(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 006 457 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
01.06.2022 Bulletin 2022/22

(21) Application number: **20847326.4**

(22) Date of filing: **24.07.2020**

(51) International Patent Classification (IPC):
F25D 11/02 *(2006.01)* ***F25D 19/00*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
F25D 23/003; F25D 19/04; F25D 23/00;
F25D 2323/00264; F25D 2323/00274

(86) International application number:
PCT/CN2020/104076

(87) International publication number:
WO 2021/018029 (04.02.2021 Gazette 2021/05)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **26.07.2019 US 201916522790**

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(54) REFRIGERATOR CAPABLE OF IMPROVING AIR CIRCULATION IN MACHINE CHAMBER

(57) A refrigerator (100), comprising a refrigerator body (110), a louver panel (222), and a plurality of blades (246, 248) spaced apart in the lateral direction. The refrigerator body (110) extends laterally between a first side surface (116) and a second side surface (118), and a refrigerating chamber (128) and a machine chamber (210) are formed in the refrigerator body (110). The machine chamber (210) has an air inlet (212) and an air outlet (214) spaced apart from each other. The louver panel (222) is mounted on the front side of the machine chamber (210). The louver panel (222) is provided with a plurality of lateral holes (224) in the vertical direction at intervals. The lateral holes (224) are in front of the air inlet (212) and the air outlet (214), and first ends (226) of the lateral holes (224) extend laterally to second ends (228). The plurality of blades (246, 248) are provided at the air outlet (214) and extend backwards from the louver panel (222).

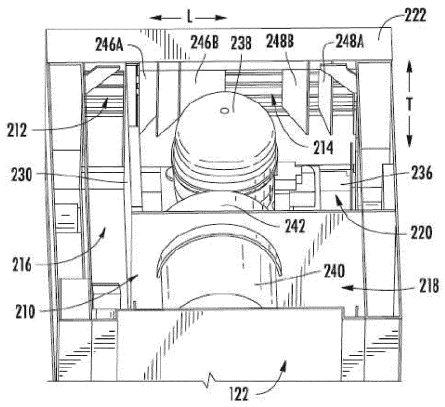

FIG. 4

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Description

FIELD OF THE INVENTION

[0001] The present subject matter relates generally to refrigerator assemblies or appliances, and more particularly to features thereof for improving air circulation through a machine compartment of a refrigerator assembly.

BACKGROUND OF THE INVENTION

[0002] Refrigerator assemblies or appliances generally include a cabinet that defines a chilled chamber, such as a fresh food chamber or a freezer chamber, for storing food or other perishable items. In addition, refrigerator appliances also generally include a door rotatably hinged to the cabinet to permit selective access to food items stored in the chilled chamber. Often, refrigerator appliances include a machine compartment in which a compressor or condenser is mounted.

[0003] It is common for typical refrigerators stick out from a wall or cabinet in which they are installed. In order to address this concern, certain refrigerator appliances, such as those commonly referred to as built-in refrigerators, are configured to be installed in a cabinet such that a refrigerator appliance appears to be an integral part of the kitchen or room. Although aesthetically pleasing, this can cause further issues. A machine compartment must often be vertically stacked, for instance, below the chilled chamber. Therefore, it can be difficult to circulate air through the machine compartment for heat exchange. An air inlet and an air outlet must often be located adjacent to each other, for instance, at a front face of the refrigerator. In turn, it is often especially difficult to prevent an intake airflow into the machine compartment from mixing with an output airflow from the machine compartment.

[0004] Some existing appliances have attempted to address these circulation concerns by providing a transverse wall or panel that extends outward (i.e., toward a user) from the machine compartment at a front face or lateral panel. Similarly, a wall that extends from a door toward the machine compartment (e.g., when the door is closed) may be provided. Unfortunately, having discontinuous elements or features extending in front of the machine compartment often creates an unseemly appearance. Such a configuration may also provide or create an intrusive surface that can catch fabric, dust, or even a user's foot passing in front of the appliance.

[0005] As a result, further improvements for addressing air circulation of refrigerator assemblies or appliances would be desirable. In particular, it would be useful to provide a refrigerator assembly or appliance having one or more features for preventing the mixing of airflows to/from a machine compartment while still providing a continuous or uninterrupted front surface.

BRIEF DESCRIPTION OF THE INVENTION

[0006] Aspects and advantages of the invention will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the invention.

[0007] In one exemplary aspect of the present disclosure, a refrigerator assembly is provided. The refrigerator assembly may include a cabinet, a louver panel, and a plurality of laterally-spaced vanes. The cabinet may extend along a lateral direction between a first lateral side and a second lateral side. The cabinet may define a chilled chamber and a machine compartment. The machine compartment may have an air inlet and an air outlet separate from the air inlet. The louver panel may be mounted to the cabinet in front of the machine compartment. The louver panel may define a plurality of lateral apertures spaced apart along a vertical direction. The plurality of lateral apertures may extend along the lateral direction in front of the air inlet and the air outlet from a first end to a second end. The plurality of laterally-spaced vanes may extend rearward from the louver panel at the air outlet.

[0008] In another exemplary aspect of the present disclosure, a refrigerator assembly is provided. The refrigerator assembly may include a cabinet, a louver panel, and a plurality of laterally-spaced vanes. The cabinet may extend along a lateral direction between a first lateral side and a second lateral side. The cabinet may define a chilled chamber and a machine compartment. The machine compartment may have an air inlet and an air outlet separate from the air inlet. The louver panel may be mounted to the cabinet in front of the machine compartment. The louver panel may define a plurality of lateral apertures spaced apart along a vertical direction. The plurality of lateral apertures may extend along the lateral direction in front of the air inlet and the air outlet from a first end to a second end. The plurality of laterally-spaced vanes may extend rearward from the louver panel at the air outlet. The plurality of laterally-spaced vanes may be directed away from the panel inlet.

[0009] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] A full and enabling disclosure of the present invention, including the best mode thereof, directed to one of ordinary skill in the art, is set forth in the specification, which makes reference to the appended figures.

FIG. 1 provides an elevation view of a refrigerator

assembly according to exemplary embodiments of the present disclosure.

FIG. 2 provides an elevation view of the exemplary refrigerator assembly of FIG. 1, wherein the door is shown in an open position.

FIG. 3 provides a section view of a machine compartment of the exemplary refrigerator assembly of FIG. 1, taken along the line 3-3, as shown in FIG. 2.

FIG. 4 provides a rear perspective view of a machine compartment of a refrigerator assembly according to exemplary embodiments of the present disclosure.

FIG. 5 provides a front perspective view of a machine compartment of a refrigerator assembly according to exemplary embodiments of the present disclosure.

FIG. 6 provides a front perspective view of the exemplary machine compartment of FIG. 4, wherein a front louver panel has been removed for clarity.

FIG. 7 provides an elevation view of a refrigerator assembly according to exemplary embodiments of the present disclosure, wherein one door is shown in an open position.

DETAILED DESCRIPTION

[0011] Reference now will be made in detail to embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope of the invention. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present invention covers such modifications and variations as come within the scope of the appended claims and their equivalents.

[0012] As used herein, the term "or" is generally intended to be inclusive (i.e., "A or B" is intended to mean "A or B or both"). The terms "first,""second," and "third" may be used interchangeably to distinguish one component from another and are not intended to signify location or importance of the individual components. The terms "upstream" and "downstream" refer to the relative flow direction with respect to fluid flow in a fluid pathway. For example, "upstream" refers to the flow direction from which the fluid flows, and "downstream" refers to the flow direction to which the fluid flows. Terms such as "inner" and "outer" refer to relative directions with respect to the interior and exterior of a refrigerator assembly. For example, "inner" or "inward" refers to the direction towards the interior of the refrigerator appliance. Terms such as "left,""right,""front,""forward,""back,""rearward,""top," or "bottom" are used with reference to the perspective of a user accessing the refrigerator appliance. For example, a user stands in front of the refrigerator to open the doors and reaches into the chilled chamber(s) to access items therein.

[0013] Referring now to FIGS. 1 through 3, multiple perspective views are provided of an exemplary refrigerator assembly **100.** A refrigerator assembly **100** according to an embodiment of the present disclosure defines a vertical direction V, a lateral direction L, and a transverse direction T (FIG. 3), each mutually perpendicular to one another. As may be seen, the refrigerator appliance **100** includes a housing or cabinet **110** that extends between a top **112** and a bottom **114** along the vertical direction V, between a left (e.g., first lateral) side **116** and a right (e.g., second lateral) side **118** along the lateral direction L, and between a front end or side **120** (FIG. 3) and a rear end or side **122** (FIG. 3) along the transverse direction T.

[0014] The cabinet **110** generally defines one or more chilled chambers **128** (e.g., fresh food or freezer chambers) for receipt of food items for storage. Specifically, the chilled chamber **128** is positioned between the left side **116** and the right side **118.** In some embodiments, the chilled chamber **128** is positioned at or adjacent the top **112** of the cabinet **110.** Nonetheless, it should be appreciated, that, except as otherwise indicate, the chilled chamber **128** may be positioned at any suitable location within the refrigerator assembly **100.** Moreover, although a single chilled chamber **128** is shown, it is understood that alternative embodiments may include any suitable number or shape of chilled chambers **128** (e.g., to be maintained at separate or discrete temperatures).

[0015] The refrigerator assembly **100** may include one or more refrigerator doors **124** rotatably mounted to the cabinet **110,** for example, such that the refrigerator door **124** permits selective access to at least a portion of the chilled chamber **128.** In some embodiments, the refrigerator door **124is** rotatably mounted to the cabinet **110** at one side (e.g., the right side **118)** of the cabinet **110.** A handle **130** may be positioned on the refrigerator door **124** to facilitate movement of the door **124** between a closed position (FIG. 1) that restricts access to the chilled chamber **128** (e.g., by extending across the chilled chamber **128)** and an open position (FIG. 3) that permits access to the chilled chamber **128** (e.g., by being spaced apart from the chilled chamber **128).**

[0016] As shown in FIG. 2, various storage components may be mounted within the food storage chamber **100** to generally facilitate storage of food items. In certain embodiments, the storage components include bins **132,** drawers **134,** and shelves **136** that are mounted within the chilled chamber **128.** The bins **132,** drawers **134,** and shelves **136** are configured for receipt of food items (e.g., beverages or solid food items) and may assist with organizing such food items.

[0017] Generally, a sealed system is provided to cool air within chilled chamber **128** (e.g., at least in part by circulating a refrigerant as part of a refrigeration cycle). For instance, one or more components of the sealed system (e.g., a compressor **238** or condenser **240)** may be

housed or within a machine compartment **210** defined by cabinet **110** (e.g., below or directly beneath chilled chamber **128).** In some such embodiments, the machine compartment **210** is selectively covered or blocked by the door **124** (e.g., in the closed position). In particular, the machine compartment**210** may be positioned rearward from the door **124.** Relative to the vertical direction V, one or more openings (e.g., lateral apertures **224)** to the machine compartment **210** may be positioned above a bottom edge **126** of the door **124.** Thus, when closed, the door **124** may hide one or more (e.g., all) lateral apertures **126** from the view of a user standing in front of the assembly **100.**

[0018] Turning especially to FIGS. 3 through 6, various views are provided of the machine compartment **210** (e.g., at the bottom **114** of cabinet**110**). In certain embodiments, the machine compartment **210** spans the cabinet **110** along the lateral direction L from the left side **116** to the right side **118.** In additional or alternative embodiments, the machine compartment **210** spans the cabinet **110** along the transverse direction T from the front end **120** to the rear end **122.**

[0019] Generally, the machine compartment **210** includes an air inlet **212** (e.g., at the front end **120)** to permit air to enter the machine compartment **210** and an air outlet **214** (e.g., at the front end **120)** to permit air to exit the machine compartment **210.** In certain embodiments, the air inlet **212** and the air outlet **214** are laterally adjacent to each other. For instance, the air inlet **212** and the air outlet **214** may be defined or located at discrete lateral positions. In some embodiments, the air inlet **212** is located proximal to the right side **118** (i.e., distal to the left side **116)** while the air outlet **214** is located proximal to the left side **116** (i.e., distal to the right side **118).** Within the machine compartment **210,** the machine compartment **210** includes one or more air channels (e.g., intake channel **216, 218** or output channel **220)** to direct air through the machine compartment **210** from the air inlet **212** to the air outlet **214.**

[0020] A louver panel **222** is mounted to the cabinet **110** in front of the machine compartment **210.** In particular, the louver panel **222** may be positioned in front of an opening that defines, at least in part, the air inlet **212** and the air outlet **214** (e.g., below the chilled chamber **128**-FIG. 2). In some embodiments, the louver panel **222** extends along the lateral direction L from the left side **116** to the right side **118.** Across at least a portion of the louver panel **222,** a plurality of lateral apertures **224** are defined. As shown, the plurality of lateral apertures **224** extend along the lateral direction L from a first end **226** to a second end **228.** In certain embodiments, the lateral apertures **224** are uninterrupted or free of any discontinuous, interrupting element between the first end **226** and the second end **228.** Thus, the plurality of lateral apertures **224** may appear as continuous lines or openings (e.g., at the bottom of the refrigerator assembly **100**-FIG. 2). Moreover, the lateral apertures **224** may appear as the only openings below the chilled chamber **128.** Each of the lateral apertures **224** may be spaced (e.g., vertically) apart from each other. In some such embodiments, one or more of the lateral apertures **224** are parallel to each other. When mounted to the cabinet **110,** the plurality of lateral apertures **224** extend across the air inlet **212** and the air outlet **214.** The air inlet **212** and the air outlet **214** may be restricted or otherwise further defined by the louver panel **222.**

[0021] The lateral apertures **224** generally extend along the transverse direction T from the machine compartment **210** to the front **120** of the assembly **100.** In optional embodiments, one or more of the lateral apertures **224** extends at an angle (e.g., non-parallel) to the transverse directionT. For instance, one or more lateral apertures **224** may be directed downward from the machine compartment **210** at a negative angle relative to the transverse direction T. Air directed from the machine compartment **210** through the lateral apertures **224** may thus flow forward from the machine compartment **210** and toward the ground (e.g., away from the chilled chamber **128).**

[0022] Returning briefly to FIGS. 1 and 2, as noted above, the door **124** may be positioned in front of the machine compartment **210.** When assembled, the door **124** may further be positioned in front of the louver panel **222.** In some embodiments, the lower edge **126** of the door **124** is positioned below a bottom edge or bottommost lateral aperture **224** of the louver panel **222.** Thus, in the closed position, the door **124** may cover or hide the louver panel **222.** By contrast, in the open position of the door **124,** access may be permitted to the louver panel **222** (e.g., such that the louver panel **222** and lateral apertures **224** are visible to a user in front of the refrigerator assembly **100).**

[0023] Returning to FIGS. 3 through 6, in exemplary embodiments, a compartment wall **230** is provided within machine compartment **210.** As shown, the compartment wall **230** generally extends along the transverse direction T (e.g., rearward relative to the louver panel **222).** The compartment wall **230** may be positioned between the air inlet **212** and the air outlet **214** (e.g., relative to the lateral direction L). The compartment wall **230** may help block or define a separate air intake channel (e.g., having a transverse intake portion **216** or a lateral intake portion **218)** and air output channel **220.** During use, the air output channel **220** is downstream from the air intake channel **216** or **218** within the machine compartment**210**. In some such embodiments, the compartment wall **230** extends from an upper end **232** to a lower end **234** of the machine compartment **210.** Air entering the machine compartment **210** through the air inlet **212** may thus be prevented from immediately intermingling with air to be ejected from the air outlet **214** (e.g., at the front end **120** of the cabinet **110).** In further embodiments, the compartment wall **230** is mounted or fixed to a base pan or floor **236** of the cabinet **110** (e.g., defining a lowermost portion of the machine compartment **210).**

[0024] In certain embodiments, the compartment wall

230 extends from the front end **120** to a portion of the machine compartment **210** forward from the rear end **122** to define a transverse intake portion **216.** Moreover, a transverse gap between the compartment wall **230** and rear end **122** of the cabinet **110** may define a lateral intake portion **218** (e.g., as a continuation or part of intake channel). In some such embodiments, the output channel **220** is defined along the lateral direction L between the left side **116** and the compartment wall **230,** while being defined along the transverse direction T between the front end **120** and the air handler **242.** At least a portion of the intake channel (e.g., transverse intake portion**216**) may be defined along the lateral direction L between the right side **118** and the compartment wall **230,** while being defined along the transverse direction T between the front end **120** and the lateral intake portion **218.** Relative to fluid flow, the lateral intake portion **218** may be located between the transverse intake portion **216** and the output channel **220.** During use, air may thus flow, for example, from the transverse intake portion **216** to the lateral intake portion **218** before passing to the output channel **220.**

[0025] As noted above, one or more portions of the sealed refrigeration system may be housed within the machine compartment **210.** In some embodiments, a compressor **238** configured to compress or motivate a refrigerant through the sealed system is mounted to the cabinet **110** within the machine compartment **210** (e.g., in the output channel **220).** In additional or alternative embodiments, a condenser **240** (e.g., in fluid communication with the compressor **238)** is housed within the machine compartment **210.** For instance, the condenser **240** may be positioned adjacent to the rear end **122** of cabinet **110** (e.g., within intake channel at transverse intake portion **216** or lateral intake portion **218,** as shown). In some such embodiments, the condenser **240** is positioned rearward from the compressor **238.**

[0026] In some embodiments, an air handler **242,** such as a fan or blower, is housed within the machine compartment **210** to motivate or urge an airflow therethrough (e.g., from the air inlet **212** to the air outlet **214).** For instance, the air handler **242** may be directed at the compressor **238** or condenser **240** to draw air across portions of the sealed system and facilitate or encourage heat exchange between the sealed system and the ambient environment. In certain embodiments, the air handler **242** is positioned upstream from the compressor **238.** In additional or alternative embodiments, the air handler **242** is positioned downstream from the condenser **240.** Optionally, the air handler **242** may be positioned between the compressor **238** and the condenser **240** along the transverse direction T. In further additional or alternative embodiments, the air handler **242** is positioned between the output channel **220** and the intake channel **216, 218** (e.g., between the condenser **240** and the compressor **238).** The output channel **220** may thus be a positive pressure channel while the intake channel **216, 218** is a negative pressure channel. In optional embodiments, one or more secondary apertures **244** are defined through the rear end **122** of the cabinet **110** in fluid communication with the air handler **242** to provide supplemental or secondary air to mix with air from the intake channel **216, 218** (e.g., within the lateral intake portion **218** or output channel **220).**

[0027] As shown, a plurality of laterally-spaced vanes **246, 248** are provided adjacent to the louver panel **222.** In some embodiments, the vanes**246**, **248** are fixed or mounted to the louver panel **222.** For instance, one or more adhesives, welds, or mechanical fasteners may secure the **vanes246, 248** directly to the louver panel **222.** Selective removal or mounting of the louver panel **222** from the cabinet **110,** may thus advantageously provide removal or mounting of the vanes **246, 248** within the mechanical compartment.

[0028] Generally, the vanes **246, 248** extend rearward from the louver panel **222** (e.g., at the air outlet **214).** Thus, when assembled, the vanes**246**, **248** are positioned opposite a front-facing surface of the louver panel **222** and are advantageously hidden from a user's view or contact. Each of the vanes **246, 248** is laterally spaced apart from the others along the lateral direction L. Separate air paths may thus be defined between adjacent vanes **246, 248.** When assembled, the vanes **246, 248** may be positioned within at least a portion of the output channel **220** (e.g., proximal to the front end **120).** In optional embodiments, the vanes **246, 248** may be positioned in front of the compressor **238** or air handler **242**(e.g., along or relative to the transverse direction T).

[0029] In certain embodiments, one or more vanes (e.g., of a first vane set **246)** are directed away from the right side **118** or the air inlet **212.** For instance, one or more vanes **246**A**, 246**B may be non-parallel to the transverse direction T. At least one vane **246, 248** may define a flow angle θ**1**(e.g., relative to the transverse direction T) directed away from, for instance, the second end **228.** Optionally, multiple vanes **246** may define flow angles θ**1** directed away from the second end **228.** In some such embodiments, separate vanes **246** define separate flow angles θ**1**. For instance, the flow angles θ**1** may generally and sequentially increase relative to the transverse direction T as the lateral distance between discrete vanes **246**increases relative to the second end **228** or air inlet **212.** Thus, the flow angle θ**1** defined by a first vane **246**A proximal to the second end **228** may be less than the flow angle θ**1** defined by a second vane **246**B distal from the second end **228** (i.e., distal in comparison to the first vane **246**A)**.** Advantageously, air from the air outlet **214** may be substantially prevented from mixing with air entering machine compartment **210** (e.g., through air inlet **212).**

[0030] In additional or alternative embodiments, one or more vanes (e.g., of a second vane set **248)** are directed away from the left side **116.** For instance, one or more vanes **248** may be non-parallel to the transverse direction T. At least one vane **248** may define a flow angle θ**2** (e.g., relative to the transverse direction T) directed away from, for instance, the first end **226.** Optionally,

multiple vanes **248** may define flow angles θ**2** directed away from the first end **226.** In some such embodiments, separate vanes **248** define separate flow angles θ**2**. For instance, the flow angles θ**2** may generally and sequentially increase relative to the transverse direction T as the lateral distance between discrete vanes **248** increases relative to the first end **226.** Thus, the flow angle θ**2** defined by a first vane **248**A proximal to the first end **226** may be less than the flow angle θ**2** defined by a second vane **248**B distal from the first end **226** (i.e., distal in comparison to the first vane **248**A).

[0031] In optional embodiments, both a first set of vanes **246** (e.g., directed toward the left side **116)** and a second set of vanes **248** (e.g., directed toward the right side **118)** are provided. In some such embodiments, the first set of vanes **246** is further directed toward the second set of vanes**248,** and vice versa. Thus, air directed from the first set of vanes **246** may be guided to merge with air from the second set of vanes **248** in front of the cabinet **110.** Moreover, the first set of vanes **246** may be positioned proximal to the right side **118** while the second set of vanes **248** is positioned proximal to the left side **116.**

[0032] Turning now briefly to FIG. 7, a further exemplary embodiment of refrigerator assembly **100** is provided. As shown, refrigerator assembly**100** includes a discrete primary cabinet **110** and secondary cabinet **310.** Generally, it is understood that the primary cabinet **110** may include a machine compartment **210,** including one or more of the above-described features. Secondary cabinet **310** may include one or more similar features. For instance, the secondary cabinet **310** may extend along the lateral direction L between a left side (e.g., first lateral) side **316** and a right side (e.g., second lateral) side **318** to define a chilled chamber **324** and a machine compartment **410** (e.g., below the chilled chamber **324).** The machine compartment **410** of the secondary cabinet **310** may include a separate air inlet **412** and air outlet **414.** As described above within the context of machine compartment **210,** the air inlet **412** may be positioned proximal to the right side **318** while the air outlet **414** may be positioned proximal to the left side **320.** In optional embodiments, the door **324** of the secondary cabinet **310** may be rotatably attached at an opposite side from the door **124** of the primary cabinet **110** (e.g., the left side **316).**

[0033] As shown, the right side **318** of the secondary cabinet **310** may be positioned against the left side **116** of the primary cabinet **110.** The air inlet **412** of the machine compartment **410** of the secondary cabinet **310** may be located proximal to the air outlet **214** of the machine compartment**210** of the primary cabinet **110.** In some such embodiments, a plurality of vanes (e.g., second set **148**-FIG. 3) within machine compartment **210** is directed toward the right side **118.** Advantageously, air output from the machine compartment **210** may thus be directed away from the air inlet **412**of the machine compartment **410.**

[0034] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they include structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

Claims

1. A refrigerator assembly defining a mutually-orthogonal vertical direction, lateral direction, and transverse direction, wherein the refrigerator assembly comprising:a cabinet extending along the lateral direction between a first lateral side and a second lateral side, the cabinet defining a chilled chamber and a machine compartment, the machine compartment having an air inlet and an air outlet separate from the air inlet; a louver panel mounted to the cabinet in front of the machine compartment, the louver panel defining a plurality of lateral apertures spaced apart along the vertical direction, the plurality of lateral apertures extending along the lateral direction in front of the air inlet and the air outlet from a first end to a second end; and a plurality of laterally-spaced vanes extending rearward from the louver panel at the air outlet.

2. The refrigerator assembly of claim 1, wherein the refrigerator assembly further comprisinga door rotatably mounted on the cabinet forward from the louver panel, the door being movable between on open position and a closed position, the open position permitting access to the chilled chamber and the louver panel, the closed position restricting access to the chilled chamber and covering the louver panel.

3. The refrigerator assembly of claim 1, wherein the refrigerator assembly further comprising a compartment wall extending along the transverse direction within the machine compartment between the air inlet and the air outlet.

4. The refrigerator assembly of claim 1, wherein the refrigerator assembly further comprisinga compressor housed within the machine compartment to motivate a refrigerant through a sealed system.

5. The refrigerator assembly of claim 4, wherein the refrigerator assembly further comprisingan air handler housed within the machine compartment to motivate an airflow from the air inlet to the air outlet.

6. The refrigerator assembly of claim 5, wherein the refrigerator assembly further comprisinga condenser in fluid communication with the compressor as part of the sealed system, the condenser being housed within the machine compartment behind the compressor and the air handler, wherein the air handler is positioned between condenser and the compressor along the transverse direction.

7. The refrigerator assembly of claim 1, wherein the air inlet is located proximal to the second end, wherein the air outlet is located proximal to the first end, and wherein at least one vane of the plurality of laterally-spaced vanes defines a flow angle directed away from the second end.

8. The refrigerator assembly of claim 1, wherein the air inlet is located proximal to the second end, wherein the air outlet is located proximal to the first end, and wherein at least one vane of the plurality of laterally-spaced vanes defines a flow angle directed away from the first end.

9. The refrigerator assembly of claim 1, wherein the chilled chamber extends along the lateral direction above the louver panel, between the first lateral side and the second lateral side.

10. The refrigerator assembly of claim 1, wherein the cabinet is a primary cabinet, the refrigeration assembly further comprises: a secondary cabinet extending along the lateral direction between a first lateral side and a second lateral side, the secondary cabinet defining a chilled chamber and a machine compartment, the machine compartment of the secondary cabinet having an air inlet and an air outlet separate from the air inlet of the secondary cabinet, wherein the second lateral side of the secondary cabinet is positioned against the first lateral side of the primary cabinet, and wherein the air inlet of the machine compartment of the secondary cabinet is located proximal to the air outlet of the machine compartment of the primary cabinet.

11. The refrigerator assembly according to any one of claim 1 to 10, wherein the plurality of laterally-spaced vanes being directed away from the panel inlet.

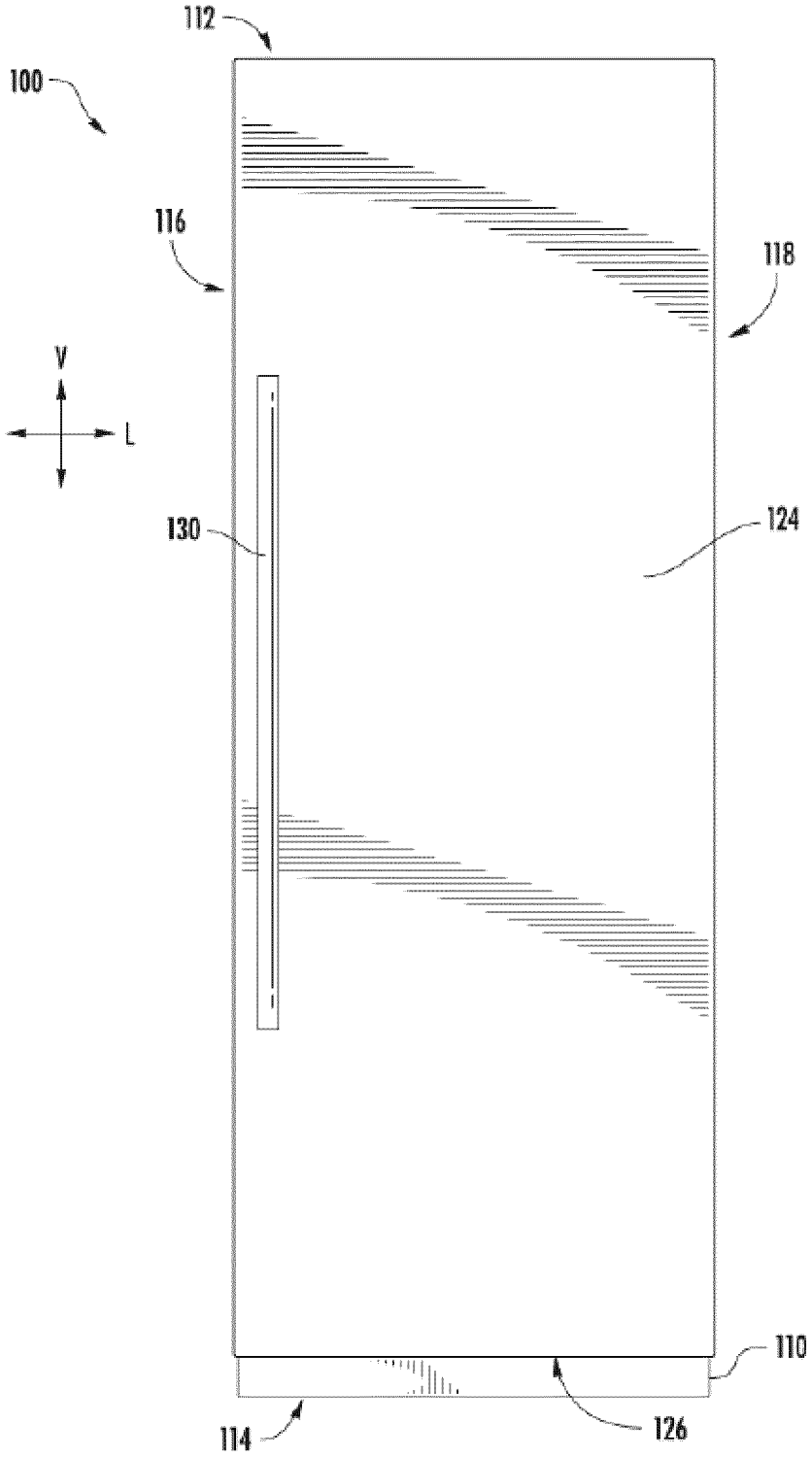
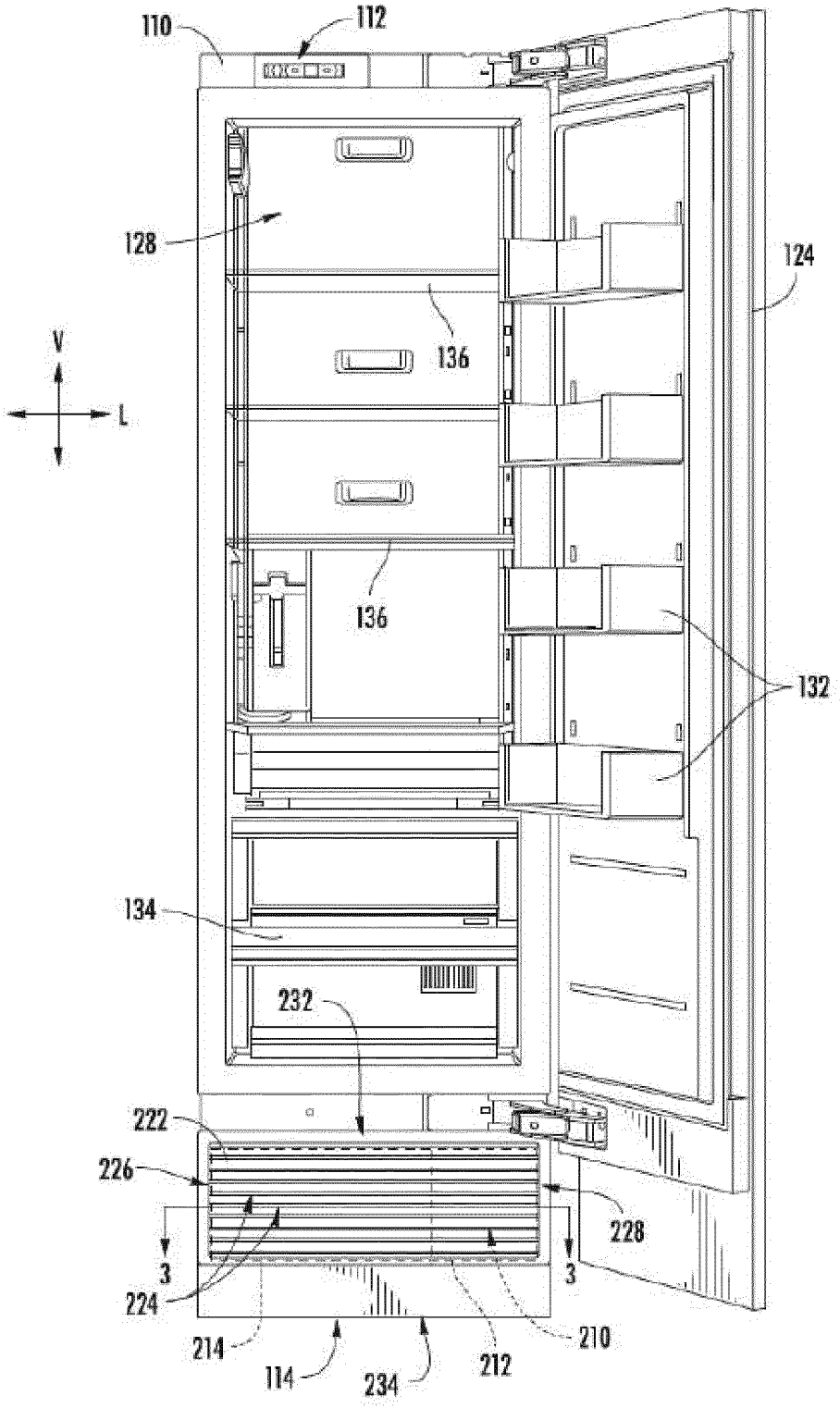


FIG. 1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112
128
124
V
L
136
136
132
134
232
222
226
228
3
3
224
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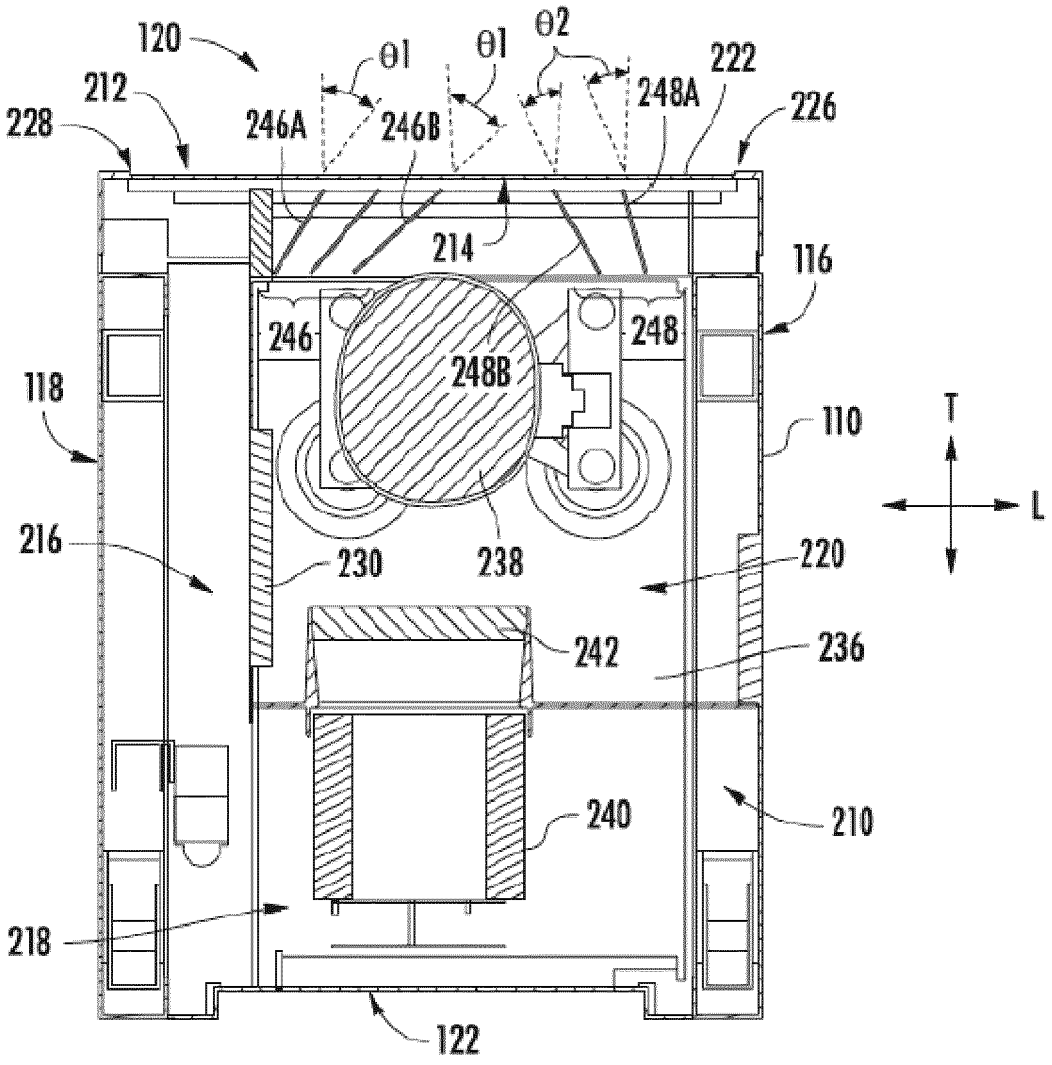
114
234
212
210

FIG. 2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θ1
θ1
θ2
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222
228
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246B
248A
226
214
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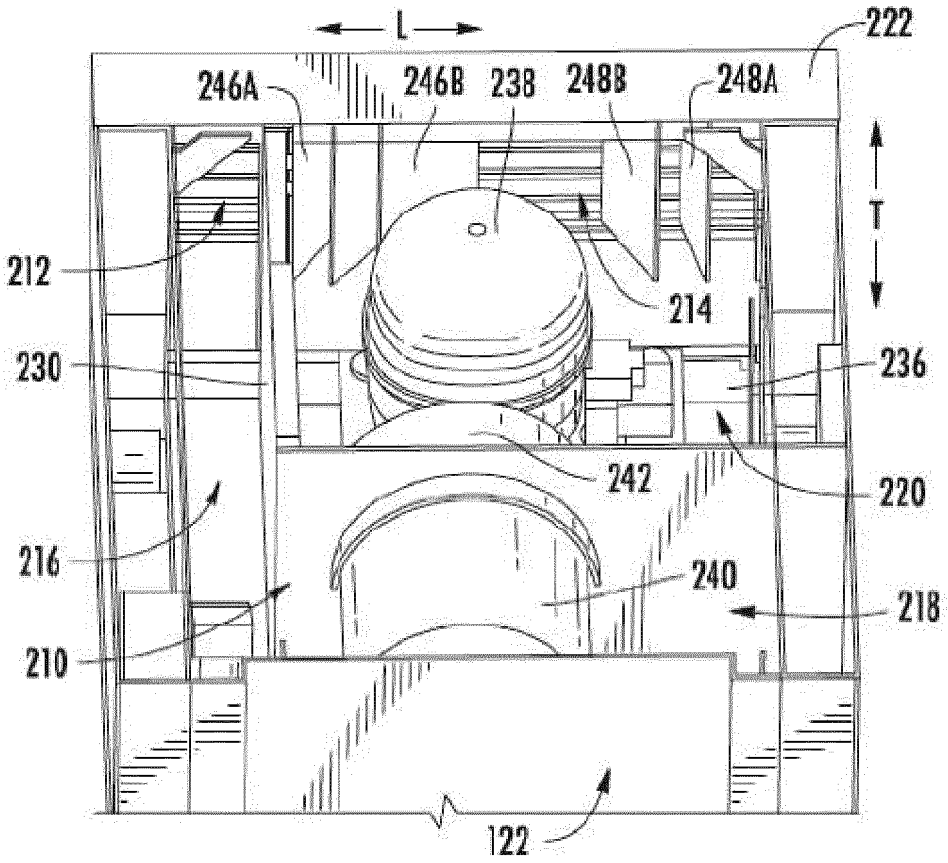
246
248
248B
118
110
T
L
216
230
238
220
242
236
240
210
218
122

FIG. 3


L
222
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246B
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248B
248A
T
212
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242
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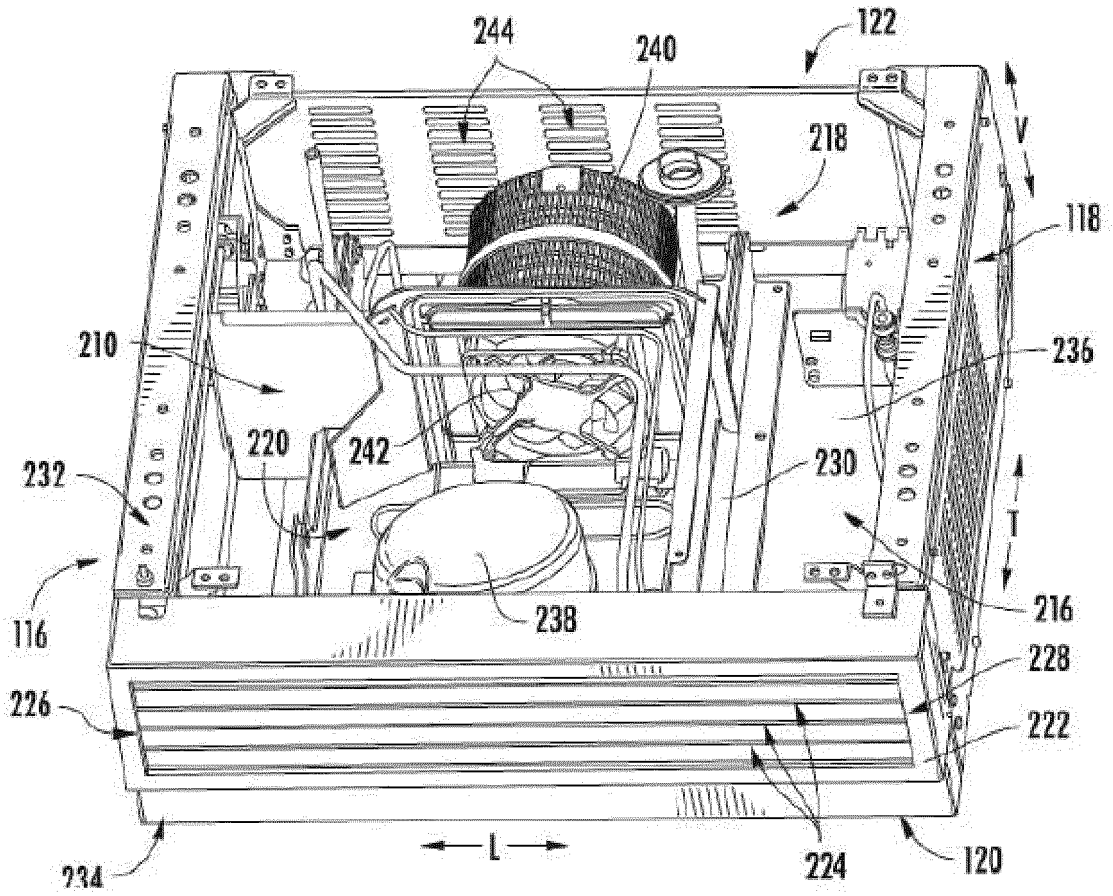
216
240
218
210
122

FIG. 4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122
218
V
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T
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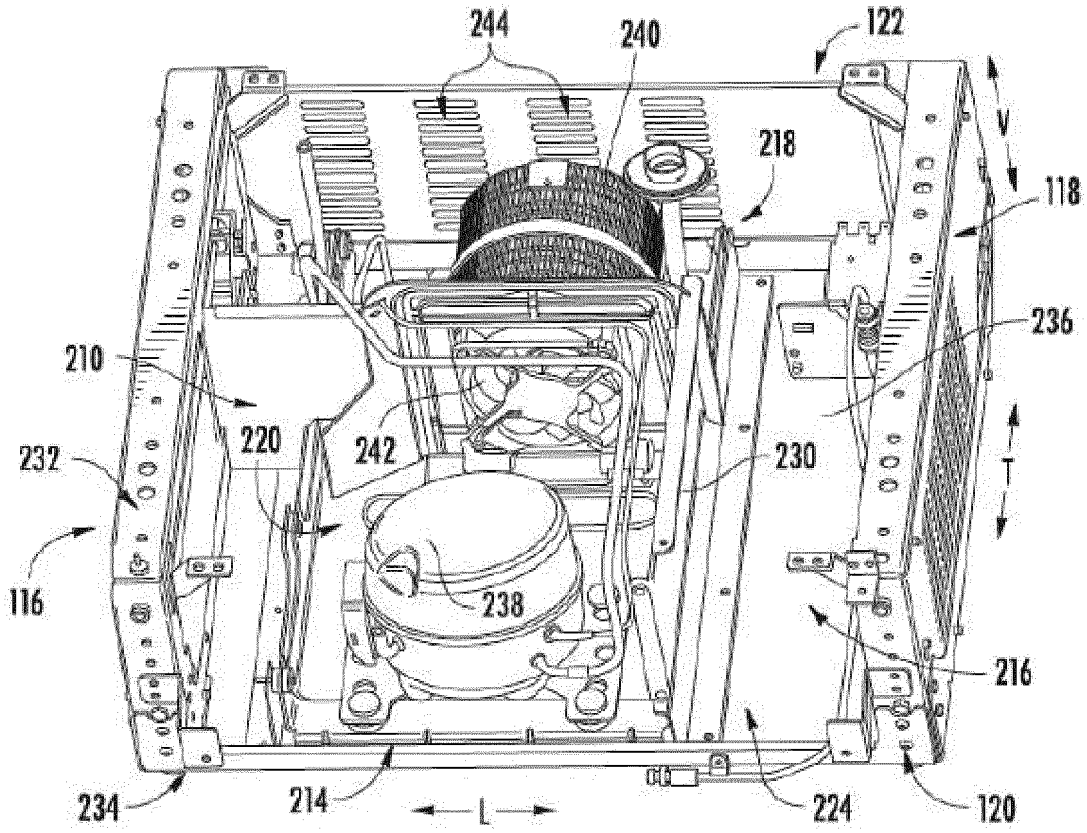
120
234

FIG. 5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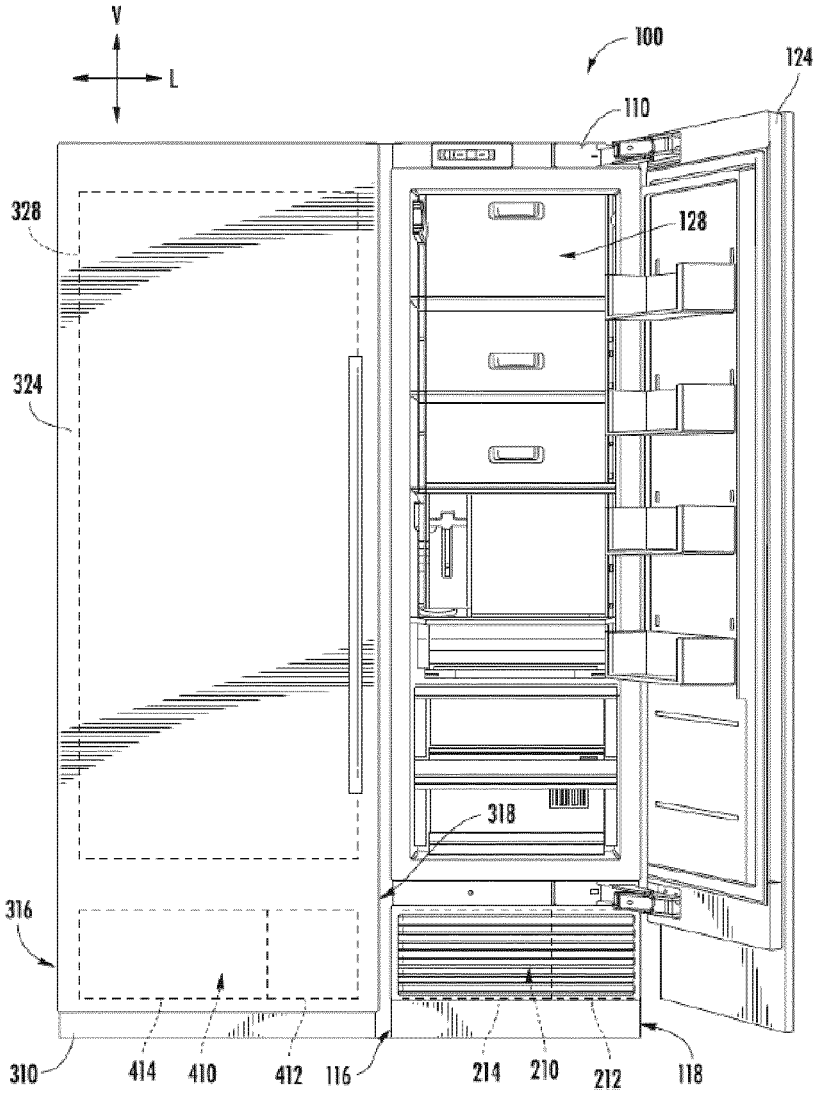
120

FIG. 6


V
L
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124
110
328
128
324
318
316
310
414
410
412
116
214
210
212
118

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/104076

A. CLASSIFICATION OF SUBJECT MATTER

F25D 11/02(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)

F25D11 F25D17 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: 机器 机械 压缩机 压机 室 腔 舱 仓 进风口 出风口 百叶 格栅 machine mechan+ compressor room chamber cabin compartment inlet outlet grill

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2019078828 A1 (BSH HAUSGERAETE GMBH) 14 March 2019 (2019-03-14) description paragraph [0034] and figure 1	1-11
Y	CN 1247303 A (SANYO ELECTRIC CO., LTD.) 15 March 2000 (2000-03-15) description page 2 line 27 to page 3 line 26 and figures 1-3	1-11
A	CN 1467465 A (LG ELECTRONICS INC.) 14 January 2004 (2004-01-14) entire document	1-11
A	EP 1970656 A3 (SAMSUNG ELECTRONICS CO., LTD.) 10 August 2011 (2011-08-10) entire document	1-11
A	US 2012137721 A1 (CHAE SU NAM et al.) 07 June 2012 (2012-06-07) entire document	1-11

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

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 September 2020	**19 November 2020**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/104076

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