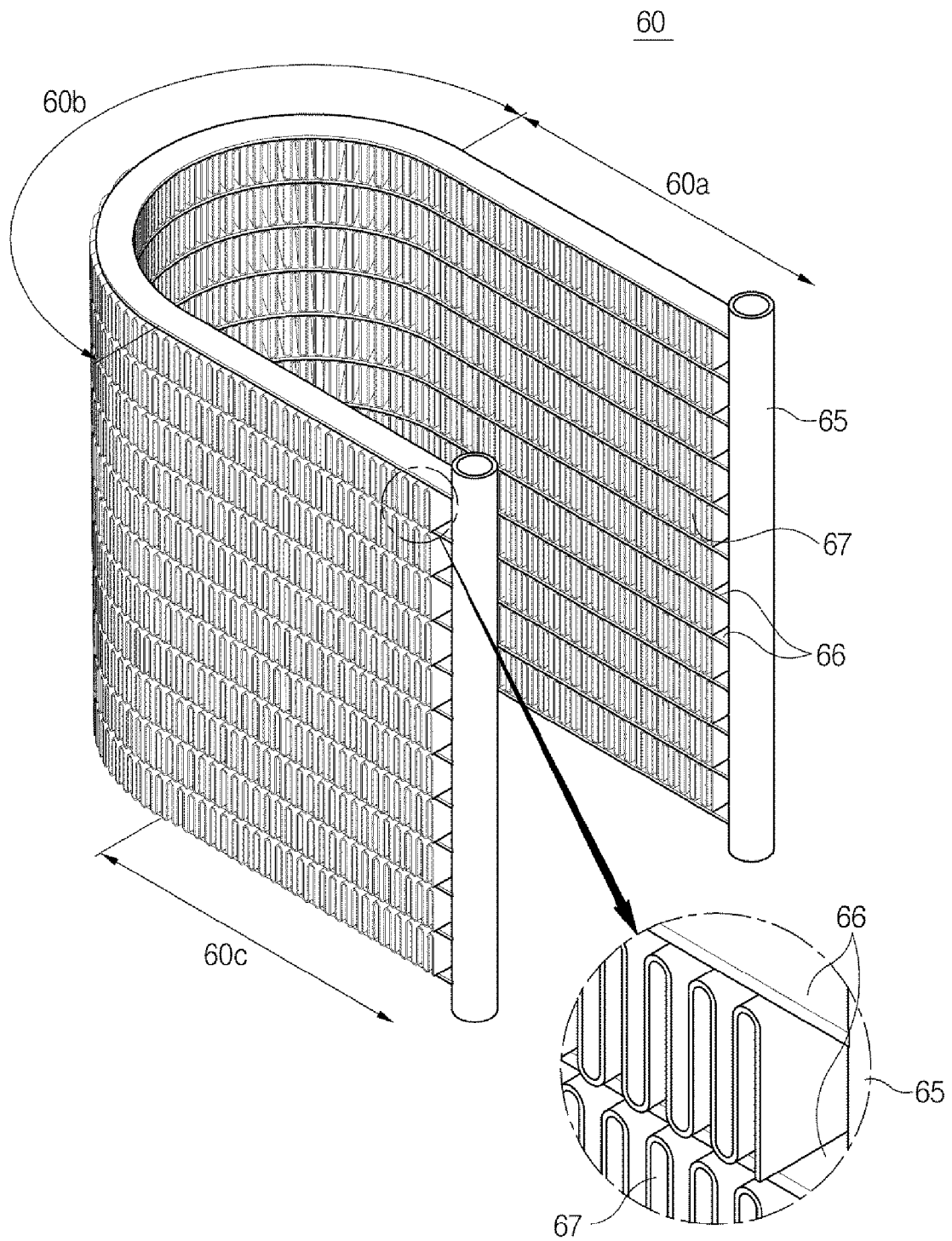


FIG.6

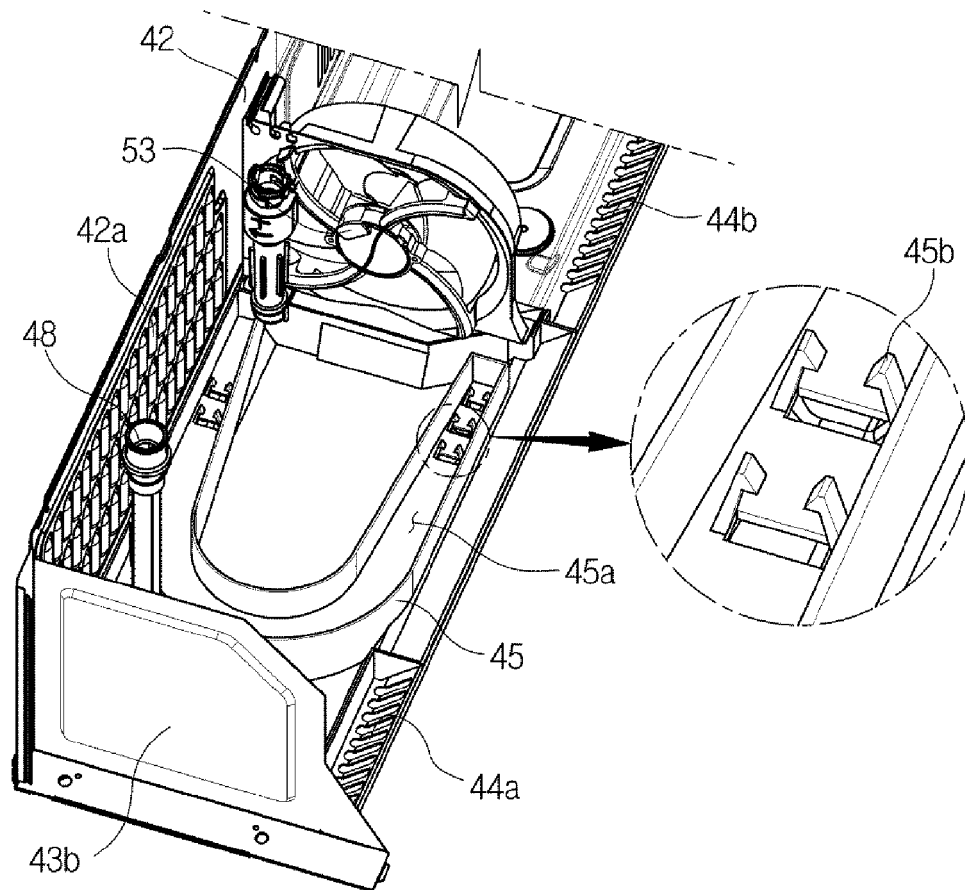


FIG. 7

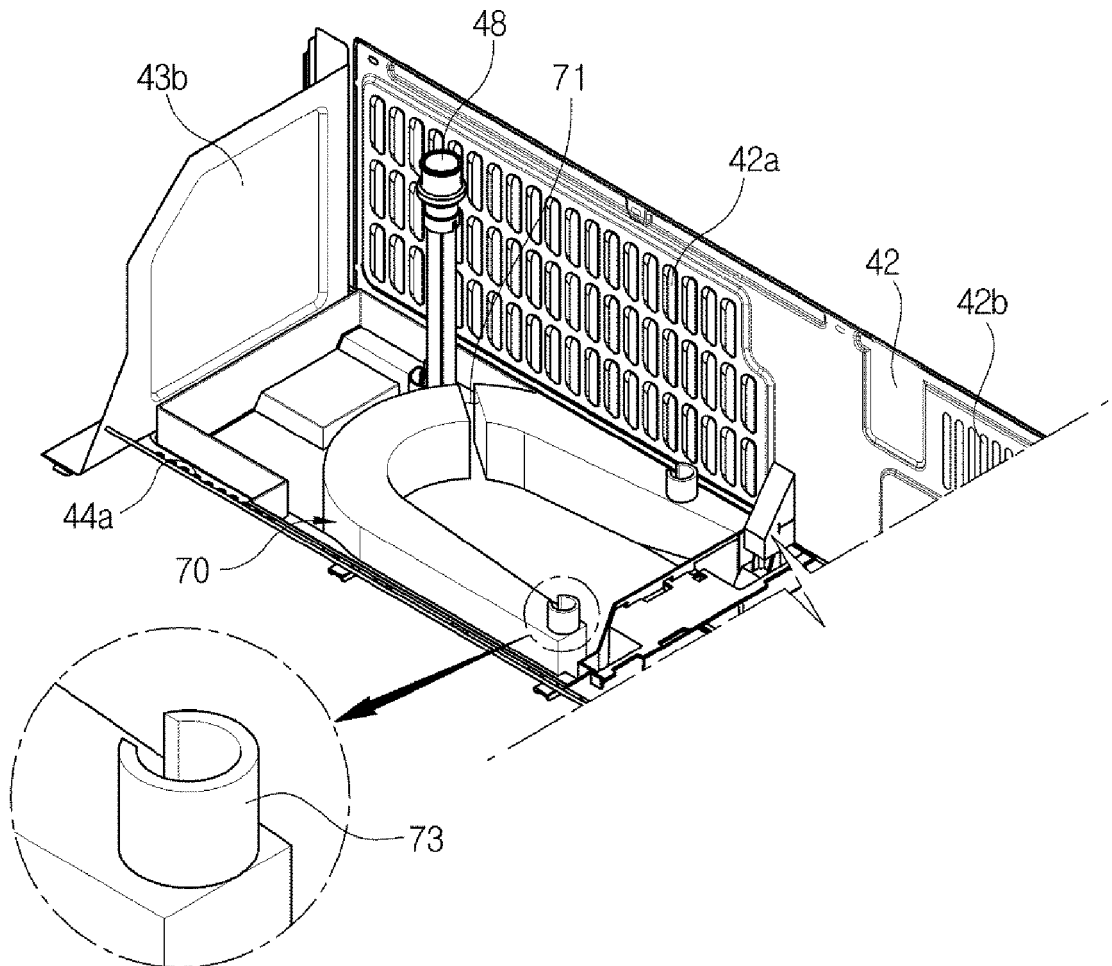


FIG. 8

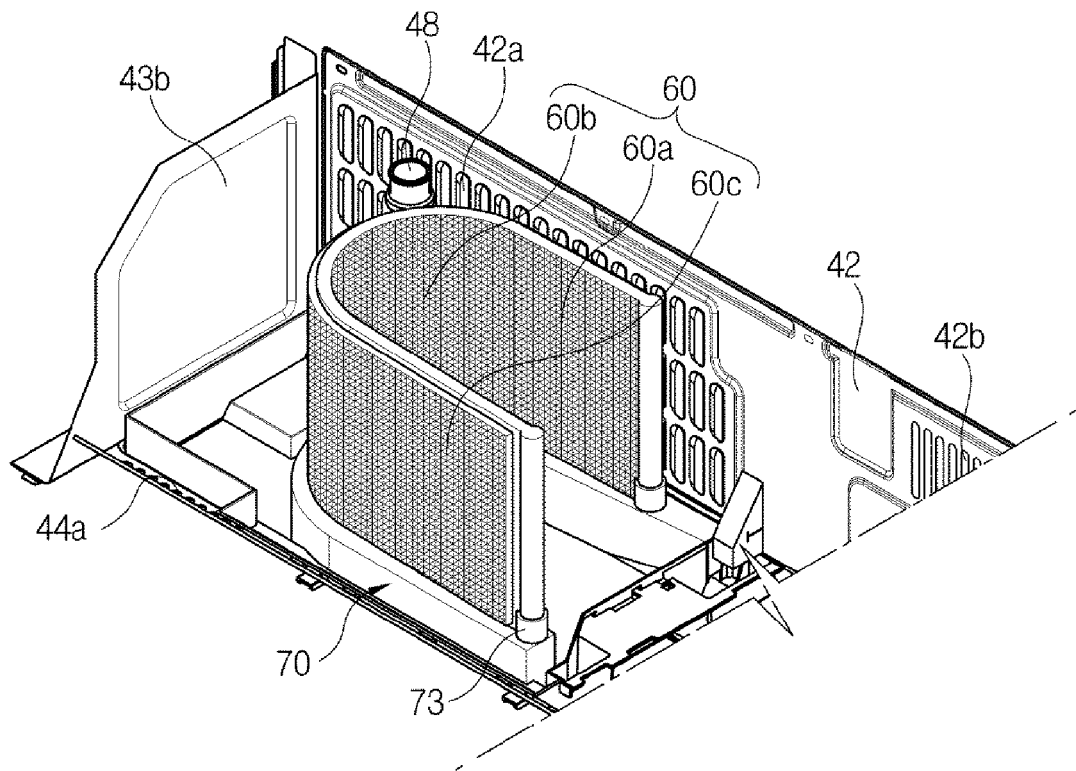


FIG. 9

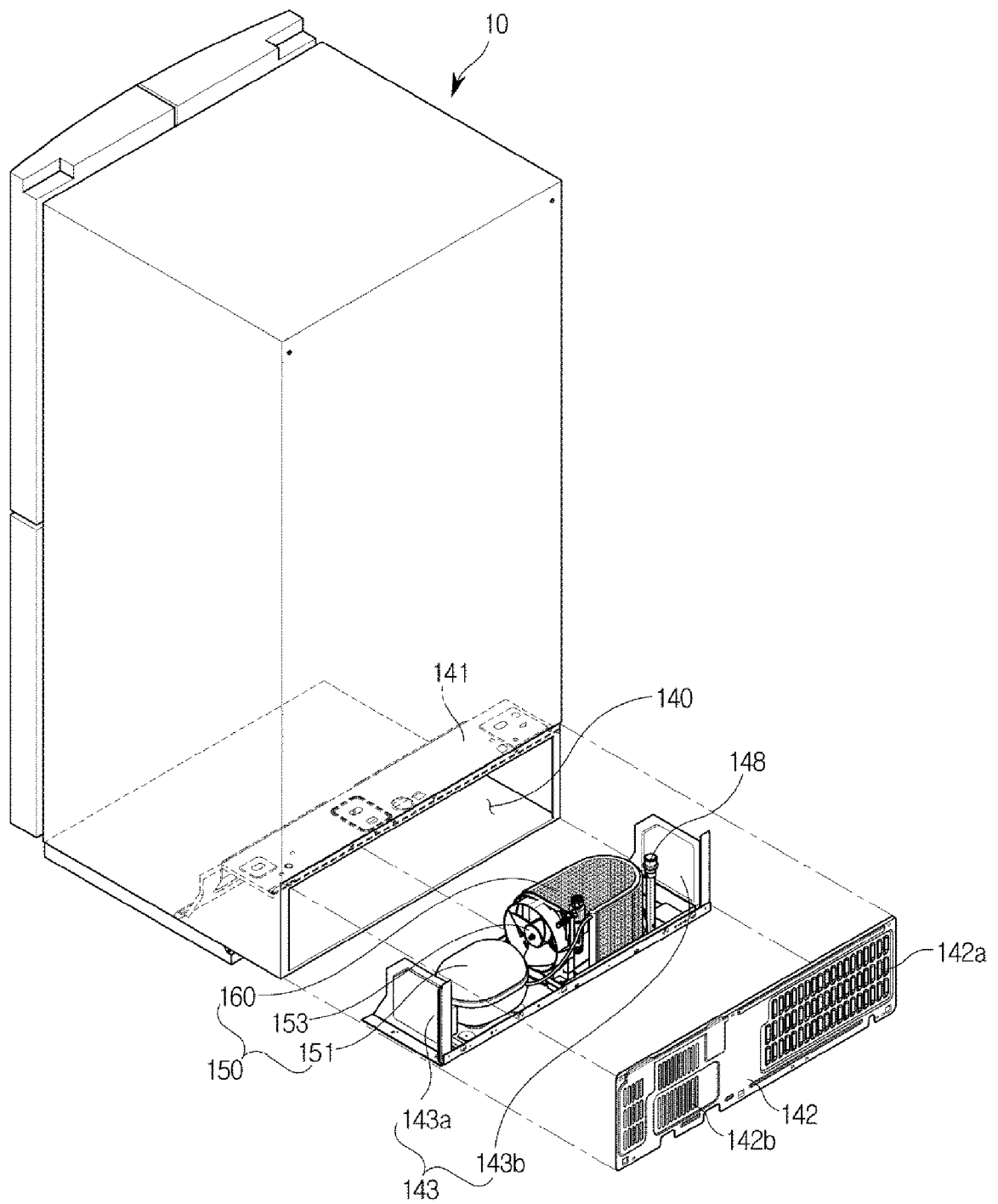


FIG. 10

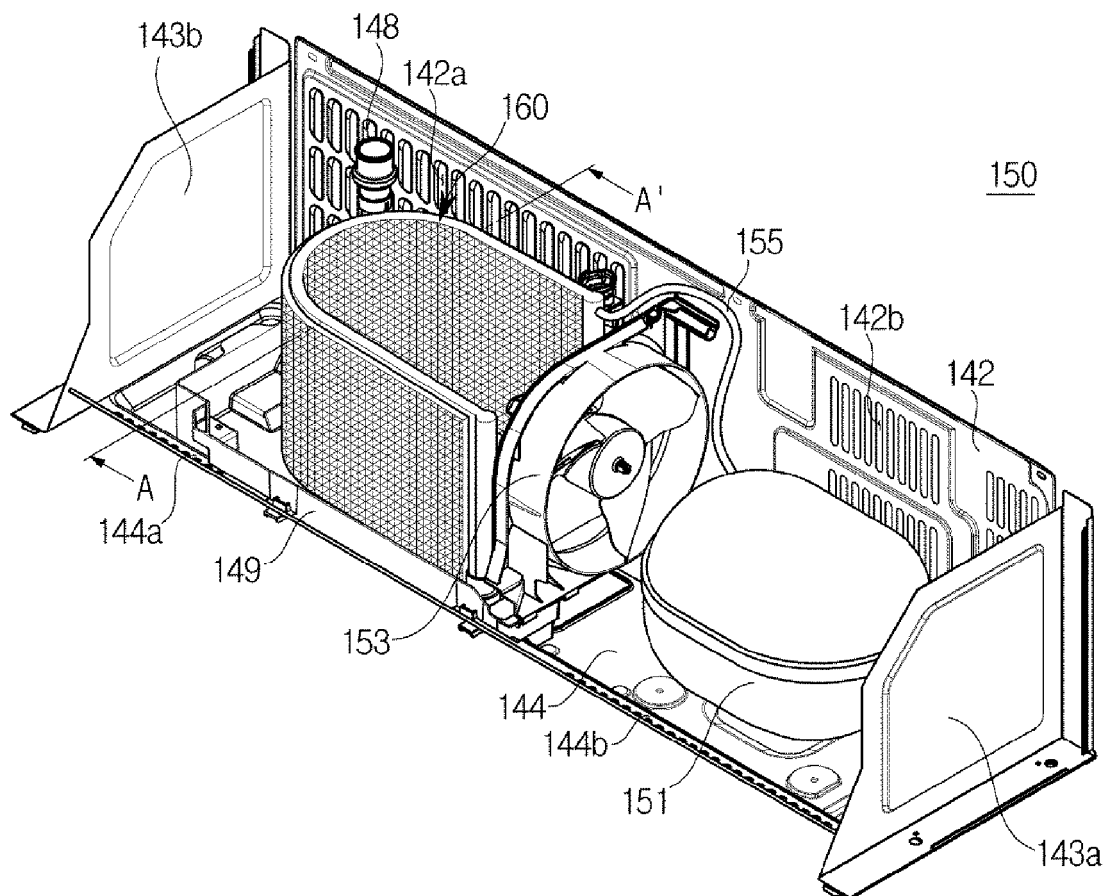


FIG. 11

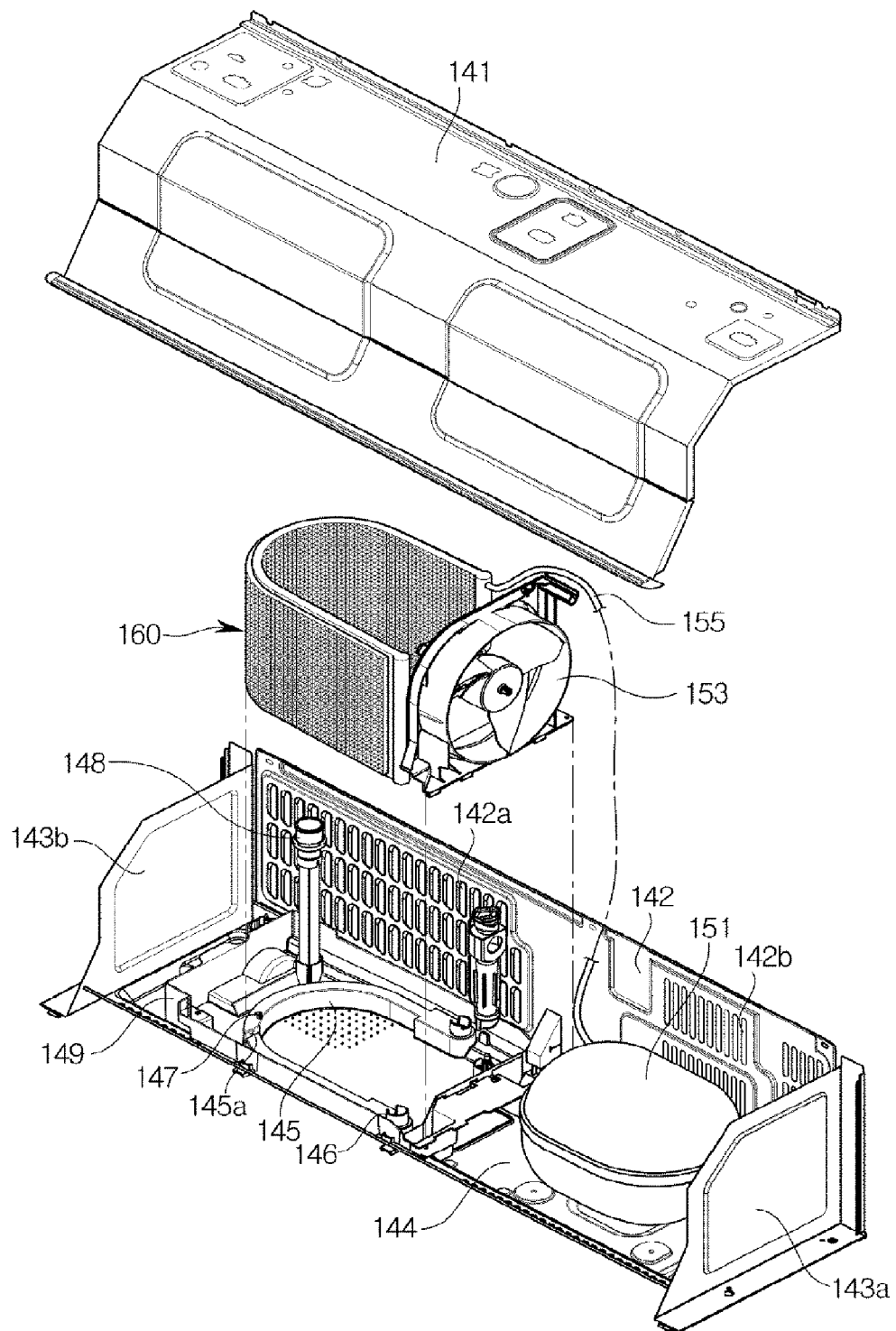


FIG. 12

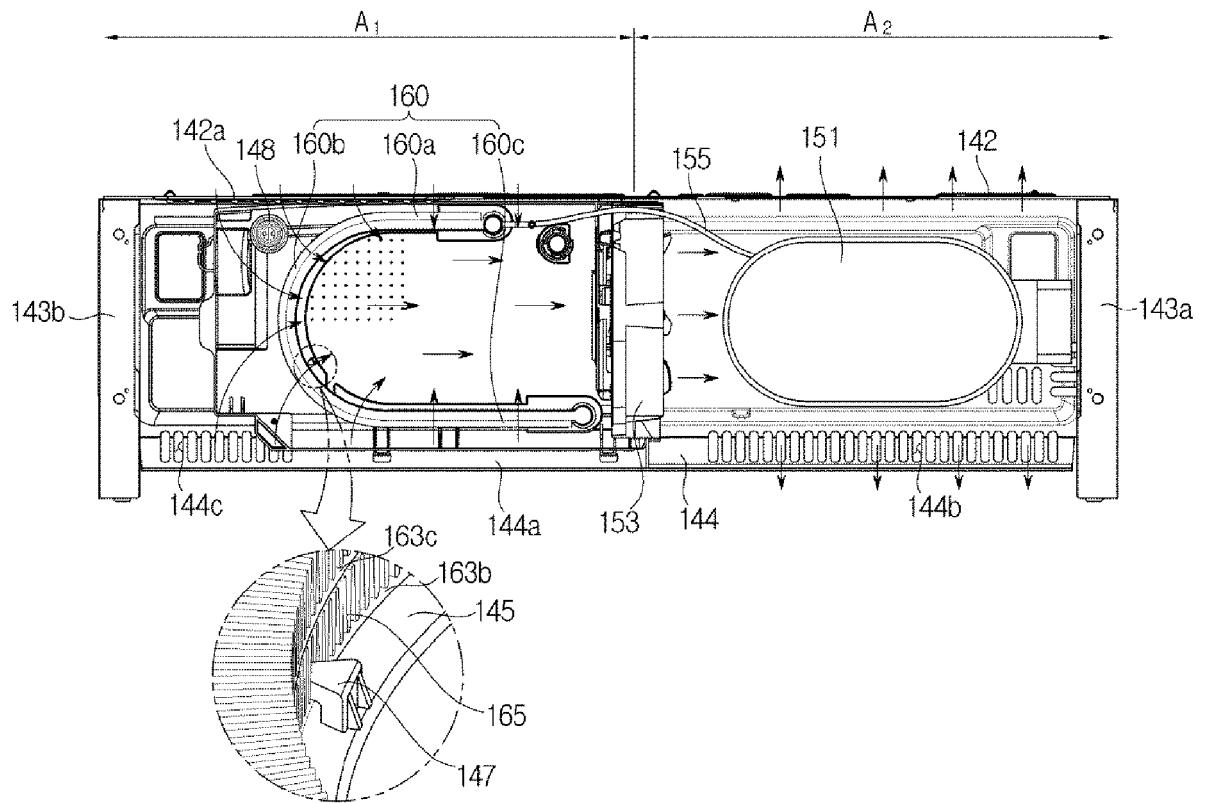


FIG. 13

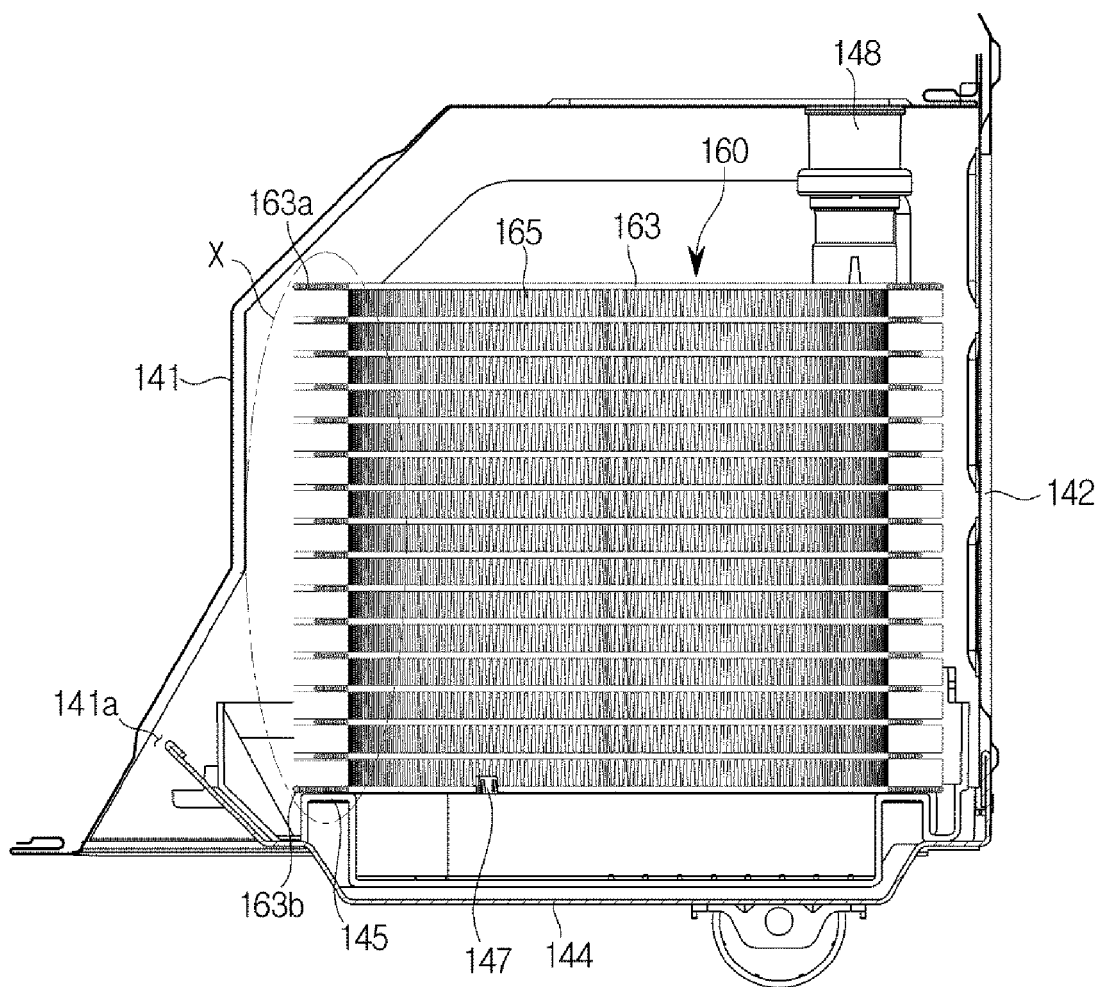


FIG. 14

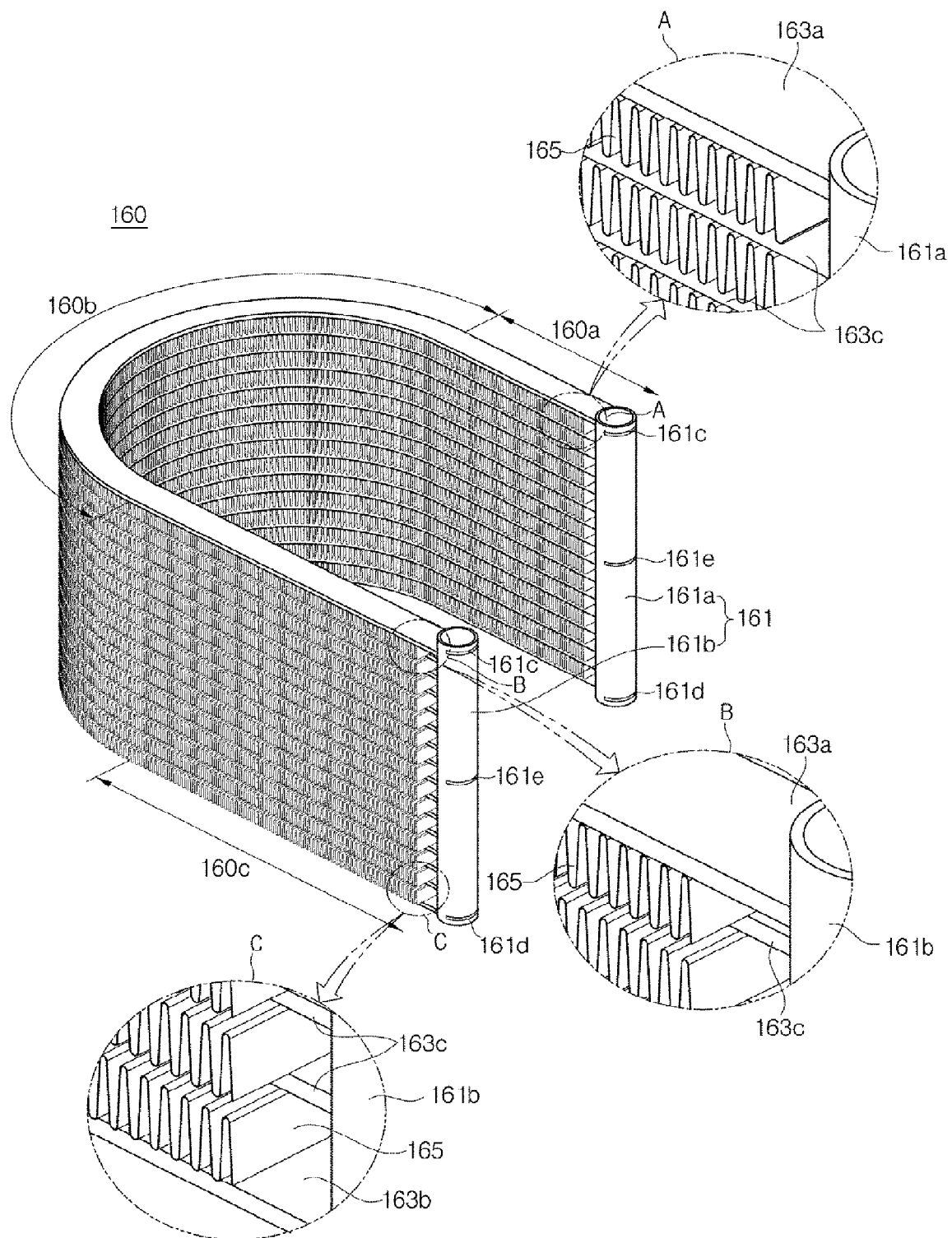


FIG. 15

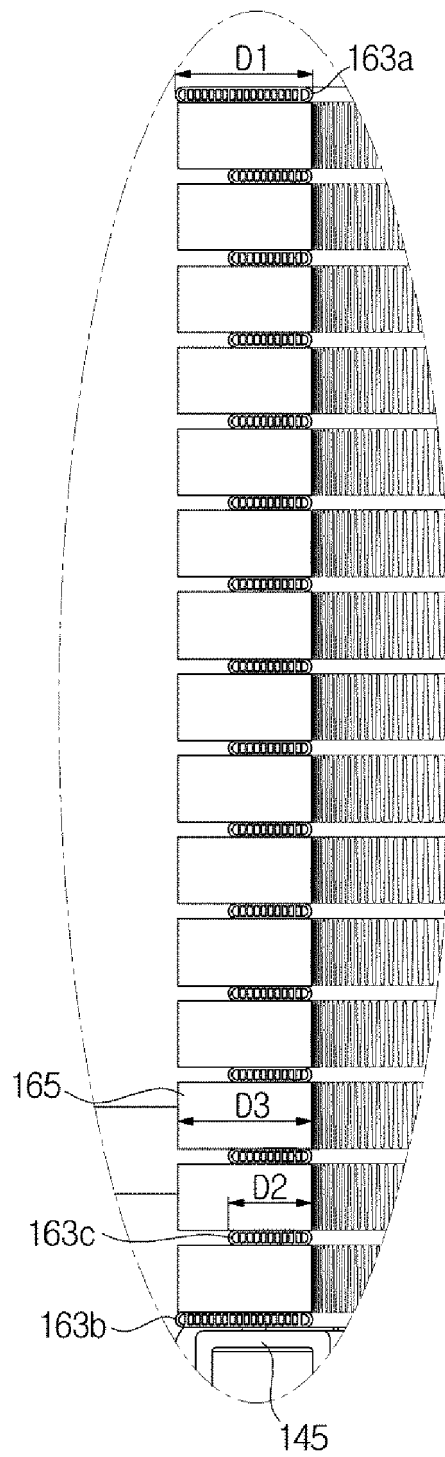


FIG. 16

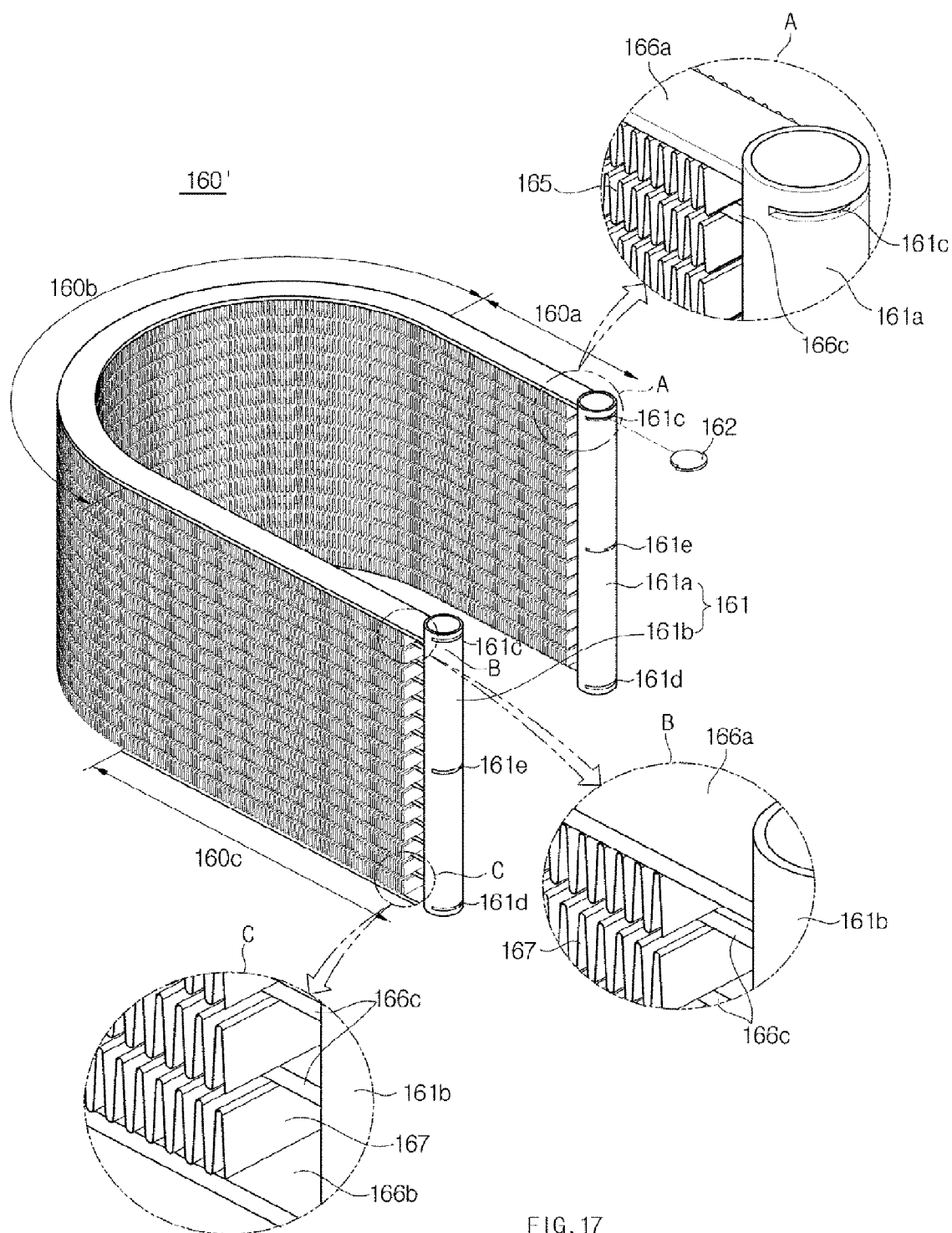


FIG. 17

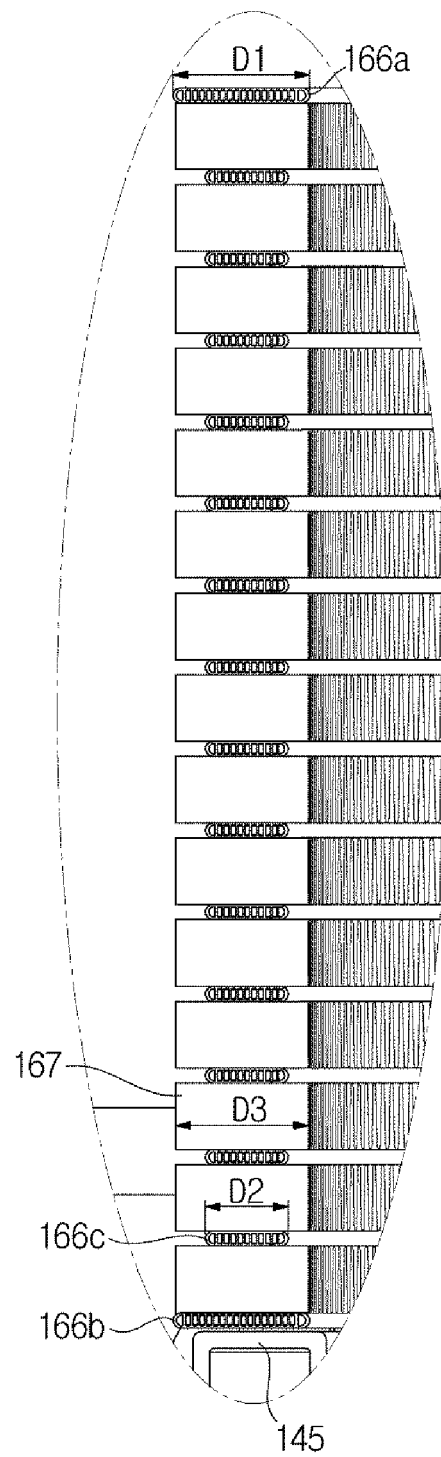


FIG. 18

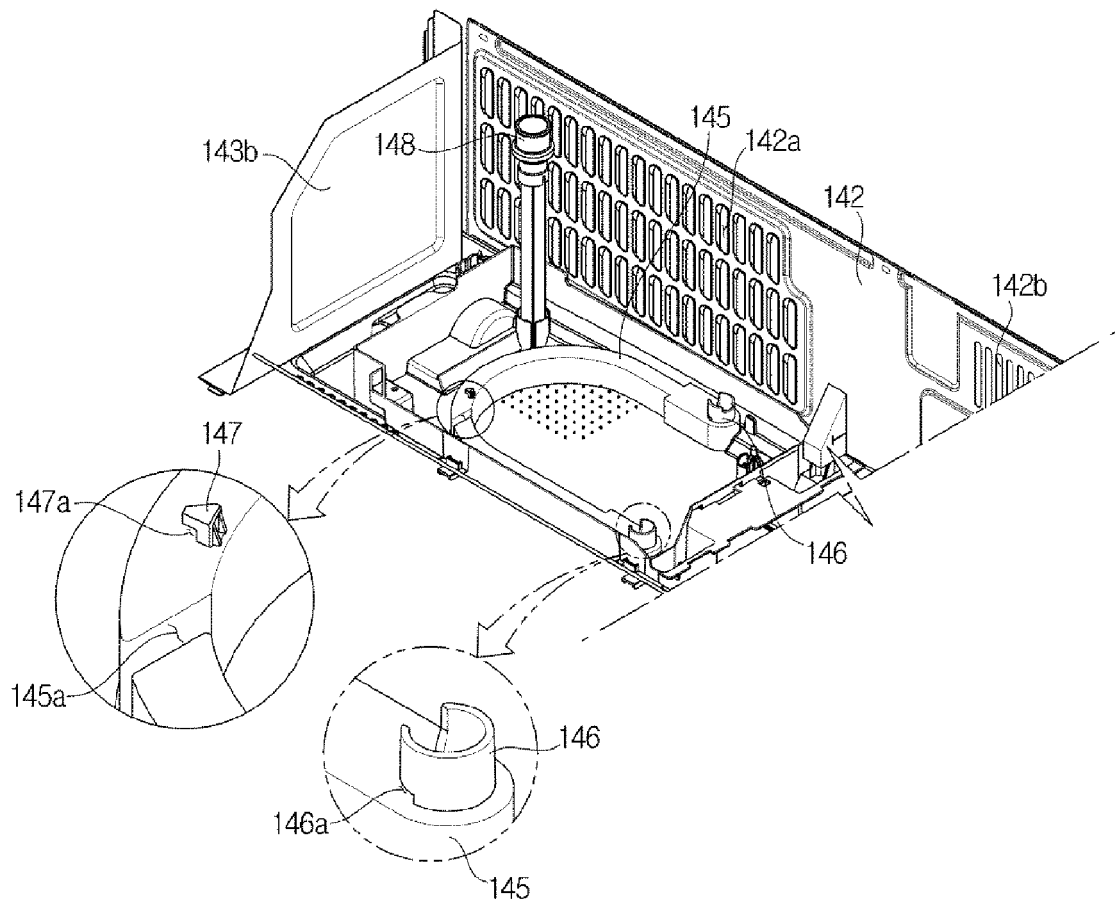


FIG. 19

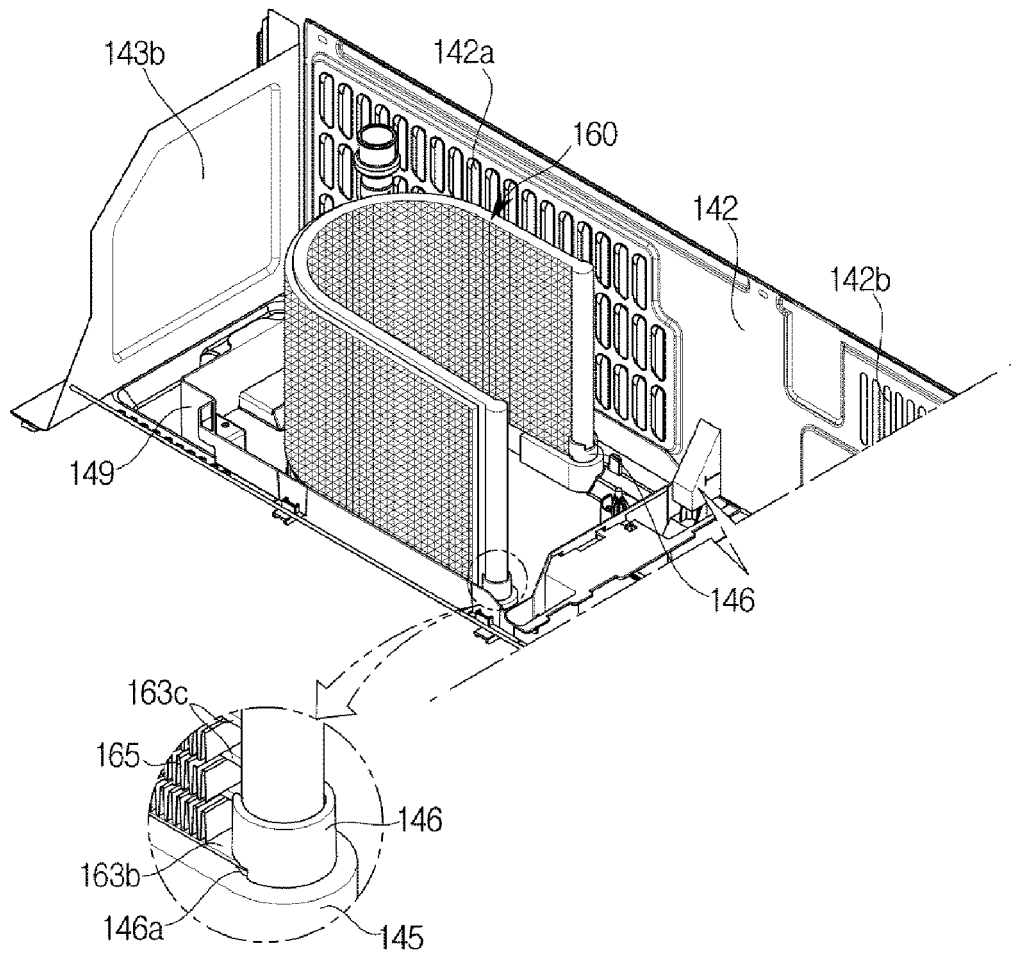


FIG. 20

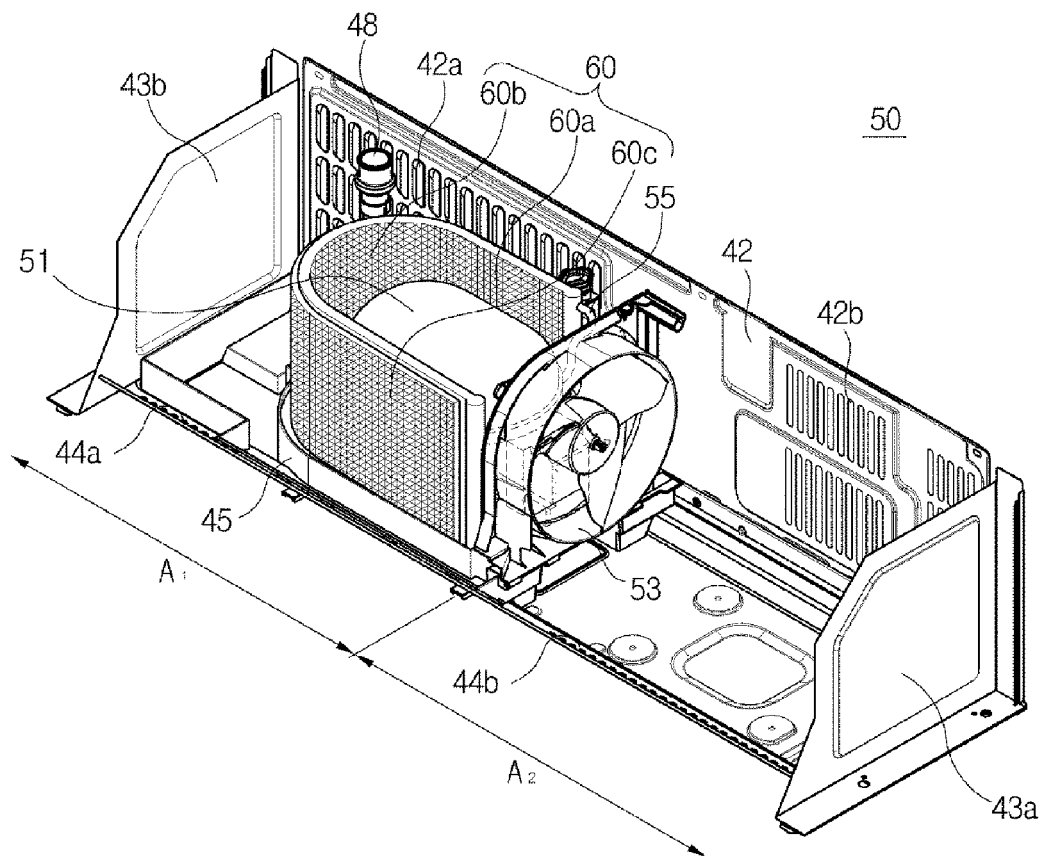


FIG. 21

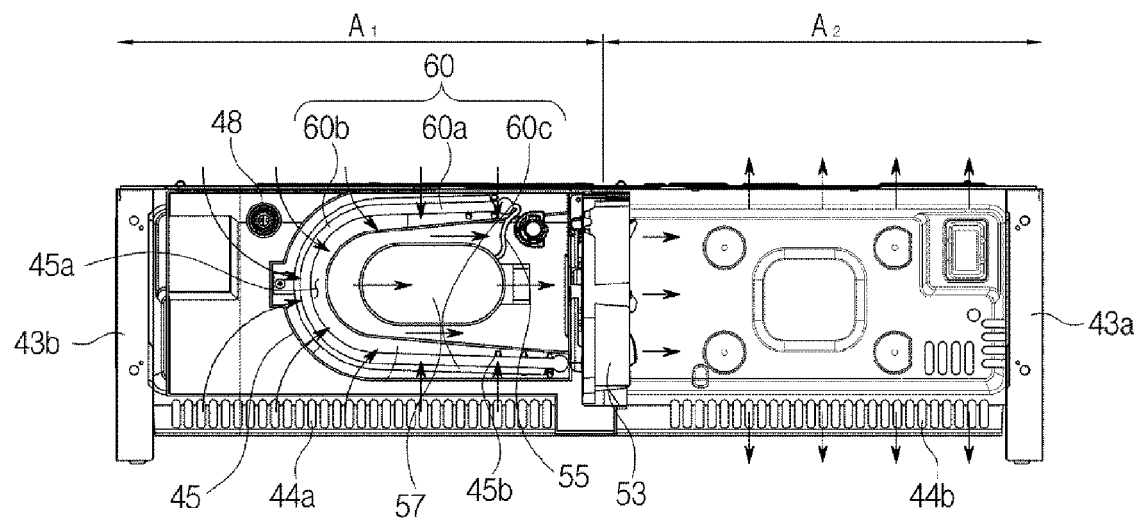


FIG. 22

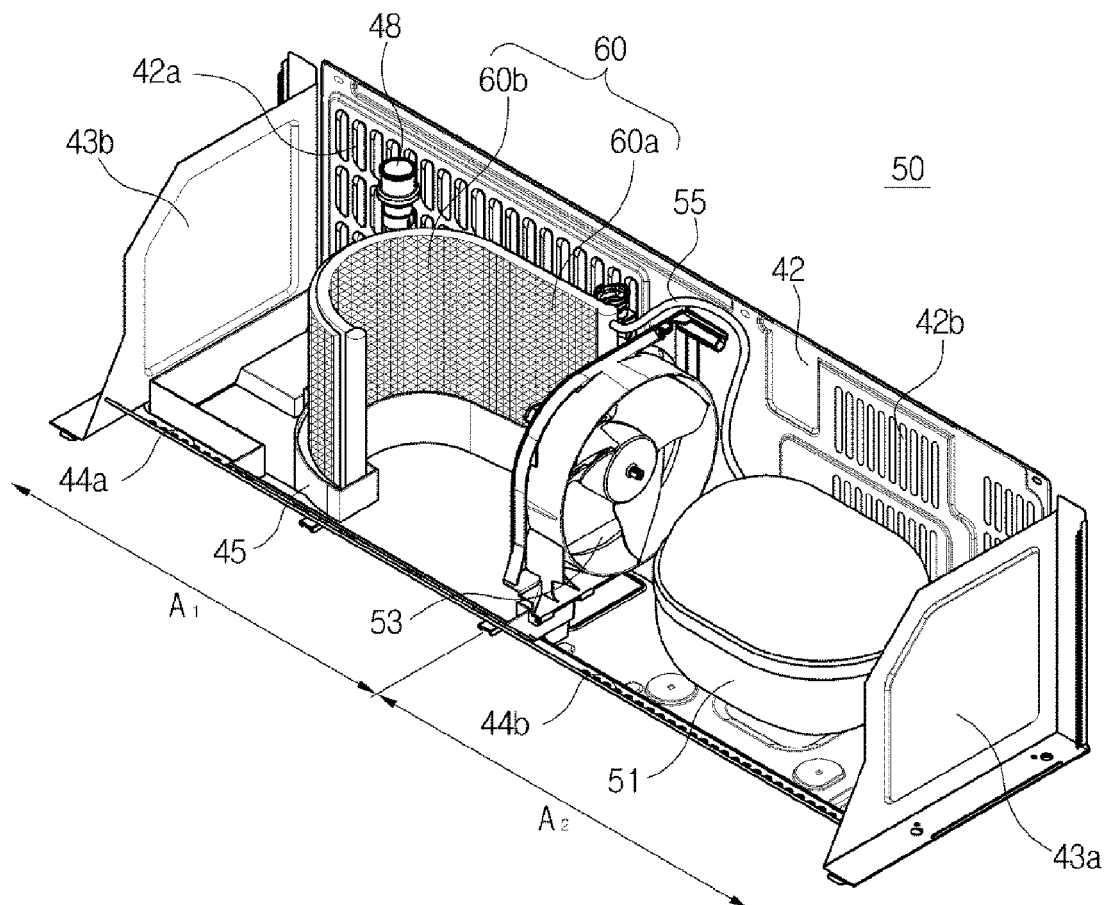


FIG. 23

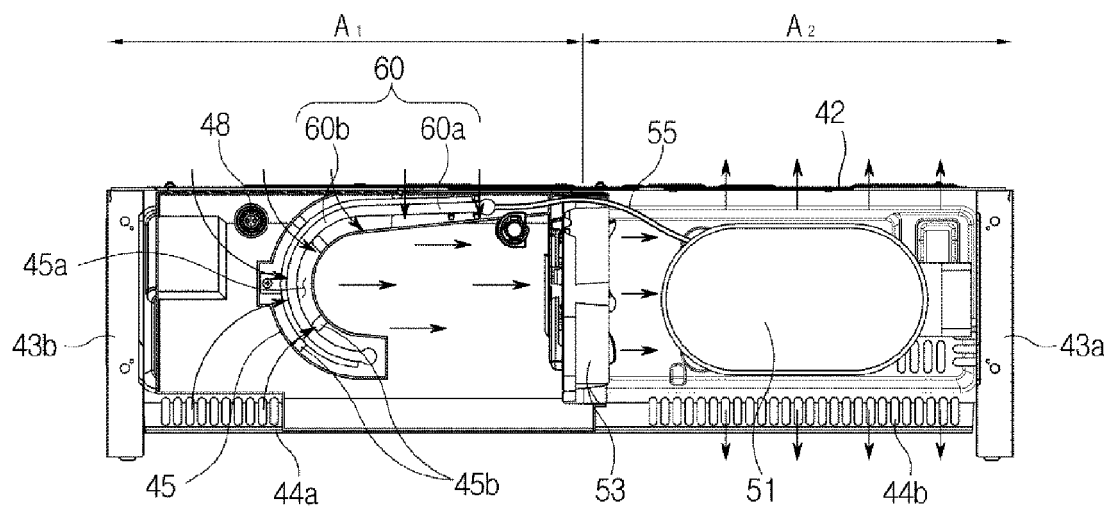


FIG.24



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