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(54) **Refrigeration appliance with two doors**

(57) Disclosed is a refrigeration appliance. The refrigeration appliance (1) includes a main body (2), having a storage chamber (201) with a front opening (3); a first door (4) and a second door (5), the first door (4) and the second door (5) each including a first end (41, 51) fixed to an opposite side of the front opening (3) and a second end (42, 52) opposite to the first end (41, 51); and a beam (6), pivotally connected to the second end (42) of the first door (4) and capable of being rotated between a retraction

position and an extending position around a rotation axis (X), wherein when the first door (4) is closed, the first door (4) is located at the extending position; and when the first door (4) is opened, the beam (6) is capable of being rotated from the extending position to the retraction position. According to the present invention, the refrigeration appliance includes a locking unit (20) for locking the beam (6) at the retraction position when the first door (6) is in an open state.

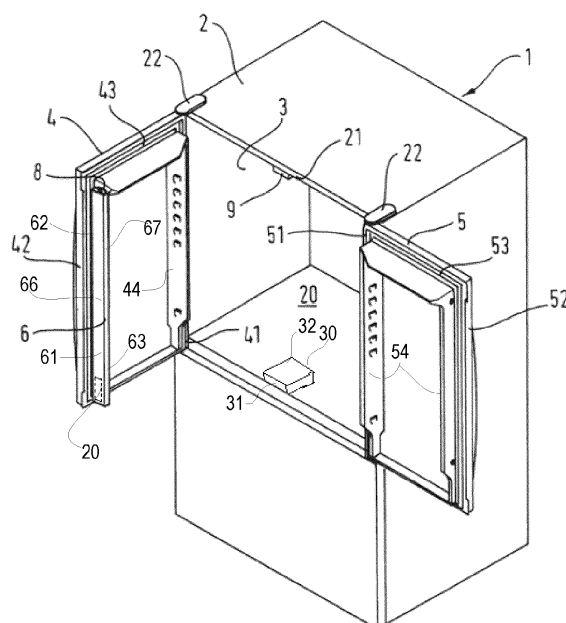


FIG. 1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a refrigeration appliance with two doors, and in particular, to a household refrigeration appliance, for example, a refrigerator.

Related Art

[0002] WO2007/115868 discloses a refrigerating device, including a main body, a pair of opposing doors connected at opposite sides of the body, and a beam rotatably connected onto a first door. The beam can be pivoted by a guiding projection which can be displaced in a guiding groove, between an extending position when the first door is closed and a retraction position when the first door is open, where at the position when the first door is closed, one edge of the second door, which is opposite the fixed edge of the second door, is applied to the beam, and at the position when the first door is opened, the beam can pass to the closed second door. The guiding projection can be displaced with respect to the first door along a direction of a pivotable axis of the first door. Therefore, it may be ensured that the top of the guiding projection contacts the base of the guiding groove, so that no air can pass through the guiding projection into the inside of the refrigerating device.

[0003] Through cooperation of the guiding projection and the guiding groove, the beam may be rotated to the retraction position through movement of the guiding projection in the guiding groove. In the prior art, the designer connects the first door with a hinge unit of the beam with reasonable design, for example, use of means such as cam or torsion spring, which may exert a certain holding force on the beam at the retraction position to prevent arbitrary rotation of the beam, so that the beam may be more reliably automatically held at the retraction position. As long as the user exerts a force slightly to pull the beam, the user still can easily rotate the beam manually to the extending position. When the beam is at the extending position, damage may be caused to the refrigeration appliance if the user forcibly closes the first door.

SUMMARY OF THE INVENTION

[0004] One objective of the present invention is to overcome the above at least one technical problem, so as to provide a refrigeration appliance helping to prolong the service life.

[0005] Therefore, one aspect of the present invention relates to a refrigeration appliance. The refrigeration appliance includes a main body, having a storage chamber with a front opening; a first door and a second door, the first door and the second door each including a first end fixed to an opposite side of the front opening and a second

end opposite to the first end; and a beam, pivotally connected to the second end of the first door and capable of being rotated between a retraction position and an extending position around a rotation axis, where when the first door is closed, the first door is located at the extending position; and when the first door is opened, the beam is capable of being rotated from the extending position to the retraction position; the refrigeration appliance is characterized in that, the refrigeration appliance includes a locking unit for locking the beam at the retraction position when the first door is in an open state.

[0006] Thus, the beam is locked at the retraction position and is incapable of being rotated, the beam still can be held at the retraction position even if the user forcibly pulls the beam, this fundamentally avoids the situation that the first door is closed when the beam is at the retraction position, so that the service life of the refrigeration appliance could be prolonged.

[0007] Other features or those combined with the other features to be regarded as characteristics of the present invention are set forth in the following appended claims.

[0008] According to an exemplary embodiment of the present invention, in a process of closing the first door, the locking unit releases the beam from a locked state at the retraction position. As the locking unit can automatically release the beam from the locked state of being incapable of being rotated in a process that the user normally closes the first door, it is convenient to use.

[0009] According to an exemplary embodiment of the present invention, the refrigeration appliance includes a guiding mechanism for driving the beam to be rotated between the retraction position and the extending position, where the locking unit is disposed to release, in a process of closing the first door, the beam from the locked state at the retraction position before the guiding mechanism generates a force impelling the beam to be rotated from the retraction position to the extending position. This not only facilitates the first door to smoothly close and is easy for user operation, but also helps to avoid that the guiding mechanism is damaged in the process of closing the first door.

[0010] Although it is possible that the locking unit is disposed on the main body, according to a particularly exemplary embodiment of the present invention, the locking unit is located on the beam.

[0011] In an embodiment particularly easy to implement, the locking unit is pivotally connected to the beam and the first door, where the hinge unit cooperates to lock the beam at the retraction position.

[0012] According to an exemplary embodiment of the present invention, the hinge unit includes a fixed member incapable of being rotated with respect to the first door and a rotatable member capable of being rotated together with the beam with respect to the first door, the locking unit includes a stopping portion connected, in a plug-in manner, to the fixed member to stop the beam from being rotated with respect to the fixed member.

[0013] According to an exemplary embodiment of the

present invention, the fixed member has a receiving portion, the stopping portion is capable of selectively entering and exiting from the receiving portion, when the stopping portion enters the receiving portion, the beam is incapable of being rotated, and when the stopping portion exits from the receiving portion, the beam is capable of being rotated. The receiving portion, for example, may be a hole, a slot or other facility receiving other components.

[0014] Preferably, the stopping portion is plugged into the fixed member in a direction perpendicular to the rotation axis.

[0015] According to an exemplary embodiment of the present invention, merely when the beam is located at the retraction position, the locking unit is aligned with the fixed member to achieve a plug-in connection. Thus, only when the beam is located at the retraction position, the beam is locked and is incapable of being rotated.

[0016] According to an exemplary embodiment of the present invention, the locking unit includes a pressuring portion for imposing a force on the stopping portion to enable the stopping portion to be plugged into the fixed member.

[0017] According to an exemplary embodiment of the present invention, the locking unit includes an unlocking portion, the main body includes a drive member fit with the unlocking portion, and in the process of closing the first door, the drive member drives the unlocking portion to release the beam from the locked state at the retraction position.

[0018] According to an exemplary embodiment of the present invention, the drive member is located at an edge of the front opening, so that, in the process of closing the first door, the drive member can meet the unlocking portion as soon as possible to release the beam from the locked state.

[0019] According to an exemplary embodiment of the present invention, the unlocking portion passes through a wall of the beam and projects out of the beam.

[0020] Preferably, the unlocking portion is rotatably connected to the beam.

[0021] Preferably, the locking unit includes a gear drive unit connecting the unlocking portion and the stopping portion.

[0022] According to an exemplary embodiment of the present invention, the drive member is connected to a chamber wall of the storage chamber.

[0023] According to an exemplary embodiment of the present invention, the drive member is formed by a boss located on the chamber wall.

[0024] According to an exemplary embodiment of the present invention, when the first door is in a closed state, the unlocking portion at least partially retreats to the inside of the beam.

[0025] According to an exemplary embodiment of the present invention, when the first door is in a closed state, the unlocking portion is pushed by the drive member to at least partially retreats to the inside of the beam.

[0026] The structure and other invention objectives as well as beneficial effects of the present invention will be more comprehensible with reference to the accompanying drawings and the description about the exemplary embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] As a part of the specification and for facilitating further comprehension of the present invention, the following accompanying drawings illustrate specific implementation manners of the present invention, and describe the principle of the present invention together with the specification, where

FIG. 1 is a schematic perspective view of a refrigeration appliance according to an exemplary embodiment of the present invention;

FIG. 2 is a schematic perspective view of a second guiding member having a guiding groove according to an exemplary embodiment of the present invention;

FIG. 3 is a schematic local perspective view showing that a guiding projection of a beam at a retraction position enters the guide groove when the left door is closed;

FIG. 4 is a schematic local perspective view of the beam at the retraction position, where a first housing member of the beam is removed to show a locking unit and a hinge unit;

FIG. 5 is a schematic local perspective view of the beam at the retraction position, where a stopping portion is connected in a plug-in manner, to the hinge unit; and

FIG. 6 is a schematic local perspective view of a refrigeration appliance when the left door is in a closed state, where the beam is at an extending position.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0028] Referring to FIG. 1, a refrigeration appliance 1 includes a heat-insulating main body 2 and a left door 4 and a right door 5 fixed to two opposite sides of the main body 2. The main body 2 has a storage chamber 201 with a front opening 3, the left door 4 and the right door 5 are connected to a front side of the main body 2, to selectively open and close the storage chamber 201.

[0029] The left door 4 and the right door 5 are respectively fixed onto the main body 2 through corresponding door hinge units 22, and can rotatably move around a corresponding longitudinal axis. In FIG. 1, the left door 4 and the right door 5 are opened.

[0030] The left door 4 and the right door 5 each include a first end 41, 51 fixed to left and right sides of the opening 3 and a second end 42, 52 opposite to the first end 41, 51. Inner sides of the left door 4 and the right door 5 are respectively provided with a pair of protrusions 44, 54 that can be used for supporting at least one door container (not shown).

[0031] When the left door 4 and the right door 5 are closed, a gap exists between the second end 42, 52 of the left door 4 and the right door 5. In order to seal the gap, the refrigeration appliance 1 has a beam 6 fixed at the second end 42 of the left door 4. In this embodiment, the beam 6 is fixed to the protrusion 44 located at the second end 42 of the left door 4. It should be understood that the beam 6 may also be fixed onto the right door 5.

[0032] Referring to FIG. 4 in combination with FIG. 1, the beam 6 includes a chamber 60 to accommodate heat-insulating materials (not shown). The beam 6 may include a first housing member 66 and a second housing member 67 fastened together to round into the chamber 60.

[0033] The beam 6 has a substantially flat rectangular cross section, including a broader butt side 61 used for butting the inner sides of the left door 4 and the right door 5 in a sealing manner, a connection side 62 connected to the left door 4 and a free side 63 opposite to the connection side 62.

[0034] The beam 6 is pivotally connected to the left door 4 through a hinge unit 40 (FIG. 4 and FIG. 5, detailed below), and is capable of being rotated around a vertical rotation axis X. The beam 6 can pivot between an extending position and a retraction position. In normal circumstances, when the left door 4 is in an open state, the beam 6 retracts, and its free side 63 is towards the main body 2. At this time, the beam 6 does not protrude beyond a side end surface of the second end 42 of the left door 4 laterally. In this way, when the right door 5 is in a closed state and the left door 4 is closed, the beam 6 at the retraction position may pass through the right door 5 without interfering with the second edge 52 of the right door 5, that is, the beam 6 at the retraction position may pass through the right door 5 in the closed state.

[0035] When the left door 4 is closed, the beam 6 bites into the inside of the main body 2, and is rotated around the vertical rotation axis in this process, so that the butt side 61, formed at a broader side, of the beam 6, after entering the main body 2, is flush with a front end surface of a frame 21 that can butt against seal pads 43, 53 of the left door 4 and the right door 5 in the closed state, of the main body 2, and at this time, the beam 6 is located at the extending position. At this position, the frame 21 and the butt side 61 form a butt surface that can cover the gap between the left door 4 and the right door 5, and the seal pads 43, 53 of the left door 4 and the right door 5 butt against the butt surface in a sealing manner.

[0036] Referring to FIG. 2 and FIG. 3 in combination with FIG. 1, the refrigeration appliance 1 includes a guiding mechanism 7 for guiding the beam 6 to be rotated.

The guiding mechanism 7 includes a first guiding member 8 disposed on an upper end of the beam 6 and a second guiding member 9 disposed at an edge of the opening 3. It should be understood that, the guiding mechanism 7 may also be disposed between a lower end of the beam 6 and a lower edge of the opening 3.

[0037] The first guiding member 8 includes a guiding projection 10, and the second guiding member 9 includes a guiding groove 11. The guiding projection 10 can move within the guiding groove 11 to drive the beam 6 to be rotated. The guiding projection 10 has an arc cross section.

[0038] When the left door 4 is closed, one end close to a narrow side of the guiding projection 10 on the beam 6 at the retraction position enters an inlet 110 of the guiding groove 11, and a convex side edge 15 of the guiding projection 10 begins to contact a second groove wall 14 of the guiding groove 11. With further closing of the left door 4, the convex side edge 15 slides along a side, facing the guiding groove 11, of the second groove wall 14, thereby driving the beam 6 to pivot around the vertical axis, until the beam 6 is located at the extending position, and at this time, the butt side 61 is flush with the frame 21.

[0039] Similarly, when the left door 4 is opened, the guiding projection 10 is also rotated in the guiding groove 11 to drive the beam 6 to be rotated to the retraction position, to enable the beam 6 to pass through the closed right door 5, so that the left door 4 can be opened in the case that the right door 5 is closed.

[0040] Referring to FIG. 4 and FIG. 5, the refrigeration appliance 1 includes a hinge unit 40 connecting the left door 4 and the beam 6. In this embodiment, the hinge unit 40 includes a hinge frame 401 unmoveably fixed to the left door 4, a hinge axis 402 unmoveably connected to the hinge frame 401 and a rotatable member 403 that is unmoveably fixed to the beam 6 but is capable of being rotated with respect to the hinge axis 402. The hinge axis 402 defines the rotation axis X of the beam 6. When the beam 6 is rotated with respect to the right door 4, the rotatable member 403 is rotated around the rotation axis X with respect to the hinge axis 402.

[0041] In this embodiment, the hinge unit 40 includes a first cam member 406 connected to the hinge axis 402. The first cam member 406 is fixed to the hinge axis 402 unmoveably with respect to the hinge axis 402. The first cam member 406 may be integrally formed on the hinge axis 402, or may be a component constructed independent of the hinge axis 402 and then connected to the hinge axis 402.

[0042] The first cam member 406 and the rotatable member 403 are respectively provided with a first cam surface 404 and a second cam surface 405, and the first cam surface 404 and the second cam surface 405 butt against each other and the second cam surface 405 is capable of being rotated with respect to the first cam surface 404 when the rotatable member 403 is rotated. The hinge unit 40 may include a spring 407 used for making the first cam surface 404 and the second cam surface

405 contact with each other all the time. As cooperation of the first cam surface 404 and the second cam surface 405 can hold the beam 6 at the retraction position or the extending position without the action of an external force. Accordingly, after the left door 4 is opened, the beam 6 can be held at the retraction position in the case of being rotated to the retraction position without an external force.

[0043] However, when the left door 4 is in an open state, if the user slightly exerts a force to pull the beam 6, the beam 6 still can easily make the second cam surface 405 be rotated with respect to the first cam surface 404, so that the beam 6 switches between the retraction position and the extending position. Usually, a child can pull the beam 6 to the extending position.

[0044] According to an exemplary embodiment of the present invention, in order to prevent that the beam is pulled to the extending position when the left door 4 is opened, the refrigeration appliance 1 includes a locking unit 20 for locking the beam 6 at the retraction position when the left door 4 is opened.

[0045] Referring to FIG. 4 and FIG. 5, in this embodiment, the locking unit 20 is located on the beam 6, and is capable of being rotated together with the beam 6 with respect to the left door 4. Preferably, the locking unit 20 is at least partially received in the chamber 60.

[0046] The locking unit 20 includes a stopping portion 21 that can joint the hinge unit 40. In this embodiment, the stopping portion 21 selectively joints the first cam member 406, which is incapable of being rotated with respect to the left door 4, of the hinge unit 40. When the stopping portion 21 joints the first cam member 406, the beam 6 is locked at the retraction position, and is incapable of being rotated with respect to the left door 4, and when the stopping portion 21 is detached from the first cam member 406, the locked state of the beam 6 is released, and the beam 6 is capable of being rotated with respect to the left door 4 with the action of an external force. Preferably, the first cam member 406 and the stopping portion 21 can be selectively connected in a plug-in manner.

[0047] The first cam member 406 may have a hole 48 for jointing the stopping portion 21, and the stopping portion 21 may be inserted into or exit from the hole 48. When the stopping portion 21 is inserted into the hole 48, the beam 6 is incapable of being rotated. In this embodiment, the stopping portion 21 is rod-shaped and perpendicular to the rotation axis X, and can move in a direction perpendicular to the rotation axis X. The stopping portion 21 may be made of metal to increase its strength.

[0048] It should be understood that, as long as the stopping portion 21 is not inserted into the hole 48 parallel to the rotation axis X, it facilitates the stopping portion 21 to stop the first cam member 406 from being rotated with a simple structure, thereby preventing the beam 6 from rotation with respect to the left door 4.

[0049] Preferably, the hole 48 is so disposed that the stopping portion 21 is aligned with the hole 48 and can be inserted into the hole 48 merely when the beam 6 is

located at the retraction position. This means that the stopping portion 21 can lock the beam 6 merely when the beam 6 is located at the retraction position.

[0050] The stopping portion 21 can pass through a limiting member 68 having a limiting hole 680, and the stopping portion 21 moves along the limiting hole 680. The limiting member 68 can be fixed (for example, integrally formed) to the second housing member 67.

[0051] The locking unit 20 includes a pressuring member 22 for directly or indirectly exerting a force in a direction of the insertion hole 48 of the stopping portion 21 on the stopping portion 21. The pressuring member 22 may be formed by, for example, a spring. One end of the pressuring member 22 can butt against the housing of the beam 6, while the other end butts against the stopping portion 21 or against a component (detailed below) fixed together with the stopping portion 21.

[0052] The locking unit 20 includes an unlocking portion 23 for driving the stopping portion 21 to exit from the hole 48. The unlocking portion 23 preferably partially protrudes outside the chamber 60.

[0053] In this embodiment, the unlocking portion 23 passes through a through hole 650 located at a lower end wall 65 of the beam 6 to extend to an outer side of the lower end wall 65. The unlocking portion 23 may be rod-shaped.

[0054] The locking unit 20 includes a transmission mechanism 24 connected between the unlocking portion 23 and the stopping portion 21. In this embodiment, the transmission mechanism 24 includes a gear 25 connected to the unlocking portion 23 and a rack 26 meshing with the gear 25.

[0055] In this embodiment, the unlocking portion 23 is fixed to the gear 25 unmoveably with respect to the gear 25, for example, the unlocking portion 23 may be integrally formed on the gear 25. The rack 26 is preferably parallel to the stopping portion 21.

[0056] The rack 26 and the stopping portion 21 may be fixed to a frame body 27. The frame body 27 may include a vertical portion 270 extending in a vertical direction and a horizontal portion 271 connected to a lower end of the vertical portion 270. The rack 26 is disposed on the horizontal portion 271. The stopping portion 21 is fixed to an upper end of the vertical portion 270.

[0057] The frame body 27 may further include a branch portion 272 connected to the vertical portion 270 and extending horizontally. A free end of the branch portion 272 can be fixed to the second housing member 67. The pressuring member 22 sleeves the branch portion 272 and can stretch along the branch portion 272, so as to be able to exert a force on the movable frame body 27. The beam 6 may be provided with a rail 28 for guiding the frame body 27 to move.

[0058] Referring to FIG. 1 and FIG. 6, the refrigeration appliance 1 includes a drive member 30 located on the main body 2, for acting upon the unlocking portion 23. In this embodiment, the drive member 30 is located at an edge of the front opening 3, for example, can be located

in the front opening 3 or located in a drive surface 31 parallel to the opening 3 and adjacent to the plane of the opening 3.

[0059] The drive member 30 is connected to a bottom chamber wall 202 of the storage chamber 201. In this embodiment, the drive member 30 is formed by a boss protruding upwards from the bottom chamber wall 202 of the storage chamber 201. The drive surface 31 can be formed by a front end surface of the drive member 30. Preferably, the drive member 30 has a reinforcement for improving strength and wear-resistance of the drive surface 31 and a top face 32 of the drive member 30.

[0060] Referring to FIG. 4 and FIG. 5, when the left door 4 is in an open state, the beam 6 is located at the retraction position, and the stopping portion 21 is aligned with the hole 48. With the action of the pressuring member 22, the stopping portion 21 fixed to the frame body 27 moves toward the direction of the hole 48 and is inserted into the hole 48. As the stopping portion 21 that is capable of being rotated together with the beam 6 with respect to the first cam member 406 is inserted into the first cam member 406 that cannot move with respect to the left door 4, at this time, the beam 6 is incapable of being rotated even if there is an external force to pull the beam 6. Thus, the beam 6 can be locked at the retraction position.

[0061] When the beam 6 is located at the retraction position, the unlocking portion 23 protrudes out of the lower end wall 65 of the beam 6 and gets close to the free side 63. Preferably, the unlocking portion 23 gets closer to the free side 63 than the guiding projection 10. In a process that the left door 4 is closed, the unlocking portion 23 touches the drive member 30, the drive member 30 exerts a force toward a direction of the connection side 62 of the beam 6 on the unlocking portion 23 to make the unlocking portion 23 move toward the direction of the connection side 62 and drive the gear 25 to be rotated clockwise, so that the rack 26 moves toward a direction of the free side 63 to make the stopping portion 21 exit from the hole 48, thereby releasing rotary locking of the beam 6. The unlocking portion 23 is rotated with the gear 25 around the central axis of the gear 25, and thus the unlocking portion 23 also has upward displacement.

[0062] In view of the above description, in the process of closing the left door 4, the beam 6 can be automatically unlocked from the retraction position. Preferably, in the process of closing the left door 4, the stopping portion 21 has been detached from the hinge unit 40 (that is, release the state that the beam 6 is locked at the retraction position) before the guiding mechanism 7 generates a force of enabling the beam 6 to be rotated from the retraction position to the extending position. Thus, after the locking unit 20 releases locking of the beam 6, the left door 4 further turns to the closed position, so that the guiding projection 10 and the guiding groove 11 cooperate to make the beam 6 be rotated around the rotation axis X, until the beam 6 is rotated to the extending position. In this process, as the stopping portion 21 can be inserted

into the hole 48 only when the beam 6 is located at the retraction position, the stopping portion 21 maintains the state of existing from the hole 48.

[0063] As shown in FIG. 6, the unlocking portion 23 at least partially retracting to the inside of the chamber 60 enters the storage chamber 201 with the beam 6, and is pushed on the top face 32 of the drive member 30. When the left door 4 reaches the closed state, the unlocking portion 23 is pushed on the top face 32 of the drive member 30 and cannot move, so that the transmission mechanism 25 cannot move. Therefore, whether the stopping portion 21 is aligned with the hole 48 or not, the stopping portion 21 can reliably maintain a detached state with the hole 48.

[0064] When the left door 4 is opened, the guiding mechanism 7 enables the beam 6 to be rotated from the extending position to the retraction position. After the beam 6 reaches the retraction position, the unlocking portion 23 is detached from the drive member 30. With the action of the pressuring member 22, the stopping portion 21 is inserted into the hole 48. The gear 25 is rotated counterclockwise to make the unlocking portion 23 protrude outside the lower end wall 65.

[0065] In the above embodiments, the stopping portion 21 can selectively be inserted into the hole 48 disposed on the hinge unit 40. However, the present invention should not be limited thereto, and can have other embodiments, for example, in an alternative embodiment, the hole or receiving portion in other forms (for example, groove) can be disposed on the stopping portion 21, while the hinge unit 40 is provided with an insertion portion that can be connected to the receiving portion on the stopping portion 21 in a plug-in manner.

[0066] In addition, in the above embodiments, the stopping portion 21 that is capable of being rotated together with the beam with respect to the left door 4 is selectively connected to the first cam member 404 in a plug-in manner to lock the beam 6 at the retraction position. However, the present invention should not be limited thereto, and can have other embodiments. For example, the stopping portion 21 may also be selectively connected to other components, which is incapable of being rotated with respect to the left door 4, of the hinge unit 40, for example, the hinge frame 41 and/or the hinge axis 402, in a plug-in manner.

[0067] In the above embodiments, the first guiding member 8 mounted on the beam 6 is provided with a guiding projection 10, and the second guiding member 9 located on the main body 2 is provided with a guiding groove 11 fit with the guiding projection 10. However, the present invention should not be limited thereto, and can have other embodiments, for example, in an alternative embodiment, the guiding groove is disposed on a guiding member located on the beam, while the guiding projection fit with the guiding groove is disposed on the main body.

Claims

1. A refrigeration appliance (1), comprising:

a main body (2), having a storage chamber (201) with a front opening (3);
 a first door (4) and a second door (5), the first door (4) and the second door (5) each comprising a first end (41, 51) fixed to an opposite side of the front opening (3) and a second end (42, 52) opposite to the first end (41, 51); and
 a beam (6), pivotally connected to the second end (42) of the first door (4) and capable of being rotated between a retraction position and an extending position around a rotation axis (X), wherein when the first door (4) is closed, the beam (6) is located at the extending position; and when the first door (4) is opened, the beam (6) is capable of being rotated from the extending position to the retraction position;
characterized in that, the refrigeration appliance comprises a locking unit (20) for locking the beam (6) at the retraction position when the first door (6) is in an open state.

2. The refrigeration appliance according to claim 1, **characterized in that**, in a process of closing the first door (4), the locking unit (20) releases the beam (6) from a locked state at the retraction position.

3. The refrigeration appliance according to claim 1 or 2, **characterized by** comprising a guiding mechanism (7) for driving the beam (6) to be rotated between the retraction position and the extending position, wherein the locking unit (20) is disposed to release, in the process of closing the first door (4), the beam (6) from the locked state at the retraction position before the guiding mechanism (7) generates a force impelling the beam (6) to be rotated from the retraction position to the extending position.

4. The refrigeration appliance according to claim 1, 2 or 3, **characterized in that**, the locking unit (20) is located on the beam (6).

5. The refrigeration appliance according to any one of claims 1 to 4, **characterized by** further comprising a hinge unit (40) pivotally connected to the beam (6) and the first door (4), wherein the locking unit (20) runs in cooperation with the hinge unit (40) to lock the beam (6) at the retraction position.

6. The refrigeration appliance according to claim 5, **characterized in that**, the hinge unit (40) comprises a fixed member (406) incapable of being rotated with respect to the first door (4) and a rotatable member (403) capable of being rotated together with the beam (6) with respect to the first door (4), the locking

unit (20) comprises a stopping portion (21) connected, in a plug-in manner, to the fixed member (406) to stop the beam (6) from being rotated with respect to the fixed member (406).

7. The refrigeration appliance according to claim 6, **characterized in that**, the fixed member (406) has a receiving portion (48), the stopping portion (21) is capable of selectively entering and exiting from the receiving portion (48), when the stopping portion (21) enters the receiving portion (48), the beam (6) is incapable of being rotated, and when the stopping portion (21) exits from the receiving portion (48), the beam (6) is capable of being rotated.

8. The refrigeration appliance according to claim 6 or 7, **characterized in that**, merely when the beam (6) is located at the retraction position, the locking unit (20) is aligned with the fixed member (406) to achieve a plug-in connection.

9. The refrigeration appliance according to claim 6, 7, or 8, **characterized in that**, the locking unit (6) comprises a pressuring portion (22) for imposing a force on the stopping portion (21) to enable the stopping portion to be plugged into the fixed member (406).

10. The refrigeration appliance according to any one of claims 1 to 9, **characterized in that**, the locking unit (6) comprises an unlocking portion (23), the main body (2) comprises a drive member (30) fit with the unlocking portion (21), and in the process of closing the first door (4), the drive member (30) drives the unlocking portion (23) to release the beam (6) from the locked state at the retraction position.

11. The refrigeration appliance according to claim 10, **characterized in that**, the drive member (30) is located at an edge of the front opening (3).

12. The refrigeration appliance according to claim 10 or 11, **characterized in that**, the unlocking portion (23) passes through a wall (65) of the beam (6) and projects out of the beam (6).

13. The refrigeration appliance according to claim 10, 11 or 12, **characterized in that**, the drive member (30) is connected to a chamber wall (202) of the storage chamber (201).

14. The refrigeration appliance according to claim 12 or 13, **characterized in that**, the drive member (30) is formed by a boss located on the chamber wall (202).

15. The refrigeration appliance according to any one of claims 10 to 14, **characterized in that**, when the first door (4) is in a closed state, the unlocking portion (23) at least partially retreats to the inside of the beam

(6).

16. The refrigeration appliance according to any one of claims 10 to 15, **characterized in that**, when the first door (4) is in the closed state, the unlocking portion (21) is pushed by the drive member (30) to at least partially retreat to the inside of the beam (6).

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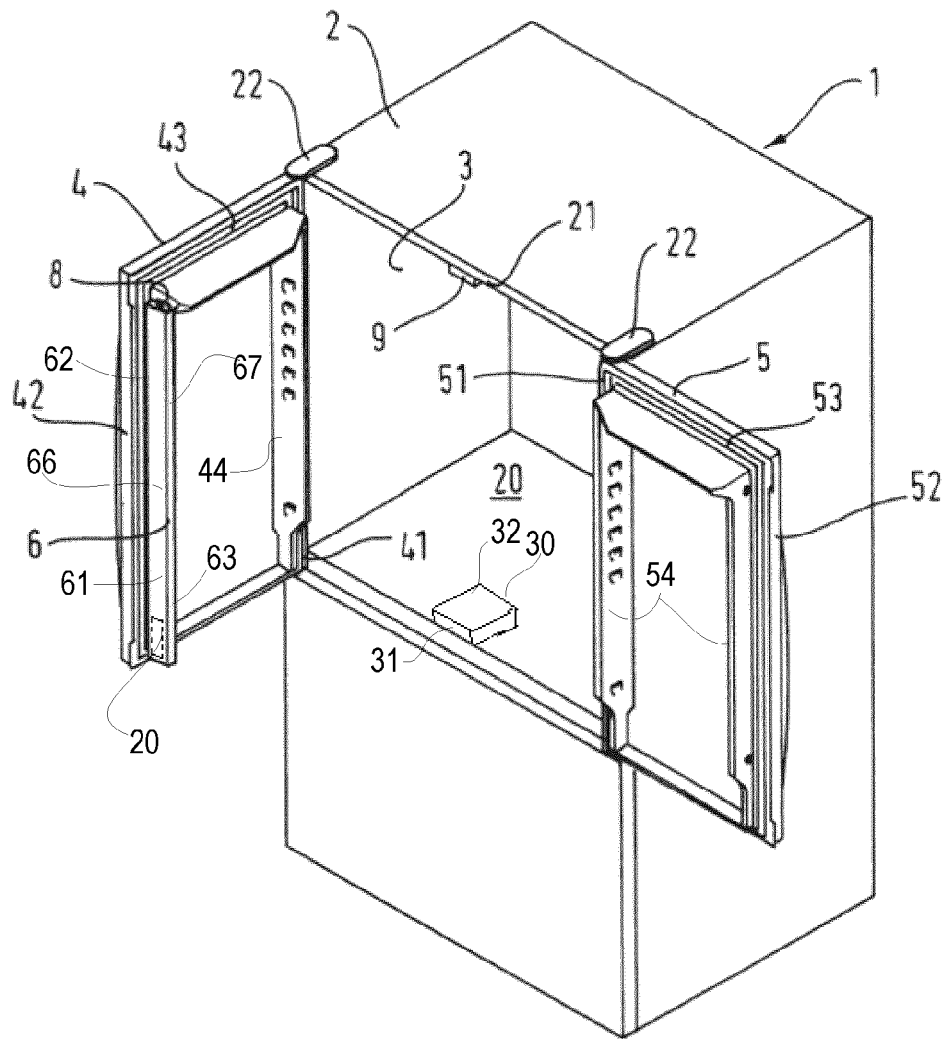


FIG. 1

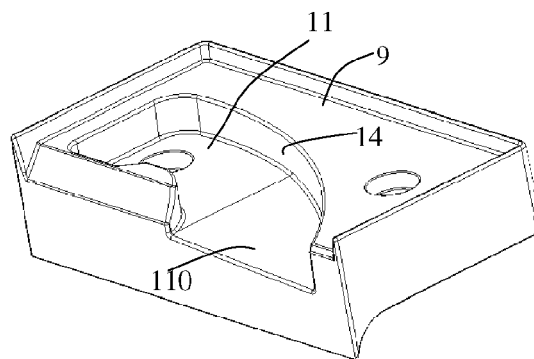


FIG. 2

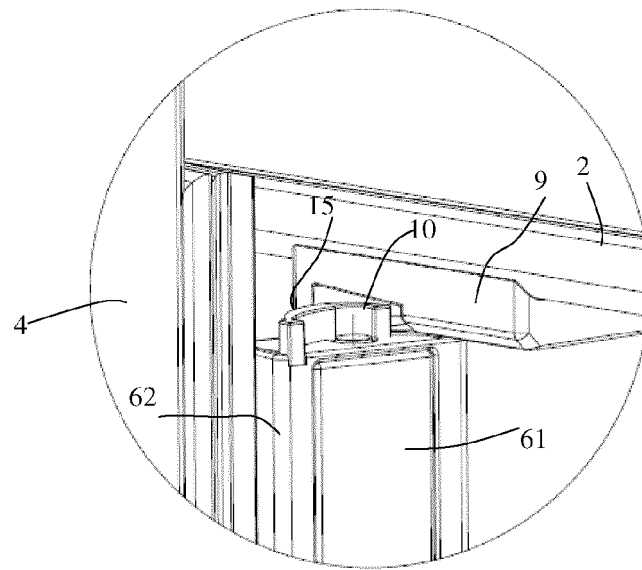


FIG. 3

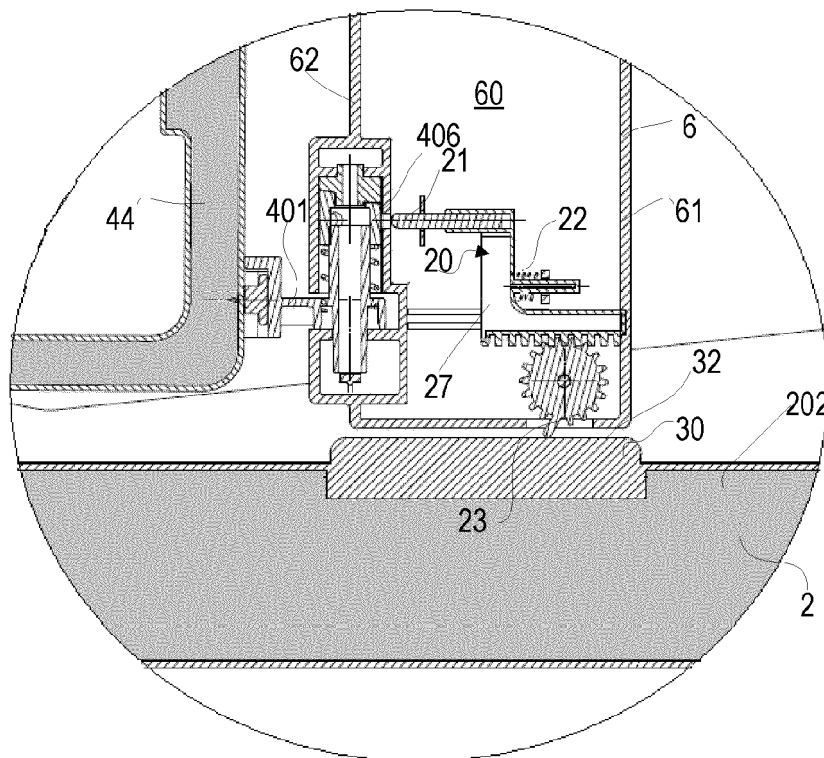


FIG. 6

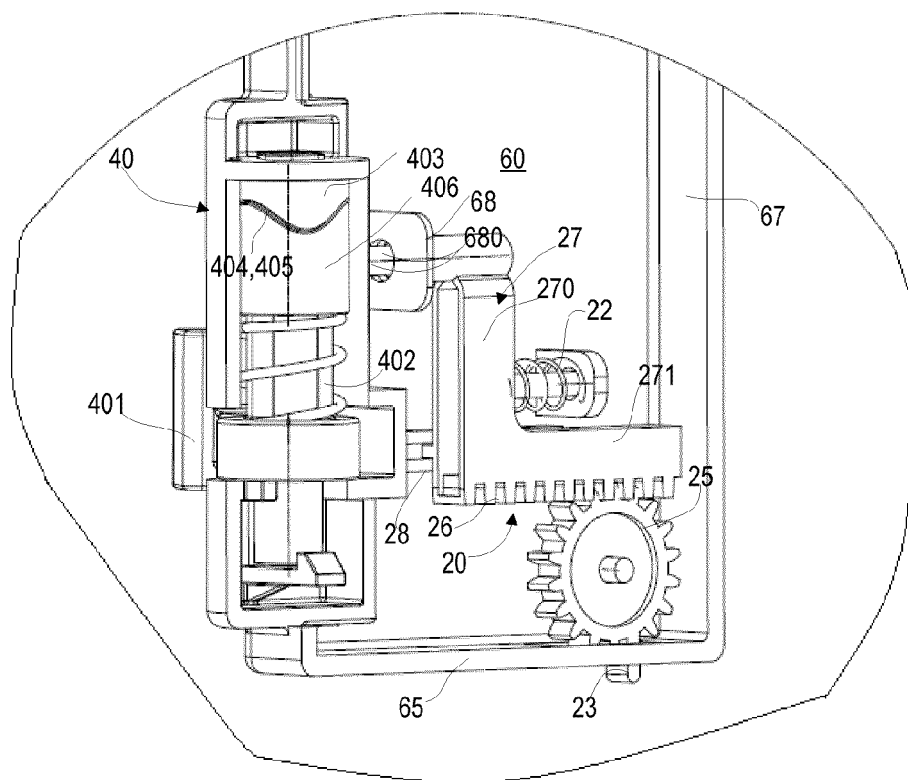


FIG. 4

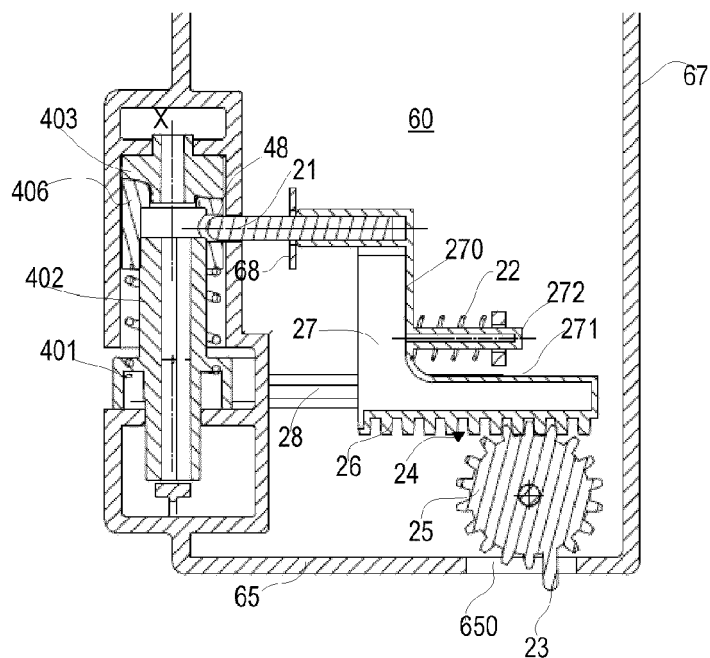


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2007115868 A [0002]