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(54) **REFRIGERATION APPLIANCE**

(57) A refrigeration appliance capable of using a simple structure to suppress the displacement of an electric box inside a machine chamber. The refrigeration appliance (10) of the present invention comprises a machine chamber (14) defined and formed in a heat insulation box (11), and an electric box (17) accommodated in the machine chamber (14). In addition, one end of the electric box (17) is connected to a side surface of the machine chamber (14) by means of a connecting portion (29), a protruding insertion portion (25) is inserted into an opening portion (26), the protruding insertion portion (25) is configured by means of part of the electric box (17) formed into a protruding shape, and the opening portion (26) is formed in the inner surface of the machine chamber (14).

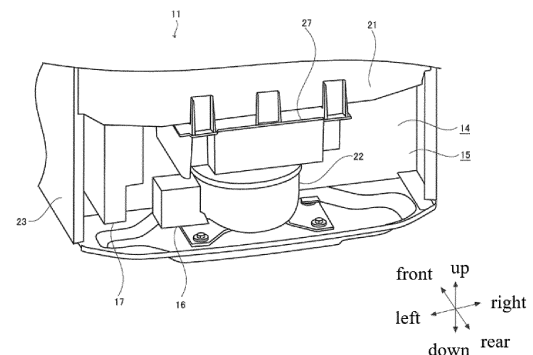


FIG 3

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Description

TECHNICAL FIELD

[0001] The present invention relates to a refrigerating appliance, and in particular, to a refrigerating appliance with an electric box disposed in a machinery chamber.

BACKGROUND

[0002] In a general refrigerating appliance, a storage chamber, such as a refrigerating chamber, or the like, is formed inside a heat insulation cabinet, and the storage chamber is cooled by a refrigerating cycle to provide a suitable temperature range for cooling and preserving a stored object. The refrigerating cycle includes a compressor, a condenser, an expansion unit, and an evaporator.

[0003] The following patent document 1 (Japanese publication No. 2015-1344) describes a refrigerating appliance in which apparatuses forming a refrigerating cycle are arranged in a machinery chamber of a heat insulation cabinet. Specifically, the machinery chamber is formed in a lowermost portion of a rear side of the heat insulation cabinet, and a compressor and a condenser are configured in the machinery chamber. Furthermore, a blower is configured between the compressor and the condenser. During operation of the refrigerating cycle, the blower blows air to the condenser, such that heat exchange in the condenser can be actively performed, and therefore, the refrigerating cycle can effectively operate.

[0004] FIG. 7 is a view showing the refrigerating appliance 100 according to the background, FIG. 7(A) is a perspective view of the machinery chamber 102 as viewed from the upper rear side, and FIG. 7(B) is a perspective view of a position where the electric box 105 is connected as viewed from the lower rear side.

[0005] Referring to FIG. 7(A), the machinery chamber 102 is defined and formed at a rear lower end of the heat insulation cabinet 101 of the refrigerating appliance 100. The machinery chamber 102 receives structural apparatuses of the refrigerating cycle, and here, only the compressor 103 and the electric box 105 are illustrated. The electric box 105 includes, for example, a control substrate having a control circuit for controlling the refrigerating cycle.

[0006] Referring to FIG. 7(B), a left end of the electric box 105 is fixed to a rear side of an outer-cabinet side surface 107 by a screw 106. With this structure, a position of the electric box 105 inside the machinery chamber 102 is defined.

Problem to be solved by invention

[0007] However, in the above refrigerating appliance, there still exists room for an improvement in the structure for fixing the electric box 105.

[0008] With reference to FIG. 8, a problem of the re-

frigerating appliance 100 according to the background will be described. FIG. 8(A) is an upper sectional view of a position where the electric box 105 is connected, and FIG. 8(B) is an upper sectional view showing a state where the electric box 105 is displaced. Further, FIGS. 8(A) and 8(B) show an outer-cabinet rear surface 104 using dotted lines.

[0009] Referring to FIG. 8(A), the left end of the electric box 105 is fixed to the rear side of the outer-cabinet side surface 107 by the screw 106. Furthermore, a refrigerant pipe 108 is configured between the electric box 105 and the outer-cabinet side surface 107.

[0010] Here, in a manufacturing process of the refrigerating appliance 10, there exist operations of drawing one end of the refrigerant pipe 108 out of the machinery chamber 102, welding the refrigerant pipe 108, and then returning the refrigerant pipe 108 to the machinery chamber 102. At this point, when the refrigerant pipe 108 is not returned to a prescribed position, the refrigerant pipe 108 may press the electric box 105.

[0011] Referring to FIG. 8(B), the refrigerant pipe 108 is not returned to the prescribed position, and thus, when the refrigerant pipe 108 rightwards presses the electric box 105, the electric box 105 is displaced as follows: the electric box 105 rotates with the position of fixation by the screw 106 as a center. Thus, a part of the electric box 105 protrudes rearwards from the outer-cabinet rear surface 104. When the electric box 105 protrudes from the outer-cabinet rear surface 104, in a use condition of the refrigerating appliance 100, there exists a concern that water flows along an outer surface of the outer-cabinet rear surface 104 and may wet the electric box 105, causing a short circuit in an electrical circuit received in the electric box 105.

[0012] Furthermore, when the electric box 105 is pulled by a power line, a wire harness, or the like (not shown), as shown in FIG. 8(B), the electric box 105 may be inadvertently displaced into the outer-cabinet rear surface 104.

SUMMARY

[0013] The present invention is made in view of the above conditions, and an object thereof is to provide a refrigerating appliance capable of suppressing displacement of an electric box in a machinery chamber with a simple structure.

Solution to problem

[0014] The refrigerating appliance according to the present invention includes: a machinery chamber defined and formed in a heat insulation cabinet; and an electric box received in the machinery chamber, one end of the electric box being connected to a side surface of the machinery chamber by a connecting portion, a protruding insertion portion being inserted into an opening portion, the protruding insertion portion being provided

by forming a part of the electric box into a protruding shape, and the opening portion being formed in an inner surface of the machinery chamber.

[0015] Furthermore, in the refrigerating appliance according to the present invention, the connecting portion is configured on one end side of the electric box, and the protruding insertion portion is configured on an end side of the electric box opposite to the connecting portion.

[0016] Furthermore, in the refrigerating appliance according to the present invention, a refrigerant pipe is configured in the machinery chamber near the electric box, and the protruding insertion portion is configured at an end portion of a side of the electric box apart from the refrigerant pipe.

[0017] Furthermore, in the refrigerating appliance according to the present invention, the heat insulation cabinet includes an outer cabinet, an inner cabinet, and a heat insulation material packed between the outer cabinet and the inner cabinet, and a front end portion of the protruding insertion portion is embedded in the heat insulation material.

Effects of invention

[0018] The refrigerating appliance according to the present invention includes: the machinery chamber defined and formed in the heat insulation cabinet; and the electric box received in the machinery chamber, one end of the electric box being connected to the side surface of the machinery chamber by the connecting portion, the protruding insertion portion being inserted into the opening portion, the protruding insertion portion being provided by forming a part of the electric box into the protruding shape, and the opening portion being formed in the inner surface of the machinery chamber. Therefore, in the refrigerating appliance according to the present invention, the protruding insertion portion is inserted into the opening portion, thus suppressing inadvertent movement of the electric box inside the machinery chamber.

[0019] Furthermore, in the refrigerating appliance according to the present invention, the connecting portion is configured on one end side of the electric box, and the protruding insertion portion is configured on the end side of the electric box opposite to the connecting portion. Therefore, in the refrigerating appliance according to the present invention, the protruding insertion portion can be configured at a position apart from the connecting portion, such that the effect of suppressing the movement of the electric box by the protruding insertion portion can be remarkable.

[0020] Furthermore, in the refrigerating appliance according to the present invention, the refrigerant pipe is configured in the machinery chamber near the electric box, and the protruding insertion portion is configured at the end portion of the side of the electric box apart from the refrigerant pipe. Therefore, in the refrigerating appliance according to the present invention, even when the electric box is pressed by the refrigerant pipe, the move-

ment of the electric box can be suppressed by inserting the protruding insertion portion into the opening portion at a position apart from the refrigerant pipe.

[0021] Furthermore, in the refrigerating appliance according to the present invention, the heat insulation cabinet includes the outer cabinet, the inner cabinet, and the heat insulation material packed between the outer cabinet and the inner cabinet, and the front end portion of the protruding insertion portion is embedded in the heat insulation material. Therefore, in the refrigerating appliance according to the present invention, by embedding the front end portion of the protruding insertion portion into the heat insulation material, the protruding insertion portion can be firmly fixed to the heat insulation cabinet side, thereby making an effect of supporting the electric box remarkable.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] A full and feasible disclosure of the present invention, including a best mode thereof, is set forth for persons of ordinary skills in the art in the specification with reference to the accompanying drawings.

FIG. 1 is a view showing a refrigerating appliance according to an embodiment of the present invention, and is a perspective view of the refrigerating appliance as viewed from the upper rear side.

FIG. 2 is a side sectional view showing the refrigerating appliance according to the embodiment of the present invention.

FIG. 3 is a view showing the refrigerating appliance according to the embodiment of the present invention, and is a perspective view of a machinery chamber as viewed from the upper rear side.

FIG. 4 is a view showing the refrigerating appliance according to the embodiment of the present invention, (A) being an exploded perspective view showing a structure of an electric box in detail, and (B) being a perspective view showing a specific structure of a substrate fixing clamp of the electric box.

FIG. 5 is a view showing the refrigerating appliance according to the embodiment of the present invention, (A) being a perspective view of a structure in which a protruding insertion portion is inserted into an opening portion as viewed from the front, and (B) being a perspective view of the structure in which the protruding insertion portion is inserted into the opening portion as viewed from the rear.

FIG. 6 is a view showing the refrigerating appliance according to the embodiment of the present invention, (A) being a perspective view showing a structure in which the electric box is connected in detail, and (B) being an upper sectional view showing the structure in which the electric box is connected.

FIG. 7 is a view showing a refrigerating appliance according to the background, (A) being a perspective view of a machinery chamber as viewed from the

upper rear side, and (B) being a perspective view of a position where an electric box is connected as viewed from the lower rear side.

FIG. 8 is a view showing the refrigerating appliance according to the background, (A) being an upper sectional view of a position where the electric box is connected, and (B) being an upper sectional view showing a state where the electric box is displaced.

REFERENCE NUMERALS

[0023] 10: refrigerating appliance, 11: heat insulation cabinet, 111: outer cabinet, 112: inner cabinet, 113: heat insulation material, 114: vegetable chamber, 115: cooling chamber, 116: evaporator, 117: defrosting heater, 118: air supply path, 12: refrigerating chamber, 13: freezing chamber, 14: machinery chamber, 15: machinery chamber opening, 16: terminal cover, 17: electric box, 171: substrate housing, 172: substrate, 173: substrate fixing clamp, 174: substrate support, 175: screw, 18: heat insulation door, 19: heat insulation door, 20: heat insulation door, 21: outer-cabinet rear surface, 22: compressor, 23: outer-cabinet side surface, 24: upper surface member, 25: protruding insertion portion, 251: sharp portion, 252: rib, 26: opening portion, 27: evaporating dish, 28: refrigerant pipe, 29: connecting portion, 100: refrigerating appliance, 101: heat insulation cabinet, 102: machinery chamber, 103: compressor, 104: outer-cabinet rear surface, 105: electric box, 106: screw, 107: outer-cabinet side surface, 108: refrigerant pipe.

DETAILED DESCRIPTION

[0024] Hereinafter, a refrigerating appliance 10 according to an embodiment of the present invention will be described in detail based on the accompanying drawings. Further, in describing the present embodiment, the same reference numerals are used for the same members in principle, and redundant descriptions are omitted. In the present embodiment, the description is given using an up-down direction, a front-rear direction and a left-right direction, and the left-right direction refers to the left-right direction when the refrigerating appliance 10 is viewed from the rear. Furthermore, in the present embodiment, a refrigerating appliance having a freezing chamber and a refrigerating chamber is exemplified as the refrigerating appliance 10, but the refrigerating appliance 10 may be configured as a refrigerating appliance having only a freezing chamber or only a refrigerating chamber.

[0025] FIG. 1 is a perspective view of the refrigerating appliance 10 according to the embodiment of the present invention as viewed from the upper rear side. The refrigerating appliance 10 has a heat insulation cabinet 11 and a storage chamber formed inside the heat insulation cabinet 11. As the storage chamber, there exist a refrigerating chamber 12, a vegetable chamber 114, and a freezing chamber 13. A front opening of the refrigerating chamber

12 is closed by a rotary heat insulation door 18, a front opening of the vegetable chamber 114 is closed by a drawn heat insulation door 19, and a front surface opening of the freezing chamber 13 is closed by a drawn heat insulation door 20.

[0026] A machinery chamber 14 as a cavity is formed at a bottom of a rear side of the refrigerating appliance 10. The machinery chamber 14 is formed continuously from a left end to a right end of the heat insulation cabinet 11. In FIG. 1, structural apparatuses built in the machinery chamber 14 are not shown. A machinery chamber opening 15 which opens rearwards is formed in the machinery chamber 14. The machinery chamber opening 15 may also be blocked by a cover.

[0027] FIG. 2 is a side sectional view of the refrigerating appliance 10. Referring to the drawing, the heat insulation cabinet 11 includes an outer cabinet 111, an inner cabinet 112 and a heat insulation material 113, the outer cabinet 111 is formed by bending a steel plate into a prescribed shape, the inner cabinet 112 is formed by a synthetic resin plate spaced apart from the outer cabinet 111 and located on an inner side of the outer cabinet 111, and the heat insulation material 113 is packed between the outer cabinet 111 and the inner cabinet 112.

[0028] A cooling chamber 115 is defined and formed on an inner side of the freezing chamber 13, and an evaporator 116 is received in the cooling chamber 115. An air supply path 118 is formed above the cooling chamber 115. Air is blown into the air supply path 118 by a cold air blowing fan not shown, and the air is cooled by the evaporator 116 in the cooling chamber 115. The air cooled by the evaporator 116 is also blown to the freezing chamber 13.

[0029] A defrosting heater 117 is configured inside the cooling chamber 115, and the defrosting heater 117 is located below the evaporator 116. The defrosting heater 117 is configured as a heater which generates heat by energization, and generates heat when energized during a defrosting stroke, and frost of the evaporator 116 is molten by the generated heat. Defrosted water generated by the defrosting reaches an evaporating dish 27 described later with reference to FIG. 3, and is evaporated by heat exchange with a high-temperature compressed refrigerant or a compressor 22.

[0030] FIG. 3 is a perspective view of the machinery chamber 14 as viewed from the upper rear side. The compressor 22, a terminal cover 16, an electric box 17, and the evaporating dish 27 are configured inside the machinery chamber 14. In FIG. 3, other members, such as a refrigerant pipe, or the like, which are received in the machinery chamber 14 are not illustrated.

[0031] The terminal cover 16 is formed by a synthetic resin plate shaped into a prescribed shape, is configured on a left side of the compressor 22, and covers electrodes formed in the compressor 22.

[0032] The electric box 17 is fixed to a left side surface of the machinery chamber 14, and receives a control board, a capacitor for the compressor 22, or the like.

[0033] The evaporating dish 27 is configured above the compressor 22 to store the defrosted water generated during the defrosting stroke.

[0034] FIG. 4(A) is an exploded perspective view showing a structure of the electric box 17 in detail, and FIG. 4(B) is a perspective view showing a structure of a substrate fixing clamp 173 of the electric box 17.

[0035] Referring to FIG. 4(A), the electric box 17 has a substrate housing 171, a substrate 172, and the substrate fixing clamp 173.

[0036] The substrate housing 171 and the substrate fixing clamp 173 are formed by injection-molded synthetic resin or metal plates, and the substrate housing 171 and the substrate fixing clamp 173 are engaged with each other to form a box shape. The substrate 172 is placed inside the substrate housing 171 and the substrate fixing clamp 173.

[0037] The substrate 172 is formed by, for example, a glass epoxy substrate, or the like, and is provided with an electrical circuit for controlling the apparatuses forming the refrigerating cycle. For example, circuit elements, such as capacitors, or the like, are mounted on a surface of the substrate 172.

[0038] A left side of the substrate fixing clamp 173 is fixed to a side surface of the machinery chamber 14 by a screw 175. Specifically, the left side of the substrate fixing clamp 173 is fixed to a rear side of an outer-cabinet side surface 23, which forms an inner wall of the machinery chamber 14. Furthermore, a part of the substrate fixing clamp 173 into which the screw 175 is inserted is reinforced by a substrate support 174.

[0039] Referring to FIG. 4(B), a rear upper end portion of the substrate fixing clamp 173 protrudes upwards to form a protruding insertion portion 25. The protruding insertion portion 25 and a body part of the injection-molded substrate fixing clamp 173 are integrally formed, for example. Furthermore, the protruding insertion portion 25 has a sharp portion 251 and a rib 252. The sharp portion 251 is configured as a portion where an upper end of the protruding insertion portion 25 is sharply formed. By providing the sharp portion 251, a front end portion of the protruding insertion portion 25 can be easily inserted into the heat insulation material 113 as described later. Furthermore, the rib 252 is configured as a portion where both end portions of the protruding insertion portion 25 in the left-right direction are thickened. The rib 252 is continuously formed from a lower end to the vicinity of an upper end of the protruding insertion portion 25. By forming the rib 252, the protruding insertion portion 25 can be reinforced, thereby preventing damage or deformation of the protruding insertion portion 25 when an external force acts on the protruding insertion portion 25.

[0040] FIG. 5(A) is a perspective view of a structure in which the protruding insertion portion 25 is inserted into an opening portion 26 as viewed from the front, and FIG. 5(B) is a perspective view of the structure in which the protruding insertion portion 25 is inserted into the opening portion 26 as viewed from the rear.

[0041] Referring to FIG. 5(A), an upper surface member 24 is formed on an upper surface of the machinery chamber 14. The upper surface member 24 is formed by a steel plate formed into a prescribed shape, and forms a part of the outer cabinet 111 shown in FIG. 2.

[0042] The opening portion 26 is formed by opening a part of the upper surface member 24 in a substantially rectangular shape. The protruding insertion portion 25 is inserted into the opening portion 26 from a bottom. A part of the protruding insertion portion 25 protruding upwards from the opening portion 26 is embedded in the heat insulation material 113 shown in FIG. 2.

[0043] Referring to FIG. 5(B), a left end portion of the electric box 17 is fixed to a side surface of the outer-cabinet side surface 23, which forms a left side surface of the machinery chamber 14, by a connecting portion 29. Furthermore, the protruding insertion portion 25 is inserted into the opening portion 26, and the protruding insertion portion 25 is formed at a right end portion of the electric box 17. In this way, both end portions of the electric box 17 in a width direction are fixed to the heat insulation cabinet 11, thereby suppressing movement of the electric box 17 inside the machinery chamber 14.

[0044] FIG. 6(A) is a perspective view showing a structure in which the electric box 17 is connected in detail, and FIG. 6(B) is an upper sectional view showing the structure in which the electric box 17 is connected.

[0045] Referring to FIG. 6(B), a refrigerant pipe 28 is placed between the electric box 17 and the outer-cabinet side surface 23. The refrigerant pipe 28 is configured as a pipe made of metal, such as copper, or the like, through which a refrigerant used in the refrigerating cycle flows.

[0046] As described above, in a manufacturing process of the refrigerating appliance 10, there exist operations of drawing the refrigerant pipe 28 out of the machinery chamber 14 for welding, and then returning the refrigerant pipe 28 to the machinery chamber 14. At this point, the refrigerant pipe 28 sometimes deviates from a normal position. Here, a case where the refrigerant pipe 28 deviates from the normal position and a rear portion thereof is configured on a right side is shown. In this case, a rear end of the refrigerant pipe 28 leftwards presses a rear portion of the electric box 17.

[0047] In the present embodiment, as shown in FIG. 6(A), a left end portion of the electric box 17 is fixed to the outer-cabinet side surface 23 by 2 screws 175. Furthermore, at the right end portion of the electric box 17, the protruding insertion portion 25 is inserted into the opening portion 26. Further, as shown in FIG. 6(B), the refrigerant pipe 28 is configured on a right side of the electric box 17, and the protruding insertion portion 25 is formed on a left side of the electric box 17.

[0048] Thus, the electric box 17 is firmly fixed to the heat insulation cabinet 11 side, and therefore, even when the incorrectly-configured refrigerant pipe 28 presses the electric box 17, the movement of the electric box 17 is suppressed. Therefore, any part of the electric box 17 can be prevented from protruding outside an outer-cab-

inet rear surface 21.

[0049] The following main effects can be achieved by the above-mentioned embodiments.

[0050] According to the present embodiment, by inserting the protruding insertion portion 25 into the opening portion 26, the inadvertent movement of the electric box 17 inside the machinery chamber 14 can be suppressed, the protruding insertion portion 25 is provided by forming a part of the electric box 17 into the protruding shape, and the opening portion 26 is formed on the inner surface of the machinery chamber 14.

[0051] Further, the protruding insertion portion 25 is configured at a position apart from the connecting portion 29, such that the effect of suppressing the movement of the electric box 17 by the protruding insertion portion 25 can be remarkable.

[0052] Further, even when the electric box 17 is pressed by the refrigerant pipe 28, the movement of the electric box 17 can be suppressed by inserting the protruding insertion portion 25 into the opening portion 26 at a position apart from the refrigerant pipe 28.

[0053] In addition, by embedding the front end portion of the protruding insertion portion 25 into the heat insulation material 113, the protruding insertion portion 25 can be firmly fixed to the heat insulation cabinet 11 side, thereby making an effect of supporting the electric box 17 remarkable.

[0054] The present invention is not limited to the above embodiments, and various modifications can be made without departing from the scope of the present invention.

Claims

1. A refrigerating appliance, comprising:

a machinery chamber defined and formed in a heat insulation cabinet; and
an electric box received in the machinery chamber,
wherein one end of the electric box is connected to a side surface of the machinery chamber by a connecting portion,
a protruding insertion portion is inserted into an opening portion, the protruding insertion portion is provided by forming a part of the electric box into a protruding shape, and the opening portion is formed in an inner surface of the machinery chamber.

2. The refrigerating appliance according to claim 1,

wherein the connecting portion is configured on one end side of the electric box, and
the protruding insertion portion is configured on an end side of the electric box opposite to the connecting portion.

3. The refrigerating appliance according to claim 1,

wherein a refrigerant pipe is configured in the machinery chamber near the electric box, and the protruding insertion portion is configured at an end portion of a side of the electric box apart from the refrigerant pipe.

4. The refrigerating appliance according to claim 1,

wherein the heat insulation cabinet comprises an outer cabinet, an inner cabinet, and a heat insulation material packed between the outer cabinet and the inner cabinet, and
a front end portion of the protruding insertion portion is embedded in the heat insulation material.

5. The refrigerating appliance according to claim 1, wherein the electric box has a substrate housing, a substrate and a substrate fixing clamp, and the protruding insertion portion and a body part of the substrate fixing clamp are integrally formed.

6. The refrigerating appliance according to claim 1, wherein the protruding insertion portion has a sharp portion and a rib.

7. The refrigerating appliance according to claim 6, wherein the sharp portion is configured as a portion where an upper end of the protruding insertion portion is sharply formed, and the rib is configured as a portion where both end portions of the protruding insertion portion in a left-right direction are thickened.

8. The refrigerating appliance according to claim 1, wherein an upper surface member is formed on an upper surface of the machinery chamber, and the opening portion is formed by opening a part of the upper surface member.

9. The refrigerating appliance according to claim 1, wherein a compressor, the electric box and an evaporating dish are configured inside the machinery chamber.

10. The refrigerating appliance according to claim 1, wherein the electric box is fixed to a left side surface of the machinery chamber, and the evaporating dish is configured above the compressor.

FIGS

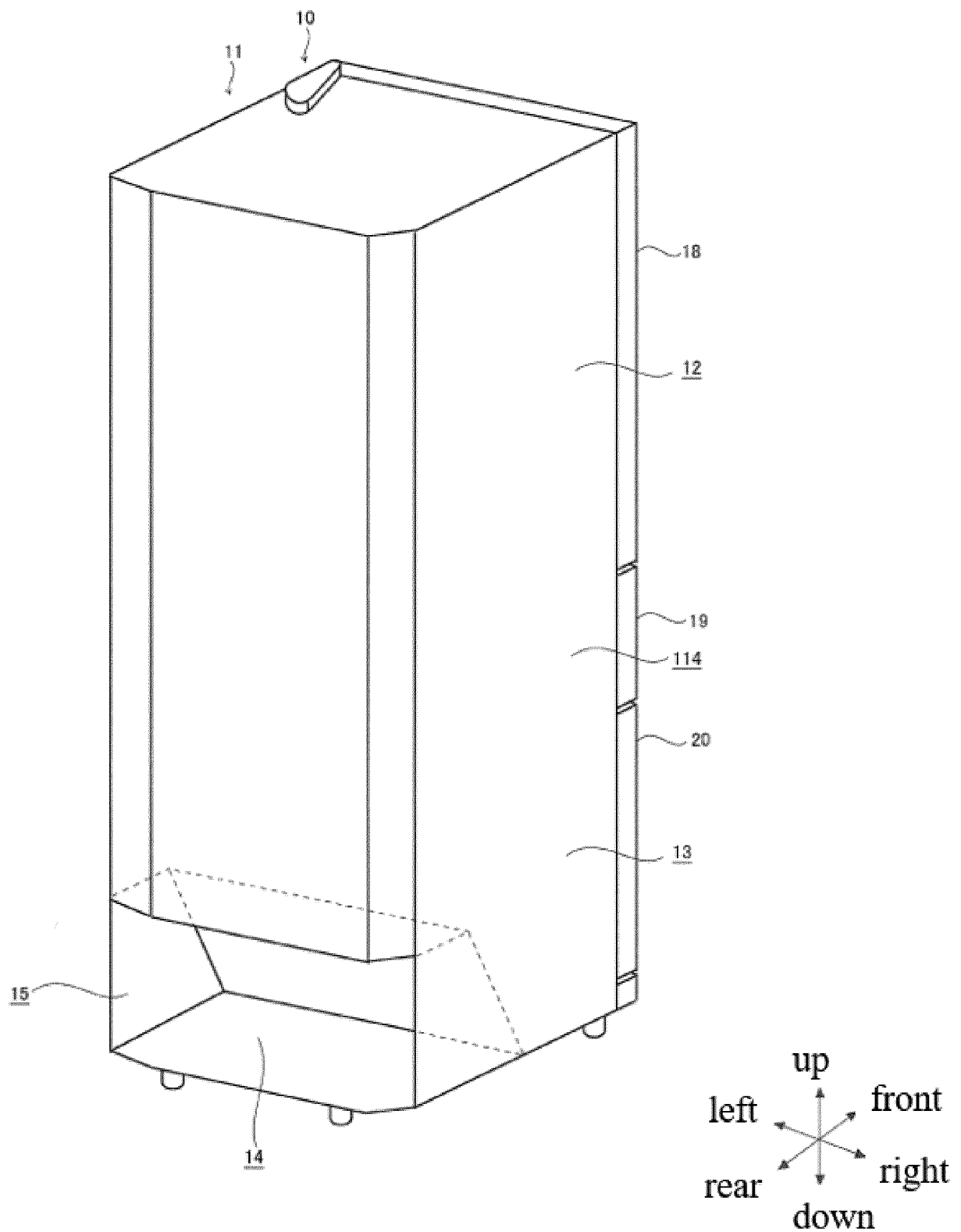


FIG 1

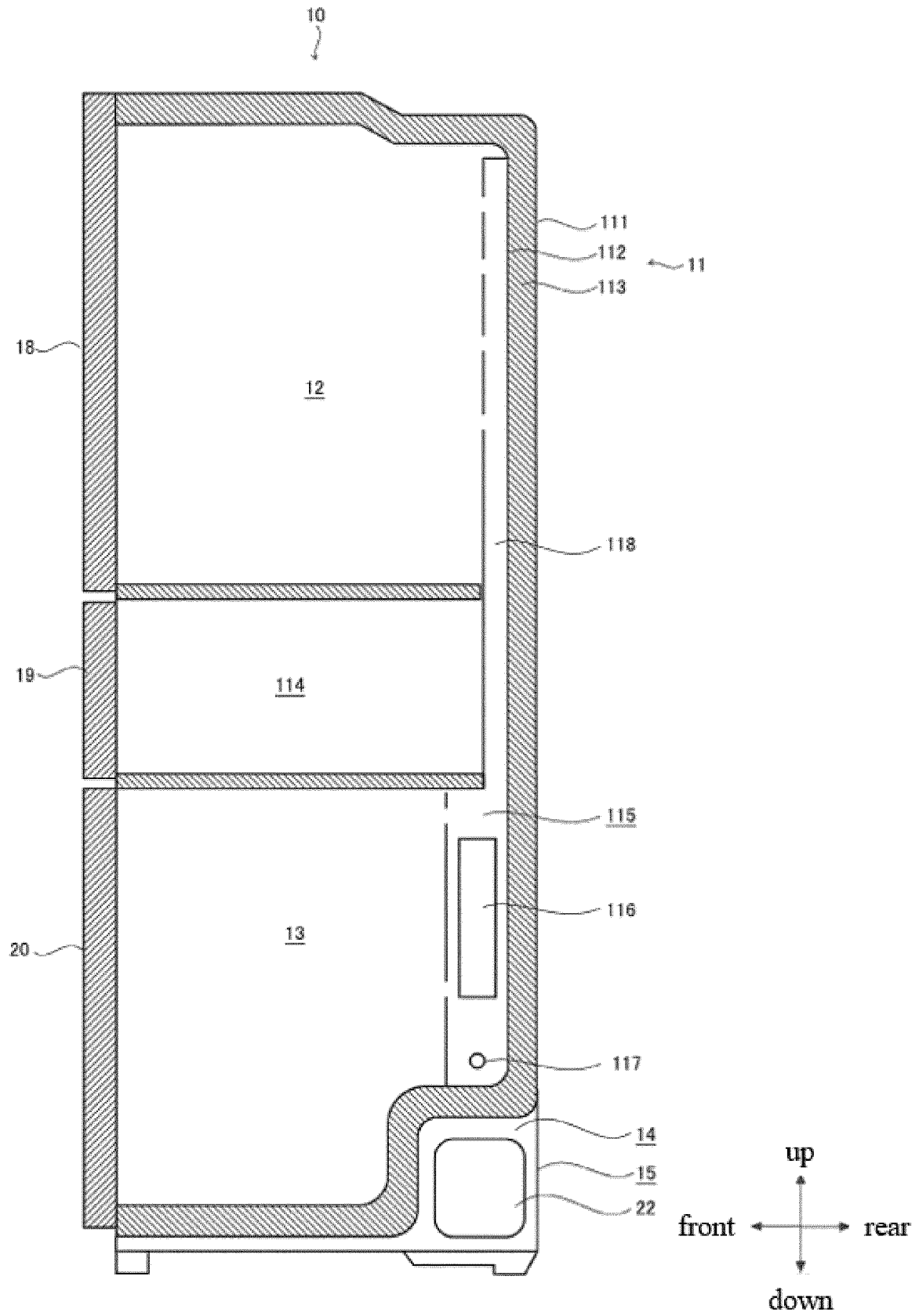


FIG 2

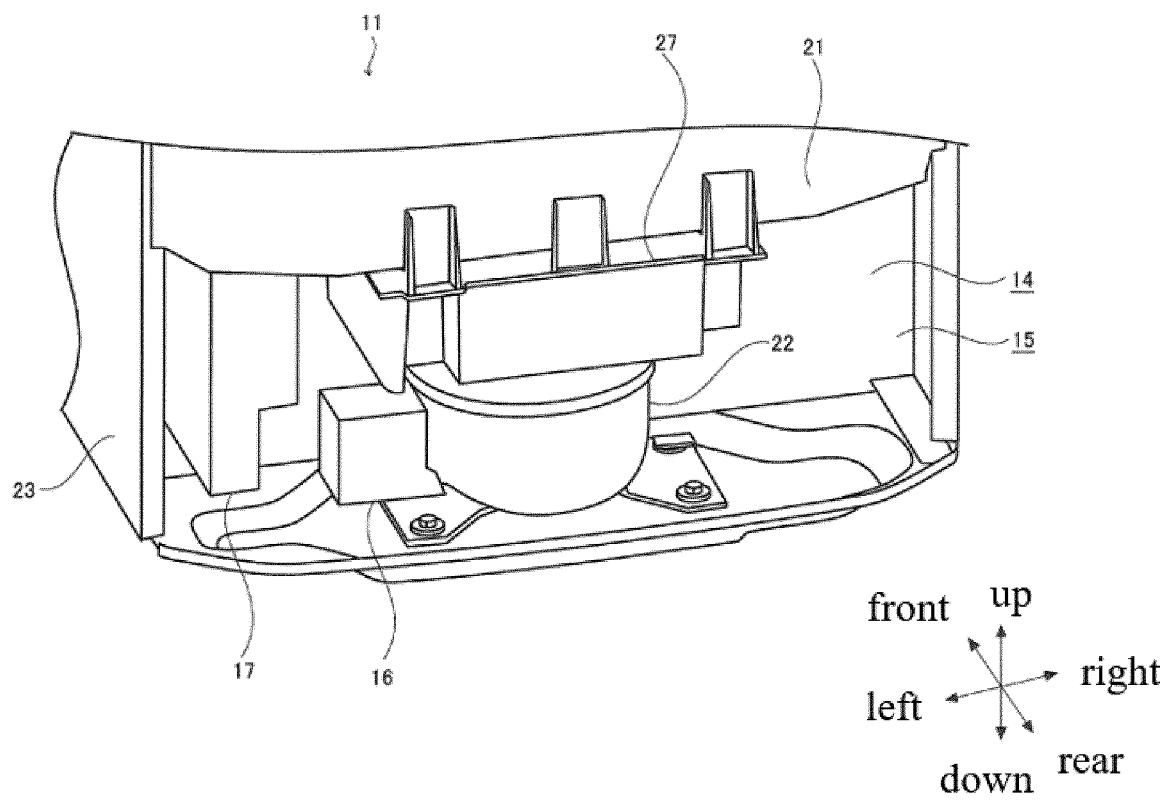


FIG 3

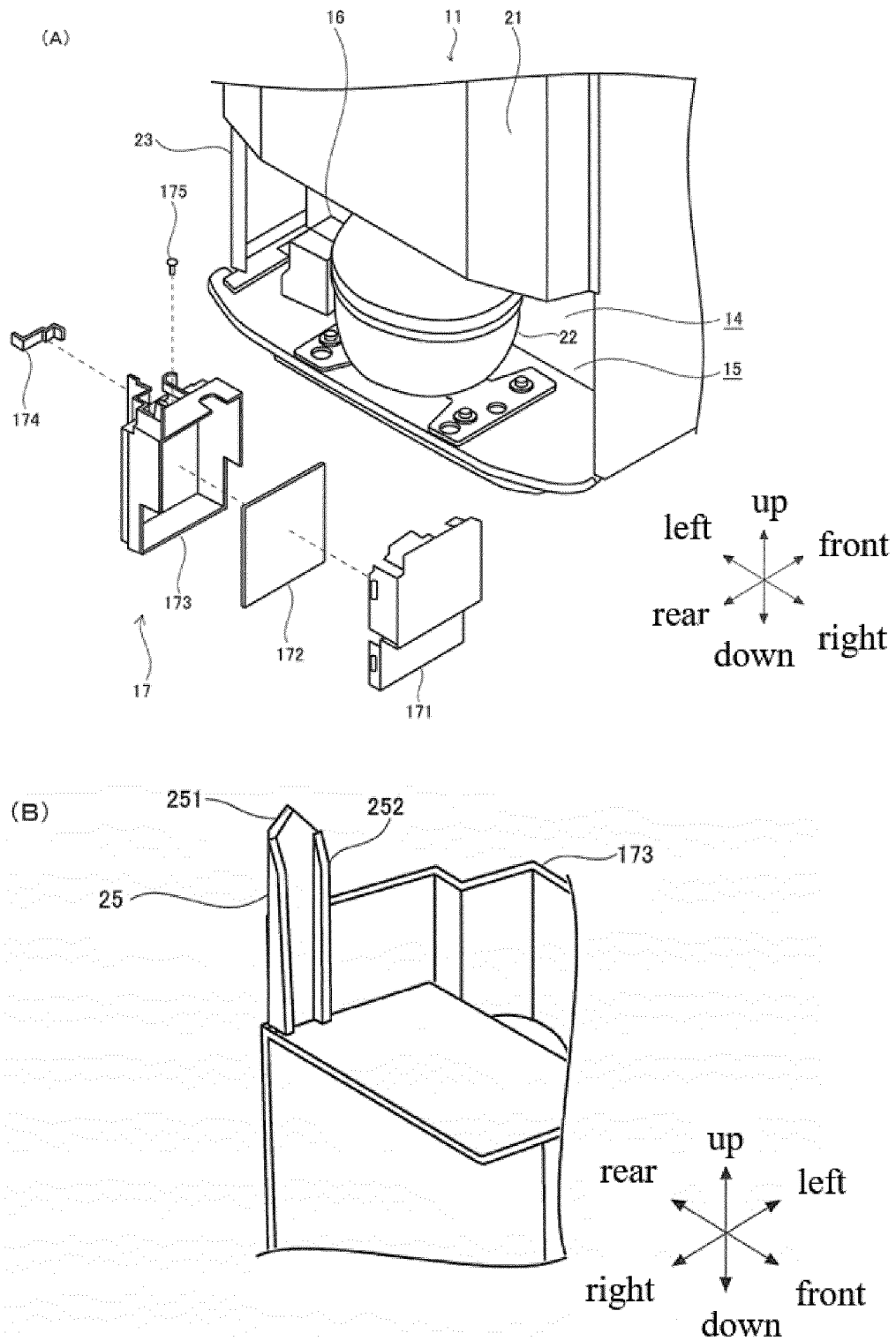


FIG 4

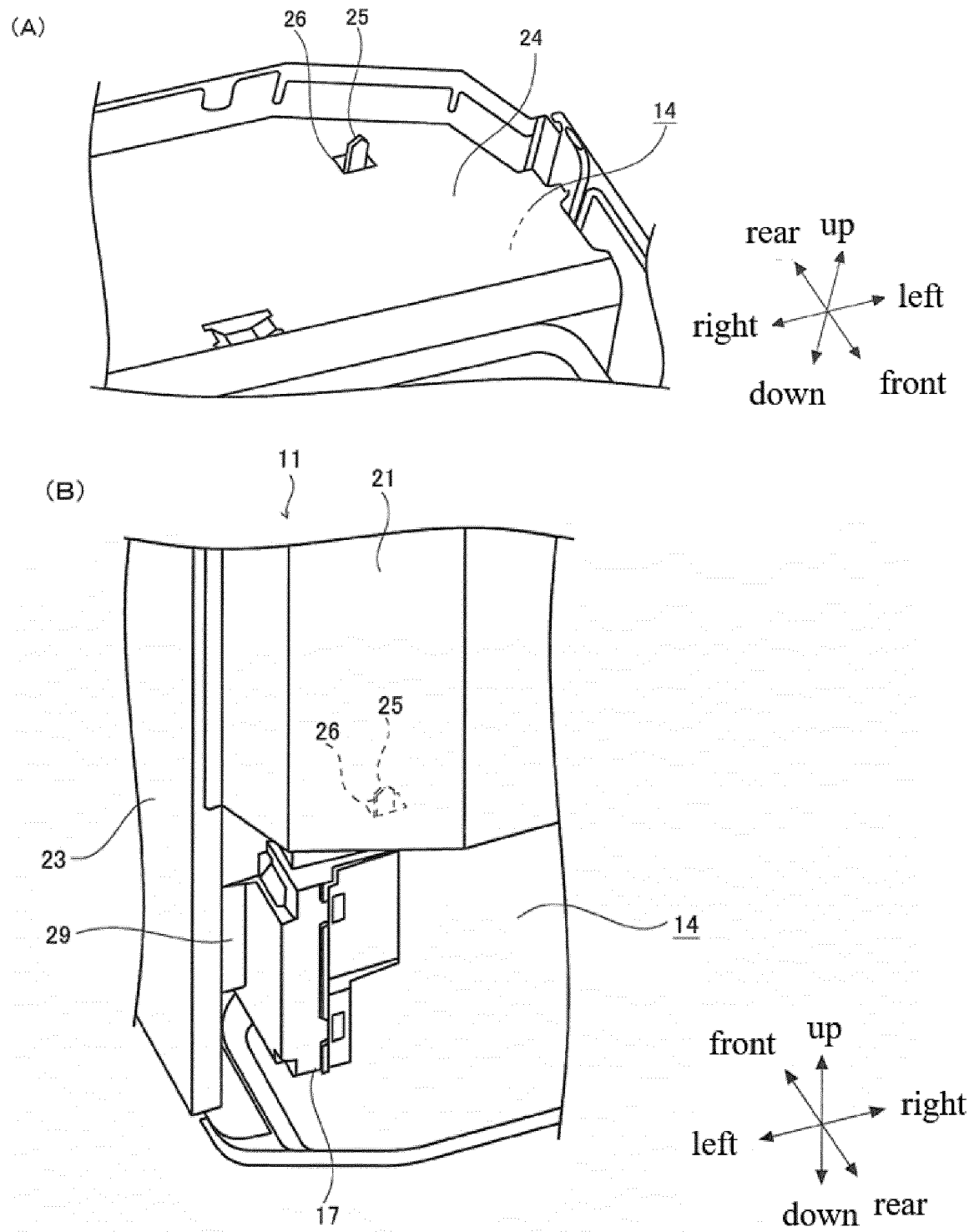
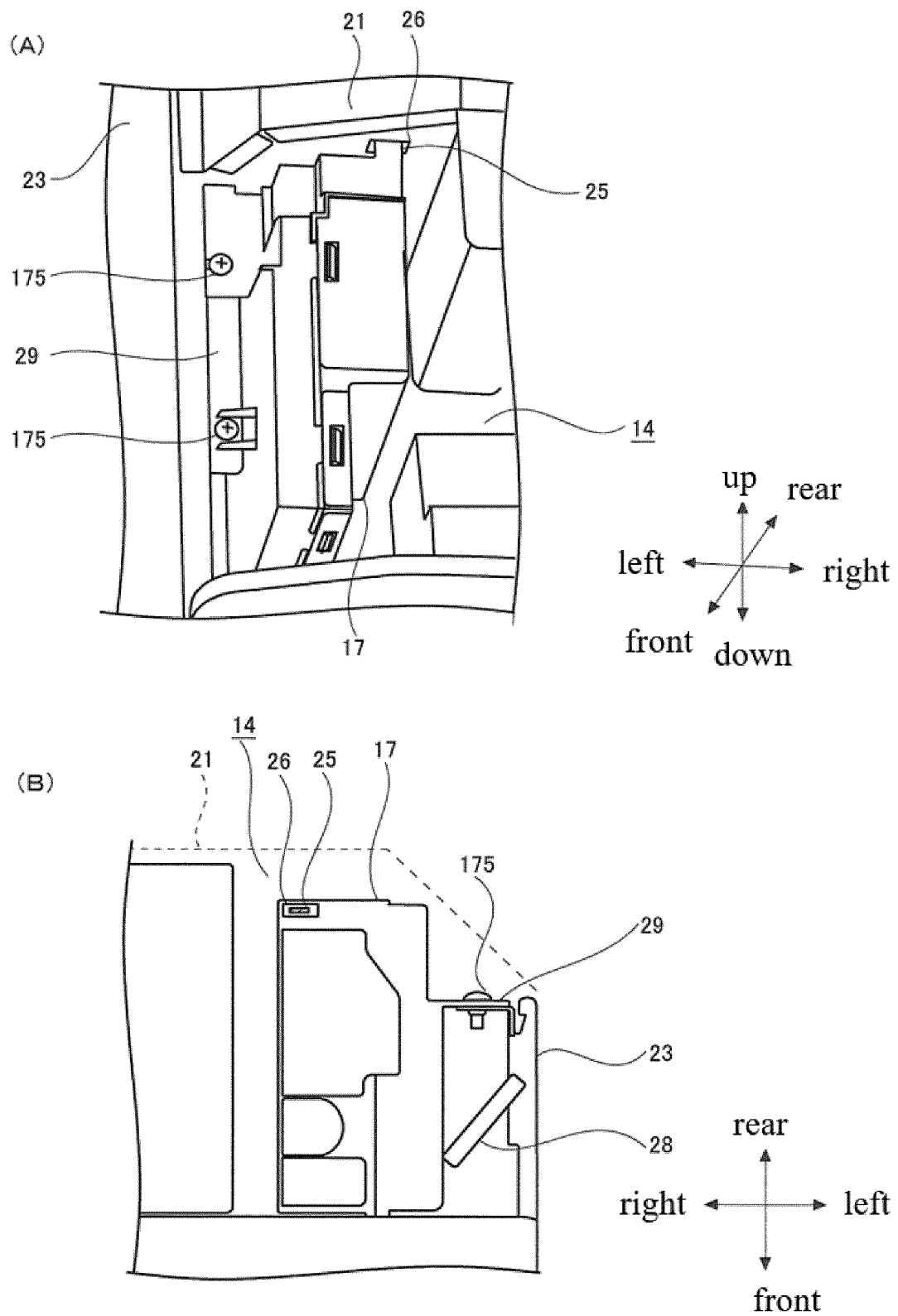


FIG 5



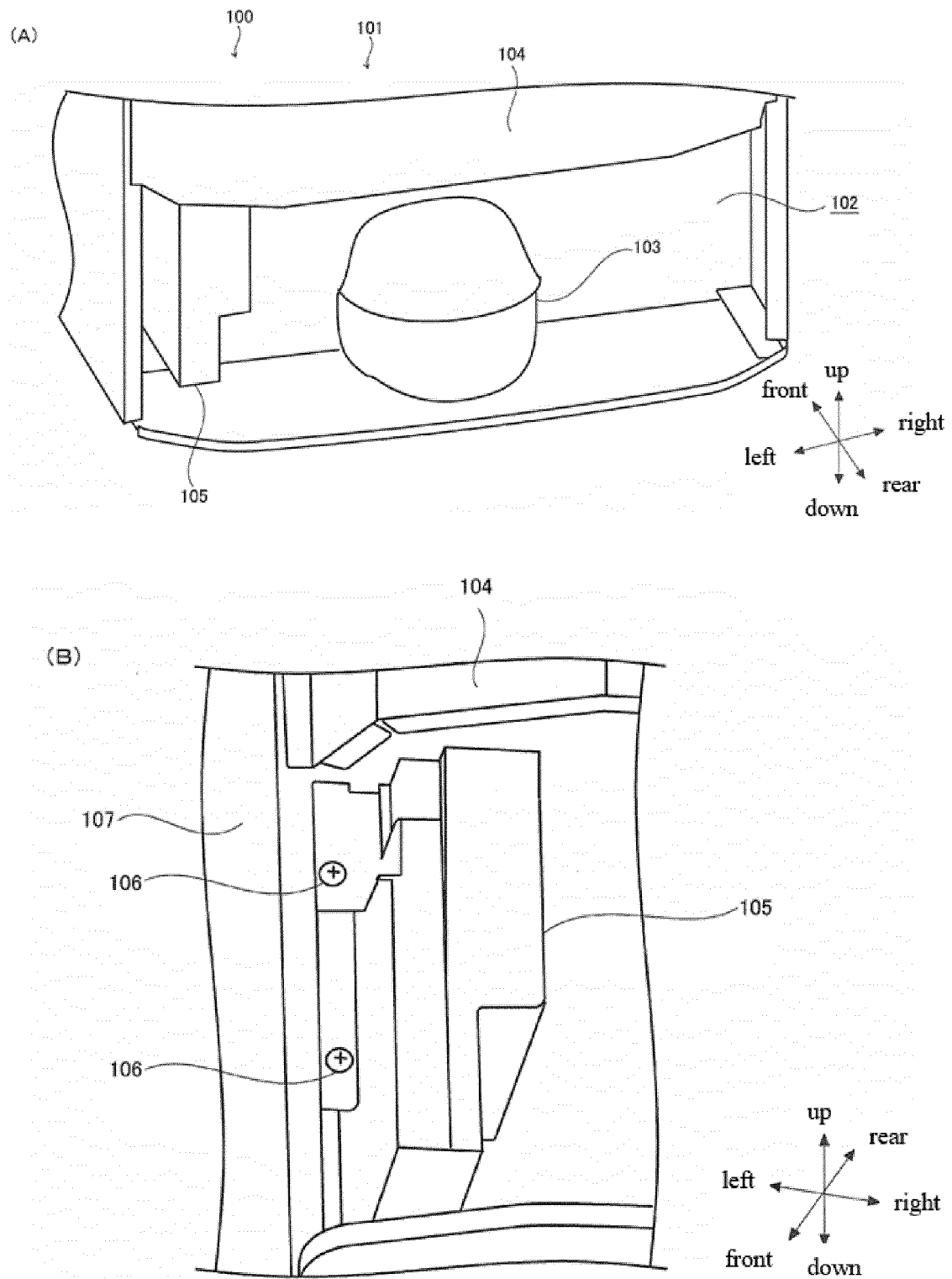
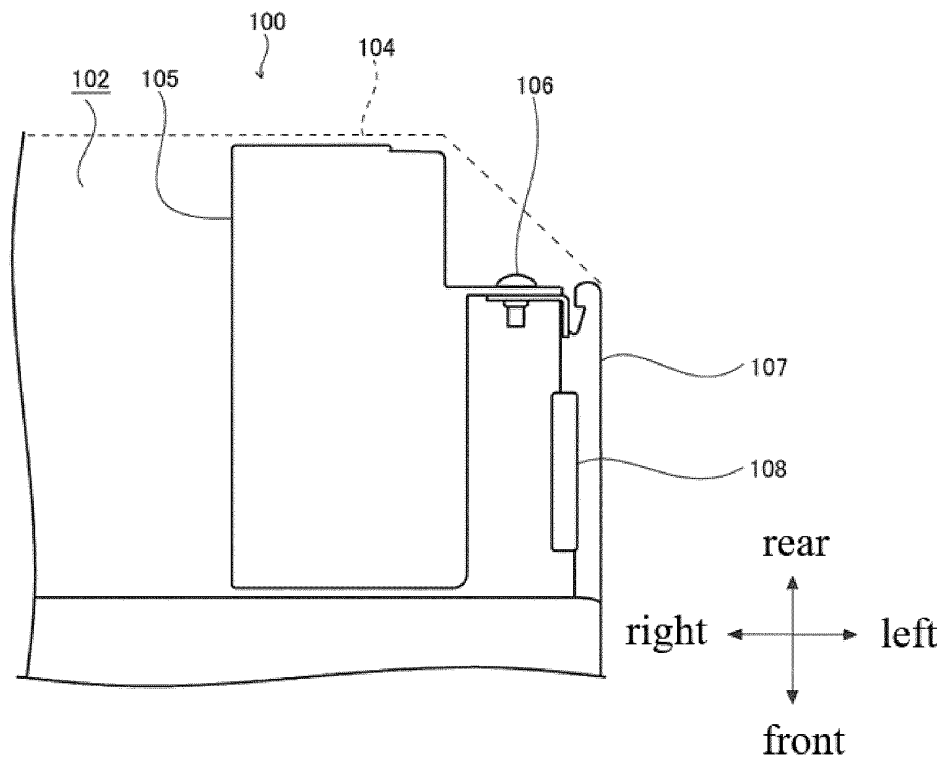


FIG 7

(A)



(B)

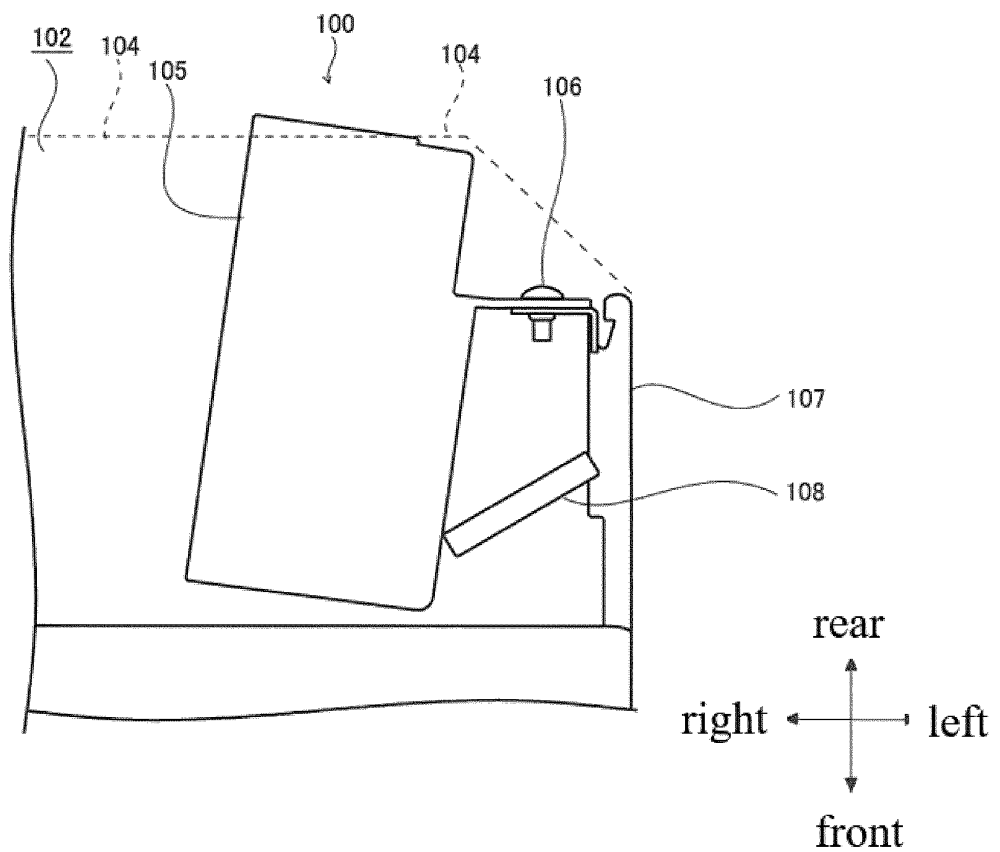


FIG 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/123602

A. CLASSIFICATION OF SUBJECT MATTER

F25D 29/00(2006.01)i; F25D 19/00(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)

F25D29 F25D11 F25D19 F25D23

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

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

CNABS, CNTXT, CNKI, DWPI: 机械 机器 压缩机 压机 室 仓 舱 电 控 基板 盒 箱 插 machin+ mechan+ compressor chamber room compartment electric+ control+ board box case housing insert+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2020134954 A1 (QINGDAO HAIER REFRIGERATOR CO., LTD. et al.) 02 July 2020 (2020-07-02) description, specific embodiments, and figures 1-5	1-10
Y	CN 205119613 U (HEFEI HUALING CO., LTD. et al.) 30 March 2016 (2016-03-30) description, paragraphs [0048]-[0051] and figures 2, 4	1-10
Y	CN 102230710 A (HEFEI MIDEA & ROYALSTAR FRIDGE CO., LTD. et al.) 02 November 2011 (2011-11-02) description, paragraph [0039], and figure 4	6, 7
A	CN 105737505 A (BSH ELECTRICAL APPLIANCES (JIANGSU) CO., LTD. et al.) 06 July 2016 (2016-07-06) entire document	1-10
A	CN 203837402 U (HEFEI KINGHOME ELECTRICAL CO., LTD.) 17 September 2014 (2014-09-17) entire document	1-10
A	JP 2002162158 A (TOSHIBA CORP.) 07 June 2002 (2002-06-07) entire document	1-10

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Information on patent family members

International application No.

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