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(54) **ICE MAKING ASSEMBLY AND REFRIGERATOR**

(57) An ice-making assembly (100) and a refrigerator with the ice-making assembly (100). The ice-making assembly (100) comprises: an ice mold (10) having a plurality of ice cells for containing ice-making water; a refrigerant pipe (20) extending from one end to the other end of the ice mold (10) and located at a bottom of the ice mold (10); a heating wire (30) located at the bottom of the ice mold (10) and spaced apart from the refrigerant pipe (20); further comprises a fixing member (40) movably connected to the ice mold (10) and configured to operably move between two positions; at the first position,

the fixing member (40) is engaged with the refrigerant pipe (20) to fix the refrigerant pipe (20) to the ice mold (10); at the second position, the fixing member (40) is separated from the refrigerant pipe (10) to release the refrigerant pipe (20). A tool needn't be used upon mounting the refrigerant pipe (20) together with the ice mold (10) and separating the refrigerant pipe (20) from the ice mold (10), and the only thing to do is operating the fixing member (40) to move. The mounting is very convenient, and the cost is lower.

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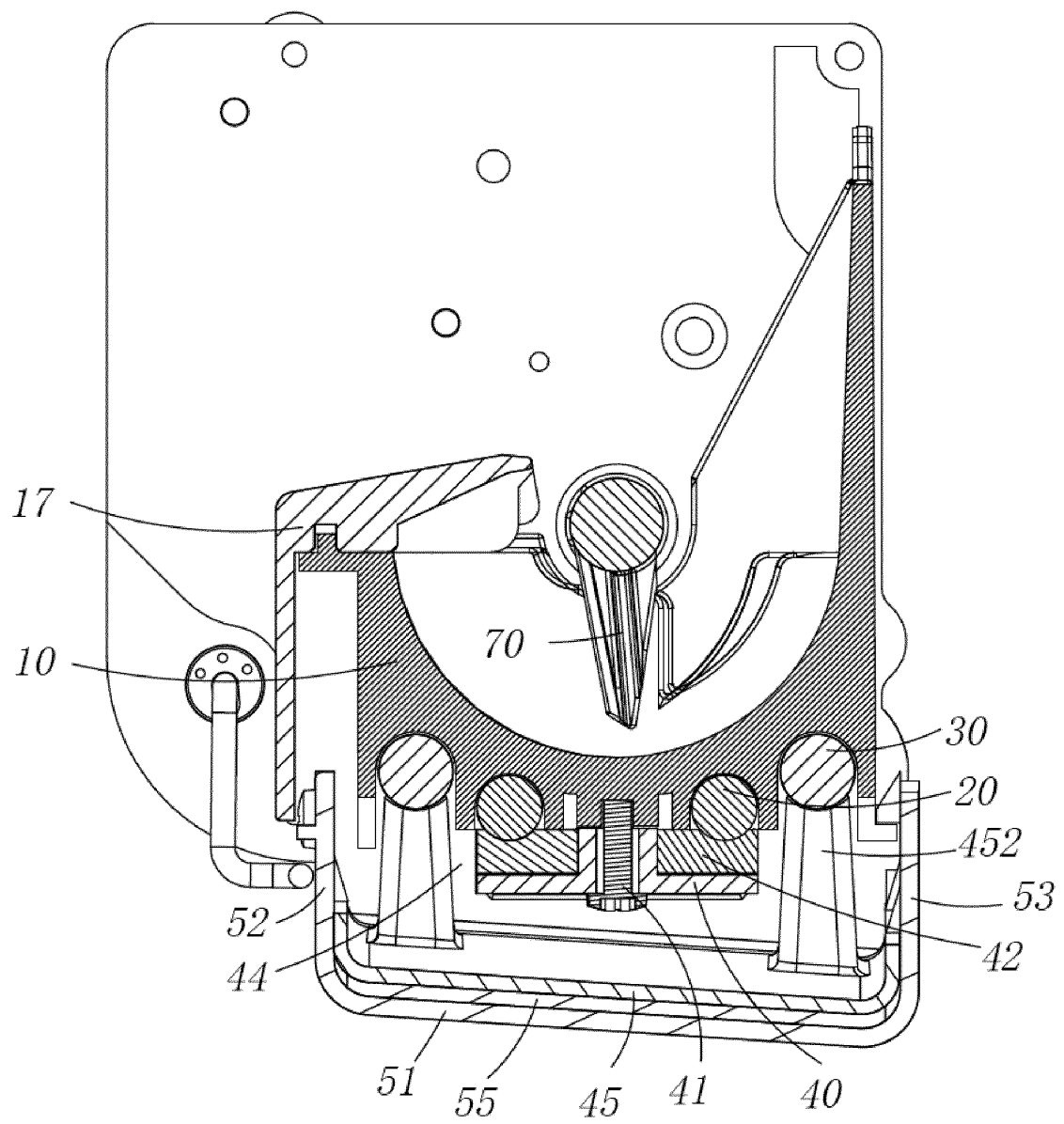


Fig. 2

Description

TECHNICAL FIELD

[0001] The present invention relates to the field of refrigerating appliances, and particularly to an ice-making assembly and a refrigerator.

BACKGROUND

[0002] An ice maker is usually disposed in a freezing chamber of a refrigerator to make ice by virtue of the cold air in the freezing chamber. As for a refrigerator with a refrigerating chamber above the freezing chamber, a user needs to bend down to open the door body of the freezing chamber upon taking out of ice. To enable the user to conveniently take ice, an independent ice-making chamber is disposed in the refrigerating chamber or a door body of the refrigerating chamber of some conventional refrigerators, the ice maker is disposed in the ice-making chamber, and a dispenser associated with the ice maker is disposed on an outer side of the door body. The cold air of the freezing chamber and the evaporator chamber is introduced through an air duct into the air-making chamber to achieve the supply of cold to the ice maker. Such an ice making manner is also referred to as air-cooled ice making.

[0003] However, the ice-making efficiency in the air-chilled ice-making manner is low, and the air duct occupies a large space, thus occupying the storage space of the refrigerator itself. For this reason, there occurs a manner of making ice through direct contact between the refrigeration pipeline and the ice-maker, and the manner is referred to as direct-cooling ice-making. The direct-cooling ice-making has advantages such as quick ice making and a small occupation of space. However, the ice maker needs to be separated from the refrigerating pipeline when the ice maker needs to be cleaned. Therefore, how to achieve connection of the refrigeration pipeline and an ice mold of the ice maker is particularly important. In a conventional solution of connection via screws, it is very inconvenient to detach and mount the ice maker in a narrow and small space of the ice-making chamber. Therefore, the prior art needs to be further improved.

SUMMARY

[0004] An object of the present invention is to provide an ice-making assembly which is convenient to detach and mount.

[0005] Another object of the present invention is to provide a refrigerator with an ice-making assembly which is convenient to detach and mount.

[0006] In order to achieve one of the above-mentioned objects, the present invention provides an ice-making assembly, comprising:

an ice mold having a plurality of ice cells for containing ice-making water;

a refrigerant pipe extending from one end to the other end of the ice mold and located at a bottom of the ice mold;

a heating wire located at the bottom of the ice mold and spaced apart from the refrigerant pipe;

wherein the ice-making assembly further comprises a fixing member movably connected to the ice mold and configured to operably move between two positions; at the first position, the fixing member is engaged with the refrigerant pipe to fix the refrigerant pipe to the ice mold; at the second position, the fixing member is separated from the refrigerant pipe to release the refrigerant pipe.

[0007] As a further improvement of an embodiment of the present invention, wherein the fixing member is constructed in a straight shape, a middle portion of the fixing member is pivotally connected to the bottom of the ice mold, the refrigerant pipe is constructed in a U-shape; at the first position, both ends of the fixing member are respectively engaged with two straight edges of the U-shape; at the second position, the fixing member rotates to between the two straight edges of the U-shape.

[0008] As a further improvement of an embodiment of the present invention, wherein an elastic pad is mounted on the fixing member; at the first position, the elastic pad is in an interference fit with refrigerant pipe, and the fixing member enables close contact between the refrigerant pipe and the ice mold via the elastic pad.

[0009] As a further improvement of an embodiment of the present invention, wherein the fixing member is provided with a dovetail groove, a portion of the elastic pad is shaped to mate with the dovetail groove, and the portion of the elastic pad mated with the refrigerant pipe is constructed with a thickness reducing from the middle to both ends.

[0010] As a further improvement of an embodiment of the present invention, wherein the ice-making assembly further comprises a water draining tray fixed below the ice mold, one end of the water draining tray forms a water outlet, at least two upwardly-protruding support ribs are provided on the water draining tray, and the support ribs contact the heating wire in a thermally-conductive manner and fix a portion of the heating wire to the ice mold.

[0011] As a further improvement of an embodiment of the present invention, wherein the ice-making assembly further comprises a bottom cover fixedly connected to the ice mold, the bottom cover comprises a bottom wall and a first side wall and a second side wall extending upwardly along the front and rear of the bottom wall respectively, the water draining tray is fixed between the first side wall and second side wall, a protruding rim protruding upwardly is provided at both ends of the bottom cover in a direction from one end to the other end of the ice mold, and the water draining tray is sandwiched between the two protruding rims.

[0012] As a further improvement of an embodiment of the present invention, wherein the ice-making assembly further comprises a housing fixed with the ice mold, the housing has a first edge and a second edge respectively corresponding to the first side wall and second side wall, one end of the bottom cover is connected to one end of the first edge and second edge; the at least support ribs comprise two first support ribs adjacent to the other end of the bottom cover, and the two first support ribs are respectively connected to the first edge and second edge.

[0013] As a further improvement of an embodiment of the present invention, wherein the bottom cover and the first edge are connected via a screw by penetrating the bottom cover and the first edge, the bottom cover is snap-fitted with the second edge, a post extends from a side of the two first support ribs facing away from each other, a hook portion extends respectively from the first edge and second edge, and the post can extend into the hook portion and rotate and move in the hook portion.

[0014] As a further improvement of an embodiment of the present invention, wherein the housing further comprises a back plate extending upwardly from a rear side of the ice mold, the ice-making assembly is mounted in an interior of the refrigerator by a mounting structure on the back plate, one end of the housing forms an upwardly-extending end plate, a water filling trough is disposed on an outer side of the end plate relative to the ice mold, the water filling trough is communicated with the ice cells, and wherein the back plate, the water filling trough, the ice mold and the housing are integrally formed.

[0015] As a further improvement of an embodiment of the present invention, wherein the edge of the water draining tray has an upwardly-extending edge, the first side wall and second side wall are respectively provided with a plurality of barbs, and the water draining tray is snap-fitted with the plurality of barbs via the edge and fixed with the bottom cover.

[0016] As a further improvement of an embodiment of the present invention, wherein an ice guide is fixedly connected at a front end of the ice mold, a guide rib extending in a lengthwise direction of the first side wall is disposed on an outer side of the first side wall of the bottom cover, and the ice guide extends downwards to a position flush with the guide rib.

[0017] In order to achieve one of the above-mentioned objects, the present invention provides a refrigerator, comprising:

- a cabinet defining a refrigerating chamber and a freezing chamber;
- a door body movably connected to the cabinet and configured to open and close the refrigerating chamber;
- an ice-making chamber disposed in the door body;
- a refrigerating system comprising a compressor and a condenser connected to an outlet side of the compressor;

wherein the ice-making assembly according to any one of embodiments above is disposed in the ice-making chamber, and the refrigerant pipe is connected to the refrigerating system.

[0018] As compared with the prior art, in embodiments of the present invention, a tool needn't be used upon mounting the refrigerant pipe together with the ice mold and separating the refrigerant pipe from the ice mold; upon mounting, the only thing to do is operating the fixing member to move to a position in engagement with the refrigerant pipe, and the refrigerant pipe is fixed relative to the ice mold. The mounting is very convenient, and the cost is lower. Meanwhile, the refrigerant pipe is close contact with the ice mold so that the utilization rate of cold is higher, the heat transfer is quicker, and thereby the ice-making efficiency can be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

FIG 1 is an exploded perspective view of an ice-making assembly according to a preferred embodiment of the present invention;

FIG 2 is a cross-sectional view of the ice-making assembly of FIG 1;

FIG 3 is an exploded perspective view of the ice-making assembly of FIG 1;

FIG 4 is a perspective view of an ice mold of the ice-making assembly of FIG 1;

FIG 5 is a schematic view of a refrigerator according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION

[0020] The present invention will be described in detail in conjunction with embodiments shown in the figures. However, the embodiments are not intended to limit the present invention. Structural, methodological or functional variations made by those having ordinary skill in the art according to the embodiments are all included in the protection scope of the present invention.

[0021] It should be appreciated that terms indicating spatial relative positions such as "up", "down", "in" and "out" used in the text herein are intended to describe a relationship of one unit or feature shown in figures relative to another unit or feature for an easy description purpose. The terms indicating spatial relative positions may be intended to include different orientations besides the orientations shown in the figures in use or operation of the device.

[0022] Referring to FIG 1 through FIG 5, a preferred embodiment of the present invention provides an ice-making assembly 100 comprising an ice mold 10, and a refrigerant pipe 20 and a heating wire 30 located at a bottom of the ice mold 10, wherein the ice mold 10 has a plurality of ice cells for containing ice-making water,

the refrigerant pipe 20 extends from one end to the other end of the ice mold 10, and the heating wire 30 is spaced apart from the refrigerant pipe 20, and preferably spaced apart from the refrigerant pipe 20 in a direction substantially perpendicular to an extension direction of the ice mold 20, i.e., the refrigerant pipe 20 and the heating wire 30 are arranged staggered from each other and respectively contact different positions of the bottom of the ice mold 20. The refrigerant pipe 20 is configured to supply cold to the ice mold 10 to freeze water in the ice cells, and the heating wire 30 is configured to supply heat to the ice mold 10 to facilitate release of ice cubes from the ice mold 10. In the present embodiment, a direction in which the ice mold extends lengthwise from one end to the other end is taken as a transverse direction, a side from which the ice cubes are released from the ice mold is taken as a front side, the opposite side is taken as a rear side, and a direction perpendicular to the transverse direction and the front-rear direction is taken as a vertical direction.

[0023] The ice-making assembly 100 further comprises a fixing member 40 movably connected to the ice mold 10 and configured to operably move between two positions. At the first position, the fixing member 40 is engaged with the refrigerant pipe 20 to fix the refrigerant pipe 20 to the ice mold 10; at the second position, the fixing member 40 is separated from the refrigerant pipe 20 to release the refrigerant pipe 20. In the present embodiment, preferably, the fixing member 40 is rotatably connected to the bottom of the ice mold 10, and the fixing member 40 is constructed in a straight shape. A middle portion of the fixing member 40 may be pivotally connected to the bottom of the ice mold 10 via a connecting member 41 such as a screw or bolt. A portion of the refrigerant pipe 20 in contact with the ice mold 10 is constructed in a U-shape. At the first position, both ends of the fixing member 40 are respectively engaged with two straight edges of the U-shape; at the second position, the fixing member 40 rotates to between the two straight edges of the U-shape. That is to say, when the fixing member 40 rotates to a length direction thereof substantially perpendicular to a transverse direction of the ice mold 10, the fixing member 40 interferes with the refrigerant pipe 20 in a vertical direction, the fixing member 40 may limit the movement of the refrigerant pipe 20 in the vertical direction, so that the refrigerant pipe 20 may be fixed to the bottom of the ice mold 10 by the fixing member 40. When the ice maker needs to be detached, it is only necessary to operate the fixing member 40 to rotate to a position staggered from the refrigerant pipe 20, for example, operate the fixing member 40 to rotate to the length direction thereof substantially parallel to the transverse direction of the ice mold 10, the ice mold 10 may be separated from the refrigerant pipe 20, so the fixing member 40 may release the refrigerant pipe 20. That is to say, either the fixation or separation of the refrigerant pipe 20 and the ice mold 10 may be achieved by simply operating the fixing member 40 to rotate. The operation is very con-

venient and quick.

[0024] Furthermore, in order to ensure close contact between refrigerant pipe 20 and ice mold 10, an elastic pad 42 may be disposed on the fixing member 40. At the first position, the elastic pad 42 is in an interference fit with refrigerant pipe 20, the fixing member 40 enables close contact between the refrigerant pipe 20 and the ice mold 10 via the elastic pad 42, thereby improving the thermal conductivity efficiency from the refrigerant pipe 20 to the ice mold 10. The fixing member 40 is provided with a dovetail groove, and a portion of the elastic pad 42 is shaped to mate with the dovetail groove. The portion of the elastic pad 42 mated with the refrigerant pipe 20 is constructed with a thickness reducing from the middle to both ends. As such, when the refrigerant pipe is mounted, as the fixing member 40 rotates, an elastic force applied by the fixing member 40 to the refrigerant pipe 20 through the elastic pad 42 increases, thereby making the operation more labor-saving, and further ensuring that the refrigerant pipe 20 is closely attached to the ice mold 10. In the present embodiment, two fixing members 40 are preferably set and distributed apart in the transverse direction of the ice mold 10 to fix the refrigerant pipe 20 more reliably. Certainly, a larger number of fixing members and corresponding elastic pads may also be provided, or the movement mode of the fixing member is not limited to rotation, e.g., may be movement. Alternatively, the fixing member itself is made of an elastic material, so that the elastic abutment against the refrigerant pipe can be achieved by only providing the fixing member.

[0025] Further referring to FIG 2 and FIG 3, the ice-making assembly 100 comprises a water draining tray 45 fixed below the ice mold 10, one end of the water draining tray 45 forms a water outlet 451, at least two upwardly-protruding support ribs 452 are provided on the water draining tray 45, and the support ribs 452 contact the heating wire 30 in a thermally-conductive manner and fix a portion of the heating wire 30 to the ice mold 10. In the present embodiment, the heating wire 30 is also constructed in a U-shape, the refrigerant pipe 20 and the heating wire 30 are arranged oppositely, i.e., the two U-shapes open in opposite directions, and furthermore, the heating wire 30 is located on an outer side of the U-shape of the refrigerant pipe 20. The support ribs 452 and the water draining tray 45 are integrally arranged and may be made of a thermally conductive material, for example a metallic material, preferably a water draining tray made of aluminum, and may simultaneously absorb the heat of the heating wire 30 to melt the frost of the water draining tray 45. Four support ribs 452 are preferably provided. The four support ribs are arranged at an interval in the transverse direction and the front-rear direction respectively. As such, a space is left between the water draining tray 45 and the bottom of the ice mold 10, and forms an airflow chamber 44 which is through from one end to the other end of the ice mold 10, air may perform heat exchange with the refrigerant pipe 20 and the ice mold 10 upon flowing through the airflow chamber 44 to form cold

air which may supply cold for the ice bin disposed below the ice-making assembly 100 to prevent the stored ice bins from melting. Either the refrigerant pipe 20 or the heating wire 30 performs heat exchange in a direct contact manner, so that the efficiency in transferring the cold and heat is higher and thereby the ice-making efficiency is greatly improved.

[0026] Specifically, the ice-making assembly further comprises a bottom cover 50 fixedly connected to the ice mold 10. The bottom cover 50 comprises a bottom wall 51 and a first side wall 52 and a second side wall 53 extending upwardly along the front and rear of the bottom wall 51 respectively, the water draining tray 45 is fixed between the first side wall 52 and second side wall 53, a protruding rim 54 protruding upwardly is provided at both ends of the bottom cover 50 in a direction from one end to the other end of the ice mold 10, and the water draining tray 45 is sandwiched between the two protruding rims 54; the first side wall 52, second side wall 53 and the two protruding rims 54 achieve accurate positioning of the water draining tray 45 relative to the bottom cover 50 in two directions, and the water draining tray 45 is positioned and fixed more reliably. In addition, the edge of the water draining tray 45 has an upwardly-extending edge 455, the first side wall 52 and second side wall 53 are respectively provided with a plurality of barbs 535, and the water draining tray 45 is snap-fitted with the plurality of barbs 535 via the edge 455 and fixed with the bottom cover 50. In addition, a thermal insulation panel 55 may be disposed between the bottom cover 50 and the water draining tray 45 to insulate the heat transfer from the water draining tray 45 to the bottom cover 50 and prevent frost from being formed on the bottom cover 50.

[0027] The ice-making assembly 100 further comprises a housing 15 fixed to the ice mold 10, wherein the housing 15 has a first edge 151 and a second edge 152 respectively corresponding to the first side wall 52 and second side wall 53, and one end of the bottom cover 50 is connected to the first edge 151 and second edge 152; at least support ribs 452 comprise two first support ribs 453 adjacent to the bottom cover 50, i.e., adjacent to one end of the water outlet 45, and the two first support ribs 453 are respectively connected to the first edge 151 and second edge 152. Specifically, the bottom cover 50 and the first edge 151 are connected via a screw 16 by penetrating the bottom cover 50 and the first edge 151, and the bottom cover 50 is snap-fitted with the second edge 152; preferably, a hook 1521 is disposed at an end of the second edge 152, and correspondingly a catching block 531 is disposed at an end of the second side wall 53. Upon assembling, the catching block 531 is hung on the hook 1521 to achieve the snap-fitting of the bottom cover 50 and second edge 152. A post 4531 extends from a side of the two first support ribs 453 facing away from each other, a hook portion 155 extends respectively from the first edge 151 and second edge 152, and the post 4531 can extend into the hook portion 155 and rotate and

move in the hook portion 155. Upon assembling, the refrigerant pipe 20 is fixed to the ice mold 10 by the fixing member 40, the bottom cover 50 and the water draining tray 45 are pre-assembled together, the post 4531 engages with the hook portion 155 so that the bottom cover 50 and the water draining tray 45 together first rotate about the post 4531 and then move along the hook portion 155 so that the bottom cover 50 is snap-fitted with the second edge, finally, the bottom cover 50 and ice mold 10 are fixed by running the screw 16 through the bottom cover 50 and first edge 151, thereby achieving the mounting of the ice-making assembly 100. The whole process is very convenient and quick. Furthermore, the heat transfer of the refrigerant pipe 20 and heating wire 30 to the ice mold 10 can be achieved reliably, and meanwhile the refrigerant pipe 20 and ice mold 10 can also achieve the heat exchange with the air in the airflow chamber 44, thereby facilitating supplying cold to other portions. In addition, upon deicing, the frost of the water draining tray 45 may also be melted with the heat of the heating wire 30, and the water resulting from the melting of the frost may be directly drained through the water outlet 451. The manner in which the refrigerant pipe 20 and the heating wire 30 simultaneously contact the ice mold 10 and the heat-conducting member 40 enables a higher utilization ratio of cold and heat and a faster heat transfer, thereby enabling an improvement in ice-making efficiency. In addition, if the ice mold needs to be cleaned, regardless of disassembly or installation, it is only necessary to connect the ice mold with the bottom cover by aligning relevant parts in position, so that the installation is very convenient.

[0028] Further referring to FIGS. 1-3, an ice guide 17 is fixedly connected at a front end of the ice mold 10, a guide rib 511 extending in a lengthwise direction of the first side wall 51 is disposed on an outer side of the first side wall 51 of the bottom cover 50, and the ice guide 17 extends downwards to a position flush with the guide rib 511, which may help a user to know a rough mounting position upon mounting the bottom cover 50. In addition, in order to facilitate connecting the ice guide 17, the ice guide 17 may be first connected to the ice mold 10, and an avoidance hole 171 may be provided on the ice guide 17 to help the screw 16 to run through to connect the bottom cover 50 with the ice mold 10. The ice-making assembly 100 further comprises a driving mechanism 60 at an end of the ice mold 10, and the driving mechanism 60 is used to bring an ice discharger 70 on the ice mold 10 to rotate to perform deicing. An open end of the U-shape of the heating wire 30 faces towards the driving mechanism 60 to facilitate making electrical connection. The open end of the U-shape of the refrigerant pipe 20 faces away from the driving mechanism 60 to facilitate connection with the refrigeration pipeline.

[0029] Frost will be formed on the bottom of the refrigerant pipe 20 and the ice mold 10. As the heating wire 30 is activated to de-ice, the water draining tray 45 meanwhile absorbs heat to melt the frost, and the water result-

ing from the melting of the frost directly falls into the water draining tray 15; in order to speed up water drainage, the water draining tray 45 may be arranged to be inclined downwards in a direction from one end of the ice mold 10 connected to the driving mechanism 60 to the other end, with an inclination angle being in a range of about 0.5-2.5 degrees. Furthermore, the water draining tray is inclined downwards in a front-rear direction, with an inclination angle being in a range of 3-5 degrees. The water outlet 421 is disposed at an end of the water draining tray away from the driving mechanism 60 and at a rear end of the water draining tray 45, i.e., at the lowest part of the water draining tray 45, so that the water resulting from the melting of the frost can be sufficiently drained. Furthermore, a water blocking edge 423 is provided at an end of the water draining tray 45 away from an end of the driving mechanism 60 to prevent overflow when the water resulting from the melting of the frost is excessive.

[0030] The housing 15 and the ice mold 10 are integrally formed to simplify the installation of the entire ice-making assembly 100. The housing 15 has a front end and an opposite rear end, the rear end of the housing 15 integrally forms an upwardly-extending back plate 157, a mounting structure is provided on the back plate 157 for mounting the ice-making assembly 100 inside the refrigerator, and the driving mechanism 60 may be mounted on the housing 15. As such, only the housing 15 needs to be fixedly connected to the refrigerator, so the mounting is more convenient. In addition, one end of the housing 15 away from the driving mechanism 60 forms an upwardly-extending end plate 158, a water filling trough 18 is disposed on an outer side of the end plate 158 relative to the ice mold 10, a water filling port communicated with an inner cavity of the ice mold 10 is disposed at a position of the water filling trough 18 adjacent to the ice mold 10, that is to say, the water filling trough is communicated with the ice cells. The water filling trough 18 and the ice mold 10 are also integrally formed, thereby avoiding the problem of water leakage during the water filling process.

[0031] In the ice-making assembly according to the above-mentioned embodiment, a tool needn't be used upon mounting the refrigerant pipe 20 together with the ice mold 10 and separating the refrigerant pipe 20 from the ice mold 10; upon mounting, the only thing to do is rotating the fixing member 40 in engagement with the refrigerant pipe 20, and the refrigerant pipe 20 is fixed relative to the ice mold 10. The mounting is very convenient, and the cost is lower.

[0032] Referring to FIG 6, a refrigerator in an embodiment provided by the present invention comprises a cabinet 910, a door body 920 movably connected to the cabinet and a refrigerating system, wherein the cabinet 910 defines a chilling compartment, a fan for introducing cold air into the chilling compartment is further provided in the cabinet, the chilling compartment comprises a refrigerating chamber 91 and a freezing chamber 92, the refrigerating chamber 91 and the freezing chamber 92 are

provided from top to bottom, the door body 920 is used for opening and closing the refrigerating chamber 91, either the refrigerating chamber 91 or the door body 920 is provided with an ice-making chamber, and an ice-making assembly 100 (not shown) is provided in the ice-making chamber, an ice bin 200 is provided below the ice-making assembly, a dispenser (not shown) selectively communicated with the ice-making chamber is provided on the door body 920, and ice cubes prepared by the ice-making assembly 100 fall into the ice bin 200 for storage and can be discharged from the dispenser. In the present embodiment, the ice-making chamber is preferably disposed on the door body 920 of the refrigerating chamber, and the chilling compartment comprises a freezing chamber and a refrigerating chamber, and certainly, the chilling compartment may comprise more chambers, such as a temperature variable chamber.

[0033] The refrigerating system comprises a compressor 913 and a condenser connected to an outlet side of the compressor 913, the refrigerant pipe 20 of the above-mentioned ice-making assembly 100 is connected to the refrigerating system, the compressor 913 is disposed at the bottom of the cabinet 910, an evaporator 912 for supplying cold to the freezing chamber 92 and the refrigerating chamber 91 is disposed in a rear of the freezing chamber, and the evaporator 912 may be connected to both sides of the compressor and the condenser in series or in parallel with the refrigerant pipe 20 for supplying cold for the ice-making. Since the installation of the ice making assembly 100 itself is more convenient, the overall assembling of the refrigerator is also more convenient, thereby reducing the manufacturing cost of the refrigerator.

[0034] It should be understood that although the description is described according to the embodiments, not every embodiment only includes one independent technical solution, that such a description manner is only for the sake of clarity, that those skilled in the art should take the description as an integral part, and that the technical solutions in the embodiments may be suitably combined to form other embodiments understandable by those skilled in the art.

[0035] The detailed descriptions set forth above are merely specific illustrations of feasible embodiments of the present invention, and are not intended to limit the scope of protection of the present invention. All equivalent embodiments or modifications that do not depart from the art spirit of the present invention should fall within the scope of protection of the present invention.

Claims

1. An ice-making assembly, comprising:

an ice mold having a plurality of ice cells for containing ice-making water;
a refrigerant pipe extending from one end to the

- other end of the ice mold and located at a bottom of the ice mold;
 a heating wire located at the bottom of the ice mold and spaced apart from the refrigerant pipe;
 wherein the ice-making assembly further comprises a fixing member movably connected to the ice mold and configured to operably move between two positions; at the first position, the fixing member is engaged with the refrigerant pipe to fix the refrigerant pipe to the ice mold; at the second position, the fixing member is separated from the refrigerant pipe to release the refrigerant pipe.
2. The ice-making assembly according to claim 1, wherein the fixing member is constructed in a straight shape, a middle portion of the fixing member is pivotally connected to the bottom of the ice mold, the refrigerant pipe is constructed in a U-shape; at the first position, both ends of the fixing member are respectively engaged with two straight edges of the U-shape; at the second position, the fixing member rotates to between the two straight edges of the U-shape.
 3. The ice-making assembly according to claim 1, wherein an elastic pad is mounted on the fixing member; at the first position, the elastic pad is in an interference fit with refrigerant pipe, and the fixing member enables close contact between the refrigerant pipe and the ice mold via the elastic pad.
 4. The ice-making assembly according to claim 3, wherein the fixing member is provided with a dovetail groove, a portion of the elastic pad is shaped to mate with the dovetail groove, and the portion of the elastic pad mated with the refrigerant pipe is constructed with a thickness reducing from the middle to both ends.
 5. The ice-making assembly according to claim 1, wherein the ice-making assembly further comprises a water draining tray fixed below the ice mold, one end of the water draining tray forms a water outlet, at least two upwardly-protruding support ribs are provided on the water draining tray, and the support ribs contact the heating wire in a thermally-conductive manner and fix a portion of the heating wire to the ice mold.
 6. The ice-making assembly according to claim 5, wherein the ice-making assembly further comprises a bottom cover fixedly connected to the ice mold, the bottom cover comprises a bottom wall and a first side wall and a second side wall extending upwardly along the front and rear of the bottom wall respectively, the water draining tray is fixed between the first side wall and second side wall, a protruding rim protruding upwardly is provided at both ends of the bottom cover in a direction from one end to the other end of the ice mold, and the water draining tray is sandwiched between the two protruding rims.
 7. The ice-making assembly according to claim 6, wherein the ice-making assembly further comprises a housing fixed with the ice mold, the housing has a first edge and a second edge respectively corresponding to the first side wall and second side wall, one end of the bottom cover is connected to one end of the first edge and second edge; the at least support ribs comprise two first support ribs adjacent to the other end of the bottom cover, and the two first support ribs are respectively connected to the first edge and second edge.
 8. The ice-making assembly according to claim 7, wherein the bottom cover and the first edge are connected via a screw by penetrating the bottom cover and the first edge, the bottom cover is snap-fitted with the second edge, a post extends from a side of the two first support ribs facing away from each other, a hook portion extends respectively from the first edge and second edge, and the post can extend into the hook portion and rotate and move in the hook portion.
 9. The ice-making assembly according to claim 7, wherein the housing further comprises a back plate extending upwardly from a rear side of the ice mold, the ice-making assembly is mounted in an interior of the refrigerator by a mounting structure on the back plate, one end of the housing forms an upwardly-extending end plate, a water filling trough is disposed on an outer side of the end plate relative to the ice mold, the water filling trough is communicated with the ice cells, and wherein the back plate, the water filling trough, the ice mold and the housing are integrally formed.
 10. The ice-making assembly according to claim 6, wherein the edge of the water draining tray has an upwardly-extending edge, the first side wall and second side wall are respectively provided with a plurality of barbs, and the water draining tray is snap-fitted with the plurality of barbs via the edge and fixed with the bottom cover.
 11. The ice-making assembly according to claim 6, wherein an ice guide is fixedly connected at a front end of the ice mold, a guide rib extending in a lengthwise direction of the first side wall is disposed on an outer side of the first side wall of the bottom cover, and the ice guide extends downwards to a position flush with the guide rib.
 12. A refrigerator, comprising:

a cabinet defining a refrigerating chamber and
a freezing chamber;
a door body movably connected to the cabinet
and configured to open and close the refrigerat-
ing chamber;
an ice-making chamber disposed in the door
body;
a refrigerating system comprising a compressor
and a condenser connected to an outlet side of
the compressor;
wherein the ice-making assembly according to
any one of claims 1-11 is disposed in the ice-
making chamber, and the refrigerant pipe is con-
nected to the refrigerating system.

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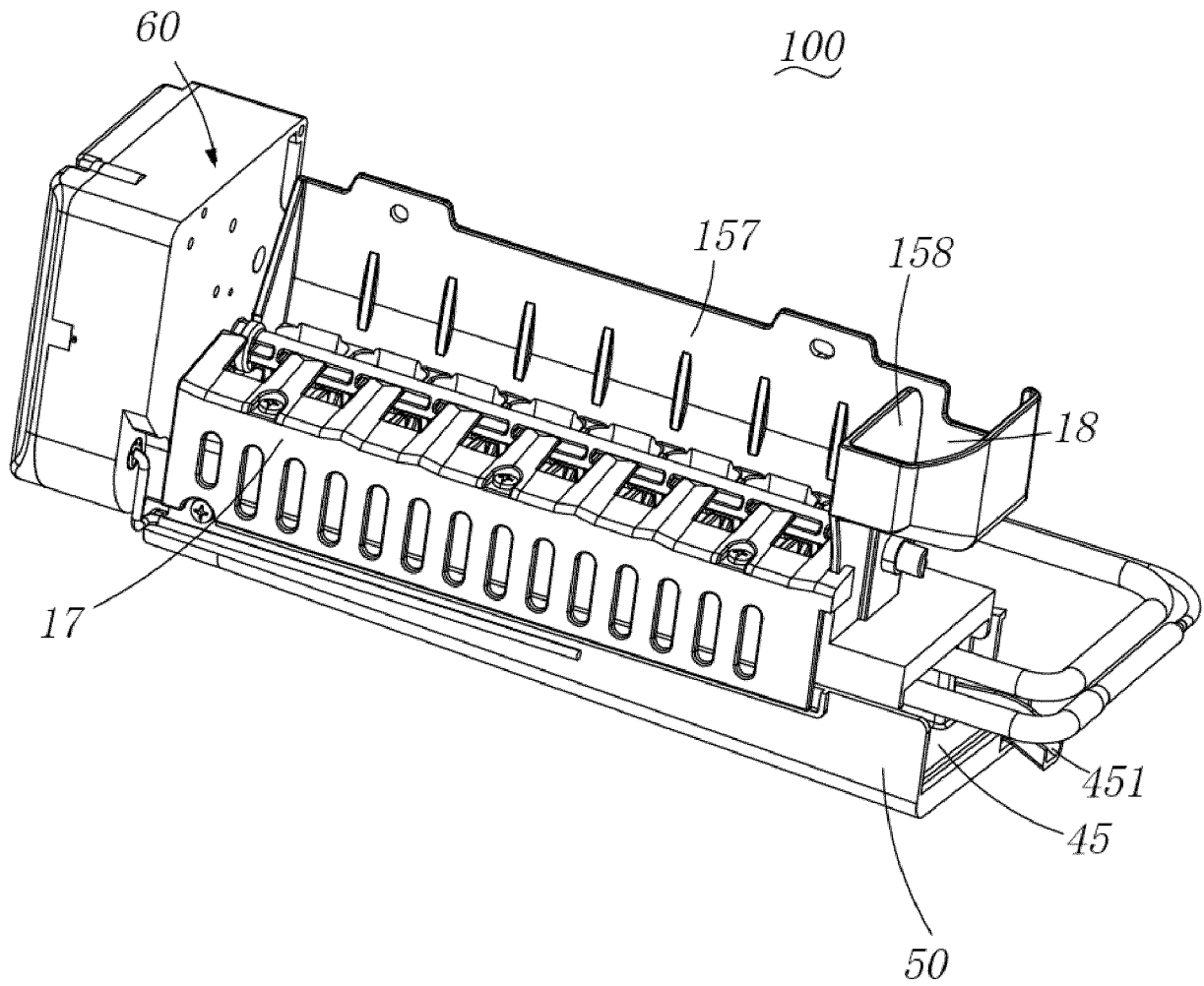


Fig.1

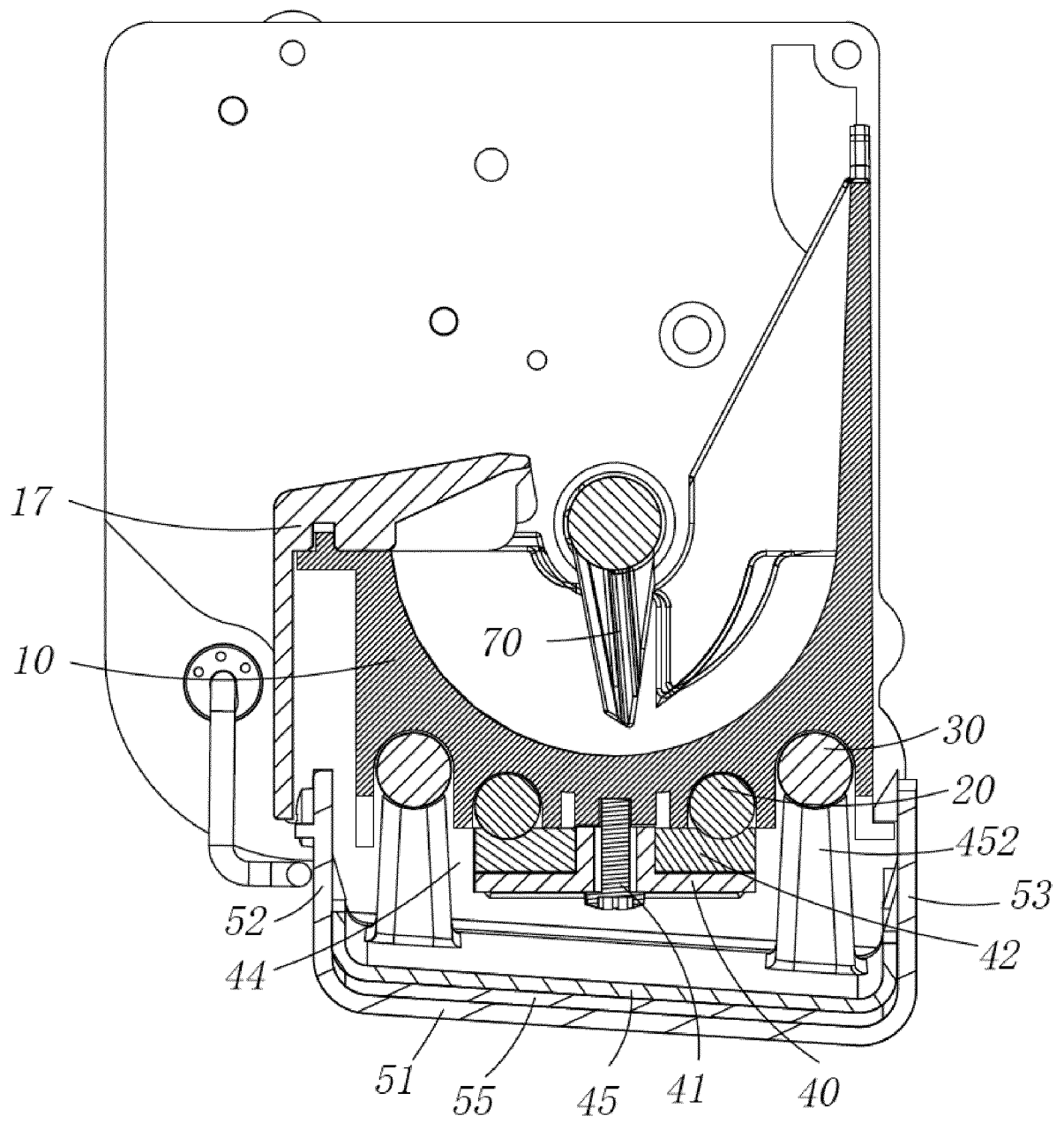


Fig. 2

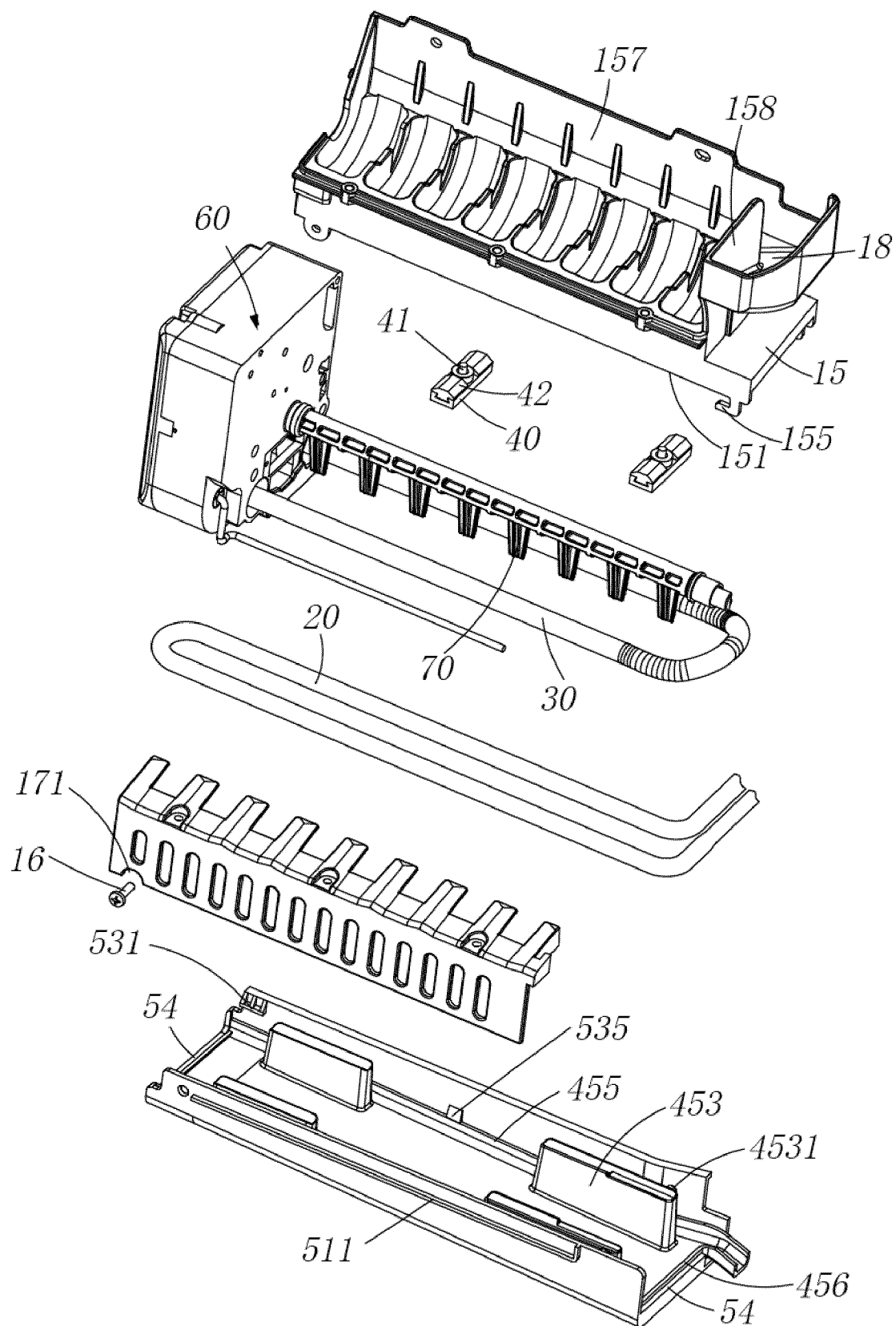


Fig. 3

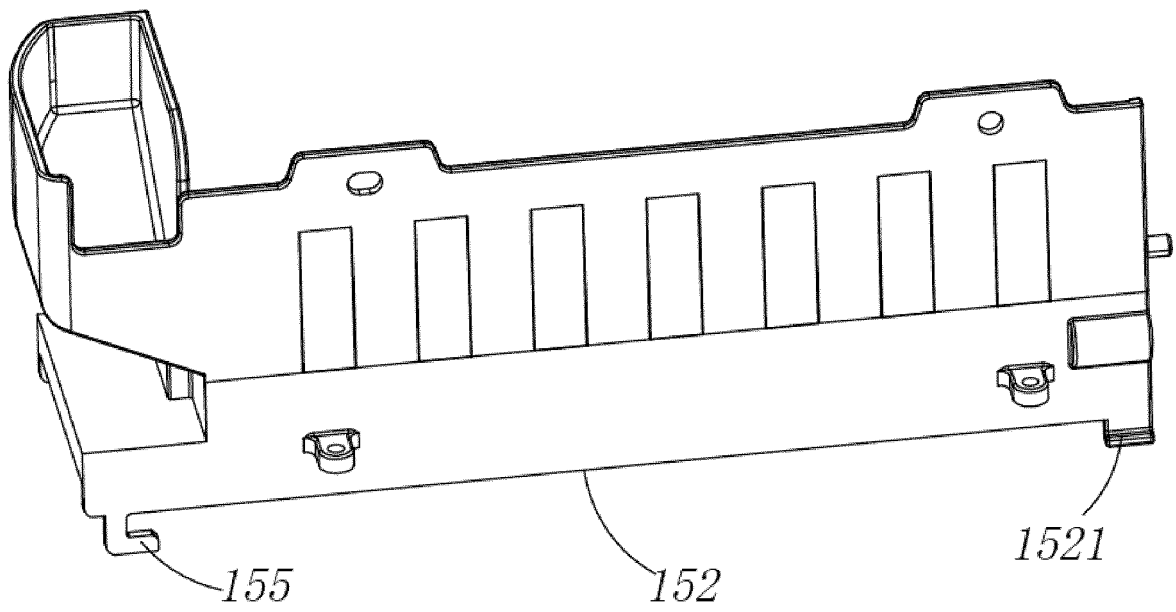


Fig. 4

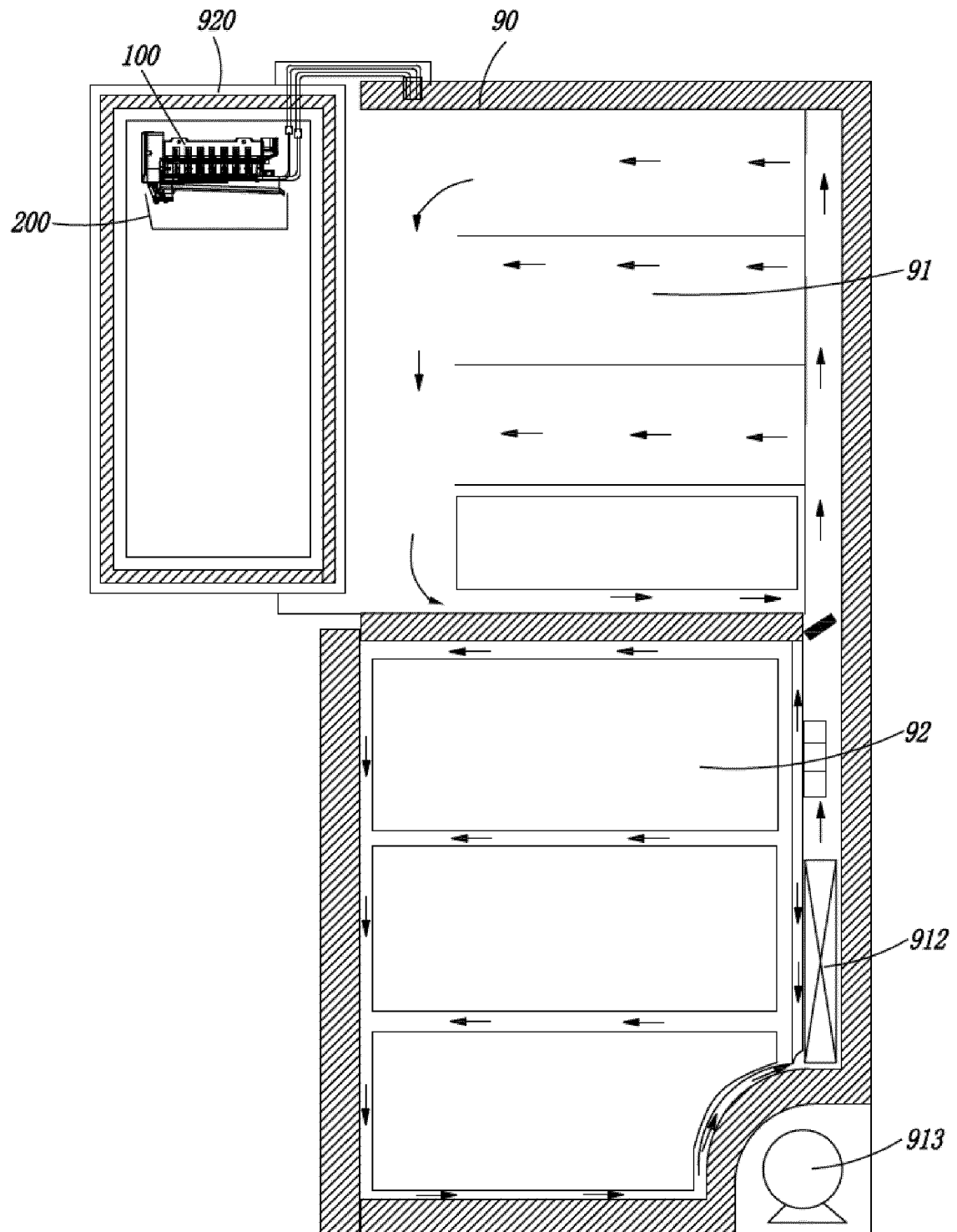


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/143524

A. CLASSIFICATION OF SUBJECT MATTER F25C 1/24(2018.01)i; F25D 11/02(2006.01)i According to International Patent Classification (IPC) or to both national classification and IPC	B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) F25C1 F25D11 F25D21 F25D23 F25D17 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: 冰盒模格盘制冷冷却蒸发管固定支撑 ice mould mold box grid pan plate refrigerat + cool+ evaporat+ tube pipe conduit fix+ fast+ support+																					
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>PX</td> <td>CN 214536960 U (QINDAO HAIER REFRIGERATOR CO., LTD. et al.) 29 October 2021 (2021-10-29) description, paragraphs [0034]-[0047] and figures 1-5</td> <td>1-12</td> </tr> <tr> <td>X</td> <td>CN 102116563 A (SAMSUNG ELECTRONICS CO., LTD.) 06 July 2011 (2011-07-06) description, paragraphs [0046]-[0115] and figures 1-12</td> <td>1-12</td> </tr> <tr> <td>A</td> <td>CN 110440504 A (HISENSE RONSHEN (GUANGDONG) REFRIGERATORS CO., LTD.) 12 November 2019 (2019-11-12) entire document</td> <td>1-12</td> </tr> <tr> <td>A</td> <td>CN 205580041 U (ZHONGSHAN DONLIM WEILIELECTRICAL APPLIANCES CO., LTD.) 14 September 2016 (2016-09-14) entire document</td> <td>1-12</td> </tr> <tr> <td>A</td> <td>KR 20200111908 A (DAE CHANG CO LTD) 05 October 2020 (2020-10-05) entire document</td> <td>1-12</td> </tr> <tr> <td>A</td> <td>US 2019011160 A1 (BSH HOME APPLIANCES CORP. et al.) 10 January 2019 (2019-01-10) entire document</td> <td>1-12</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	PX	CN 214536960 U (QINDAO HAIER REFRIGERATOR CO., LTD. et al.) 29 October 2021 (2021-10-29) description, paragraphs [0034]-[0047] and figures 1-5	1-12	X	CN 102116563 A (SAMSUNG ELECTRONICS CO., LTD.) 06 July 2011 (2011-07-06) description, paragraphs [0046]-[0115] and figures 1-12	1-12	A	CN 110440504 A (HISENSE RONSHEN (GUANGDONG) REFRIGERATORS CO., LTD.) 12 November 2019 (2019-11-12) entire document	1-12	A	CN 205580041 U (ZHONGSHAN DONLIM WEILIELECTRICAL APPLIANCES CO., LTD.) 14 September 2016 (2016-09-14) entire document	1-12	A	KR 20200111908 A (DAE CHANG CO LTD) 05 October 2020 (2020-10-05) entire document	1-12	A	US 2019011160 A1 (BSH HOME APPLIANCES CORP. et al.) 10 January 2019 (2019-01-10) entire document	1-12	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.
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Date of the actual completion of the international search 11 March 2022	Date of mailing of the international search report 07 April 2022																					
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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Information on patent family members

International application No.

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