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(54) **REFRIGERATOR**

(57) A refrigerator (1) including a storage compartment, a insulation door (10) for opening and closing the storage compartment, and a dispenser (30) provided on the inside of the insulation door (10) for discharging drinking water from a beverage container (40). When the storage compartment is closed by the insulation door (10), the dispenser (30) is accommodated in a space formed between the insulation door (10) and the storage compartment. The dispenser (30) is provided in such a manner that the heat insulation of the heat-insulating door (10) is not reduced and the cost is not excessively high.

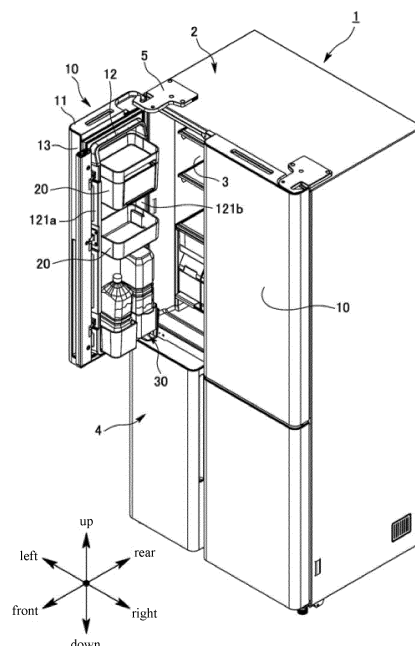


Fig. 1

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Description

TECHNICAL FIELD

[0001] The present application relates to a refrigerator.

BACKGROUND

[0002] A refrigerator with a dispenser is provided, which stores drinking water in a water storage portion provided in the storage compartment and discharges the stored drinking water through user operation. For example, such a refrigerator with a dispenser is disclosed in Patent Document 1. Patent Document 1 is Japanese Patent Application Publication No. 2016-114253.

[0003] In the refrigerator disclosed in Patent Document 1, the drinking water outlet of the dispenser is provided on the surface side of the insulation door that opens and closes the storage compartment (the outside of the insulation door when the insulation door is closed). Thus, in the refrigerator of Patent Document 1, the flow path from the water storage portion to the drinking water outlet is formed inside the insulation door, and the drinking water outlet is exposed to the outside from the surface side of the insulation door. Therefore, the storage compartment is communicated with the outside through the flow path and the drinking water outlet, leading to a decrease in the thermal insulation of the insulation door.

[0004] Furthermore, due to the reduced thermal insulation of the insulation door, it is necessary to lower the temperature of the cold air circulating inside the refrigerator. As a result, the refrigerator disclosed in Patent Document 1 also has issues from the perspective of energy saving. Additionally, in the refrigerator disclosed in Patent Document 1, a structure for exposing the drinking water outlet to the outside needs to be separately provided. This increases the manufacturing cost compared to a refrigerator with a regular insulation door.

SUMMARY

[0005] In view of these problems, an objective of the present application is to provide a refrigerator with a dispenser that does not reduce the thermal insulation of the insulation door and does not cause excessive cost increases.

[0006] To solve the above problems, the refrigerator according to the present application comprises:

- a storage compartment;
- a insulation door provided at the front side of the storage compartment for opening and closing the storage compartment; and
- a dispenser provided on the inside of the insulation door and connected to a drinking spout of a beverage container for dispensing drinking water from the beverage container; wherein, when the insulation door is closed to the storage compartment, the dispenser

is accommodated in the space formed by the insulation door and the storage compartment.

[0007] Furthermore, in the refrigerator according to the present application, the dispenser includes:

- a container connection assembly connected to the beverage container and comprising a flow path for the drinking water of the beverage container; and
- a control lever rotatably supported at a designated position for controlling the opening and closing of the flow path of the container connection assembly.

[0008] Furthermore, in the refrigerator according to the present application, the dispenser further comprises a stopper device that restricts the rotation of the control lever when the insulation door is closed to the storage compartment.

[0009] Furthermore, in the refrigerator according to the present application, the container connection assembly further includes a drinking water outlet portion for discharging the drinking water when the flow path is flowing, and the control lever includes a drinking water receiving portion for receiving the drinking water falling from the drinking water outlet portion.

[0010] Furthermore, in the refrigerator according to the present application, the dispenser further comprises:

- a first cover portion for accommodating the container connection assembly and the control lever; and
- a second cover portion for covering the first cover portion and mounted to the first cover portion in a vertically movable manner.

[0011] Furthermore, in the refrigerator according to the present application, the dispenser further comprises a housing portion, and the first cover portion and the second cover portion are detachably mounted to the housing portion.

[0012] Furthermore, in the refrigerator according to the present application, the dispenser is detachably mounted to the insulation door.

[0013] Furthermore, in the refrigerator according to the present application, the container connection assembly includes a container connection portion connected to the drinking spout of the beverage container, a fixed cylindrical portion provided radially inward of the container connection portion, and a movable cylindrical portion provided radially inward of the fixed cylindrical portion, the drinking water outlet portion being connected to the bottom ends of the fixed cylindrical portion and the movable cylindrical portion, the drinking water supplied from the beverage container to the container connection assembly is discharged to the outside from the drinking water outlet portion after passing through the fixed cylindrical portion, the movable cylindrical portion being vertically movable relative to the fixed cylindrical portion, the movable cylindrical portion is provided with a check valve,

and in the case where the movable cylindrical portion is in an initial position, the check valve provided on the movable cylindrical portion contacts the upper end of the fixed cylindrical portion to close the flow path of the container connection assembly; when the movable cylindrical portion rises, the check valve is separated from the fixed cylindrical portion, the flow path of the container connection assembly is opened, and the drinking water of the beverage container flows into the fixed cylindrical portion.

[0014] Furthermore, in the refrigerator according to the present application, the control lever includes a rotation shaft portion, an operation portion for performing the rotation operation of the control lever, and an outlet abutment portion that abuts the drinking water outlet portion due to the rotation of the control lever, when the operation portion of the control lever is pushed to rotate the control lever, the outlet abutment portion of the control lever abuts the drinking water outlet portion of the container connection assembly, the movable cylindrical portion rises accordingly, the check valve rises in conjunction with the movement of the movable cylindrical portion, the check valve is separated from the fixed cylindrical portion, the flow path of the container connection assembly is opened, and the drinking water of the beverage container flows into the fixed cylindrical portion.

[0015] Furthermore, in the refrigerator according to the present application, when the second cover portion is in the reference position, the upper wall of the second cover portion is located near the upper wall of the first cover portion, when the first cover portion and the second cover portion are in such a positional relationship, the container connection assembly with the beverage container is placed on the first cover portion, and after the container connection assembly is placed on the first cover portion, the second cover portion can be slid to a position higher than the reference position.

[0016] The dispenser of the present application is accommodated in the space formed by the insulation door and the storage compartment when the insulation door is closed to the storage compartment. Thus, according to the present application, an area communicating with the outside of the refrigerator is not formed while the dispenser is provided. In this way, the thermal insulation of the insulation door is not reduced, and the cost does not increase excessively.

[0017] Additionally, when the insulation door is closed to the storage compartment, the stopper device restricts the rotation of the control lever. Thus, according to the present application, it is possible to prevent the control lever of the dispenser from contacting a part provided on the storage compartment side and accidentally discharging drinking water from the dispenser during the process of closing the storage compartment with the insulation door.

[0018] Furthermore, according to the present application, the control lever of the dispenser is provided with a drinking water receiving portion for receiving the drinking water falling from the drinking water outlet portion. Thus,

for example, water droplets (drinking water) attached to the drinking water outlet portion will not fall into the storage compartment. Furthermore, when the user pushes a cup against the control lever to rotate the control lever, the drinking water receiving portion also rotates. In this way, during the user's water dispensing operation, the drinking water receiving portion is not located in the water dispensing area directly below the drinking water outlet portion. This ensures that the user's smooth water dispensing operation is not obstructed, even if the drinking water receiving portion is provided separately.

[0019] Furthermore, the second cover portion of the dispenser is mounted to the first cover portion in a vertically movable manner. Thus, for example, when placing the beverage container on the dispenser, the second cover portion can be lowered to place the beverage container on the dispenser. This allows the action of placing the beverage container on the dispenser to be performed smoothly.

[0020] Furthermore, according to the present application, the first cover portion and the second cover portion of the dispenser can be detached from the housing portion. Thus, the opening area formed after removing the first cover portion and the second cover portion of the housing portion can be utilized as a storage space for stored items.

[0021] Furthermore, according to the present application, the dispenser (e.g., the housing portion) can be detached from the insulation door. In this way, when the dispenser is not used, the dispenser (housing portion) can be removed from the insulation door. Additionally, the area of the insulation door where the dispenser (housing portion) is removed can be equipped with, for example, a storage shelf for storing items. Thus, according to the present application, the dispenser can be detached from the insulation door according to the user's intention, and the space after removing the dispenser can be utilized as a storage space for stored items.

BRIEF DESCRIPTION OF DRAWINGS

[0022] The specific embodiments of the present application will be further described in detail below with reference to the drawings, in which:

FIG 1 is a perspective view of the refrigerator according to the present embodiment.

FIG 2 is an enlarged view of the insulation door including the dispenser according to the present embodiment.

FIG 3 is a vertical sectional view of the dispenser according to the present embodiment.

FIG 4 is a vertical sectional view of the dispenser according to the present embodiment.

FIG 5 is an enlarged perspective view of the refrigerator with the insulation door in the open state.

FIG 6 is an enlarged sectional view of the refrigerator with the insulation door in the closed state.

FIG 7 is a vertical sectional view of the dispenser with the second cover portion in a reference position according to the present embodiment.

FIG 8 is a vertical sectional view of the dispenser with the second cover portion in a higher position according to the present embodiment.

FIG 9 is a perspective view illustrating that the first cover portion and the second cover portion can be detached from the housing portion according to the present embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS

[0023] Next, referring to the drawings, the refrigerator 1 according to an embodiment of the present application will be described in detail. Additionally, when describing the refrigerator 1 of this embodiment, the "up and down" direction corresponds to the height direction of the refrigerator 1, the "left and right" direction corresponds to the width direction of the refrigerator 1, and the "front and rear" direction corresponds to the anter-posterior depth direction of the refrigerator 1. Furthermore, the directions of the insulation door are defined based on the state where the insulation door closes the storage compartment. That is, the height direction (up and down direction) of the insulation door corresponds to the height direction of the refrigerator 1, the width direction (left and right direction) of the insulation door corresponds to the width direction of the refrigerator 1, and the anter-posterior depth direction (front and rear direction) of the insulation door corresponds to the anter-posterior depth direction of the refrigerator 1.

[0024] Referring to FIG 1, the overall structure of the refrigerator 1 according to this embodiment will be described. In this case, FIG 1 is a perspective view of the refrigerator 1. As shown in FIG 1, the refrigerator 1 of this embodiment includes an insulated cabinet 2 that corresponds to the main body of the refrigerator. The insulated cabinet 2 includes an outer housing made of steel plate, an inner housing made of synthetic resin, and an insulating material made of foamed polyurethane filled in the gap formed between the outer housing and the inner housing.

[0025] Inside the insulated cabinet 2, there are insulated partition walls that divide multiple storage compartments, such as a refrigerating compartment 3 and a freezing compartment 4. The refrigerator 1 of this embodiment includes multiple storage compartments corresponding to the refrigerating compartment 3 and the freezing compartment 4 above. However, the arrangement order of each storage compartment is not limited to this. Moreover, the number of storage compartments is not limited to this.

[0026] Additionally, each storage compartment of the insulated cabinet 2 is provided with front surface openings, insulation doors are provided to open and close these openings. The insulation door 10, as shown in FIG 1, is rotatably supported at the upper and lower ends of

the left end, for example, when viewed from the front of the refrigerator 1, by a hinge member 5 on the insulated cabinet 2, and closes the front surface opening of the refrigerating compartment 3.

[0027] The insulation door 10 shown in FIG 1 includes a hollow box-shaped outer cover portion 11 that opens on the inside (back side); an inner panel part 12 mounted in the opening area on the inside of the outer cover part 11; and a frame 13 installed along the outer periphery of the inner panel part 12 for sealingly mounting the inner panel part 12 inside the outer cover part 11. The insulation door 10 is filled with an insulating material.

[0028] Additionally, there are elongated protruding walls 121a, 121b that protrude from the two side areas of the inner panel part 12 (when the insulation door 10 is in the state of closing the refrigerating compartment 3) towards the inside of the refrigerating compartment 3 (the rear side of the insulation door 10). A storage shelf 20 for storing items is supported on these protruding walls 121a, 121b. Furthermore, a dispenser 30 is provided at the lowest portion on the inside of the insulation door 10.

[0029] Thus, since the dispenser 30 is provided on the inside of the insulation door 10, when the insulation door 10 closes the refrigerating compartment 3, the dispenser 30 is accommodated in the space (inside space of the refrigerator 1) formed by the insulation door 10 and the refrigerating compartment 3. According to this embodiment, since the dispenser 30 is located in the inside space of the refrigerator 1, an area that communicates the insulation door 10 with the outside of the refrigerator 1 is not formed while the dispenser 30 is provided. Therefore, the thermal insulation of the insulation door 10 is not reduced, and the cost does not increase excessively.

[0030] Next, referring to FIGS. 2 to 4, the dispenser 30 of this embodiment will be described. In this case, FIG 2 is an enlarged view of the insulation door 10 including the dispenser 30. Additionally, FIGS. 3 and 4 are vertical sectional views of the dispenser 30 (sectional views along line A-A of FIG 2). Furthermore, the dispenser 30 shown in FIG 3 corresponds to the state where the flow path of the container connection assembly 31 described later is closed. In contrast, the dispenser 30 shown in FIG 4 corresponds to the state where the flow path of the container connection assembly 31 is open.

[0031] As shown in FIGS. 2 to 4, the dispenser 30 of this embodiment includes a container connection assembly 31, a control lever 32, a first cover portion 33 for accommodating the container connection assembly 31 and the control lever 32, a second cover portion 34 for covering the first cover portion 33, and a housing portion 35 for accommodating the first cover portion 33 and the second cover portion 34. As shown in the figures, a beverage container 40 (e.g., a plastic bottle) is installed in a downward position (with the drinking spout 41 facing the dispenser 30) to the container connection assembly 31 of the dispenser 30.

[0032] Furthermore, as shown in FIG 3, the container connection assembly 31 includes a base 311, a container

connection portion 312 connected to the drinking spout 41 of the beverage container 40, a fixed cylindrical portion 313 provided radially inward of the container connection portion 312, a movable cylindrical portion 314 provided radially inward of the fixed cylindrical portion 313, and a drinking water outlet portion 315 connected to the bottom ends of the fixed cylindrical portion 313 and the movable cylindrical portion 314. Additionally, a check valve 316 is connected in the movable cylindrical portion 314.

[0033] The drinking water supplied from the beverage container 40 to the container connection assembly 31 is discharged to the outside from the drinking water outlet portion 315 after passing through the interior of the fixed cylindrical portion 313. In other words, the area inside the fixed cylindrical portion 313 included in the container connection assembly 31 of this embodiment corresponds to the drinking water flow path.

[0034] Next, the control lever 32 includes a rotation shaft portion 321 for rotating the control lever 32 in the direction of arrow B, an operation portion 322 for performing the rotation operation of the control lever 32, and an outlet abutment portion 323 that abuts the drinking water outlet portion 315 due to the rotation of the control lever 32. Additionally, as shown in FIG 3, the control lever 32 of this embodiment is installed in the designated position inside the first cover portion 33 in a manner that opposes the container connection assembly 31.

[0035] The movable cylindrical portion 314 is configured to move vertically relative to the fixed cylindrical portion 313. As shown in FIG 3, when the movable cylindrical portion 314 is in the initial position, the check valve 316 installed on the movable cylindrical portion 314 contacts the upper end of the fixed cylindrical portion 313. This closes the flow path of the container connection assembly 31, and the drinking water from the drinking spout 41 of the beverage container 40 facing the container connection portion 312 is blocked by the upper end of the fixed cylindrical portion 313.

[0036] In contrast, as shown in FIG 4, when, for example, a user pushes a cup against the operation portion 322 of the control lever 32 to rotate the control lever 32 in the direction of arrow B, the outlet abutment portion 323 of the control lever 32 abuts the drinking water outlet portion 315 of the container connection assembly 31. The movable cylindrical portion 314 then rises accordingly.

[0037] As a result, the check valve 316 rises in conjunction with the movement of the movable cylindrical portion 314, and the check valve 316 is separated from the fixed cylindrical portion 313. This opens the flow path of the container connection assembly 31, and the drinking water of the beverage container 40 flows into the fixed cylindrical portion 313.

[0038] Furthermore, as shown in FIGS. 3 and 4, the control lever 32 preferably includes a drinking water receiving portion 324 for receiving the drinking water falling from the drinking water outlet portion 315. The drinking water receiving portion 324 of this embodiment has a bottom wall extending substantially horizontally from the

front surface of the bottom of the operation portion 322 and a side wall standing up from the bottom wall. The falling drinking water is received in the area enclosed by the bottom wall and the side wall of the drinking water receiving portion 324.

[0039] Due to the provision of the drinking water receiving portion 324 with this shape, for example, water droplets (drinking water) attached to the drinking water outlet portion 315 will not fall into the refrigerating compartment 3. Furthermore, since the drinking water receiving portion 324 is located at the position of the operation portion 322 of the control lever 32, the drinking water receiving portion 324 rotates together with the rotation of the control lever 32 caused by user operation. Thus, during the user's water dispensing operation, the drinking water receiving portion 324 is not located in the water dispensing area directly below the drinking water outlet portion 315. In this way, even if the drinking water receiving portion 324 is provided separately, it will not obstruct the user's smooth water dispensing operation.

[0040] Next, referring to FIGS. 5 and 6, the stopper device 36 for restricting the rotation of the control lever 32 when the insulation door 10 is closed to the refrigerating compartment 3 (storage compartment) will be described. In this case, FIG 5 is an enlarged perspective view of the refrigerator 1 when the insulation door 10 is in the open state. Additionally, FIG 6 is an enlarged sectional view of the refrigerator 1 when the insulation door 10 is in the closed state (an enlarged vertical sectional view including the dispenser 30 and the stopper device 36).

[0041] As shown in FIGS. 5 and 6, the stopper device 36 of this embodiment is provided on the side of the refrigerating compartment 3. Furthermore, the stopper device 36 extends substantially horizontally from a designated position of the refrigerating compartment 3 (e.g., the front end of a shelf opposite the dispenser 30, or a position such as the front wall of the fresh food compartment) to the inside of the first cover portion 33 of the dispenser 30. In this way, the stopper device 36 opposes the other end portion 325 of the control lever 32 (the end opposite to the operation portion 322) and restricts further rotation of the control lever 32.

[0042] Due to the provision of such a stopper device 36, it is possible to prevent the control lever 32 of the dispenser 30 from contacting a designated position of the refrigerating compartment 3 (e.g., a portion of the refrigerating compartment 3 opposite the dispenser 30) and accidentally rotating during the process of closing the refrigerating compartment 3 with the insulation door 10. In this way, it is possible to prevent drinking water from being accidentally discharged from the dispenser 30.

[0043] Next, referring to FIGS. 7 and 9, the first cover portion 33 and the second cover portion 34 of the dispenser 30 will be described in detail. In this case, FIG 7 is a vertical sectional view of the dispenser 30 with the second cover portion 34 in the reference position. Addi-

tionally, FIG 8 is a vertical sectional view of the dispenser 30 with the second cover portion 34 in a position higher than the reference position. Furthermore, FIG 9 is a perspective view illustrating that the first cover portion 33 and the second cover portion 34 can be detached from the housing portion 35.

[0044] The second cover portion 34 is mounted to the first cover portion 33 in a vertically movable manner. As shown in FIG 7, when the second cover portion 34 is in a reference position, the upper wall 341 of the second cover portion 34 is located near the upper wall 331 of the first cover portion 33. When the first cover portion 33 and the second cover portion 34 are in such a positional relationship, the container connection assembly 31 with the beverage container 40 is placed on the first cover portion 33.

[0045] Additionally, as shown in FIG 8, after the container connection assembly 31 is placed on the first cover portion 33, the user can slide the second cover portion 34 to a position higher than the reference position. At this time, a protrusion 342 extending inward from the inner side wall of the second cover portion 34 is embedded into a recess 332 provided on the side wall of the first cover portion 33. In this way, the second cover portion 34 is locked in the elevated position.

[0046] Thus, when the container connection assembly 31 is placed on the first cover portion 33, the second cover portion 34 is in the reference position, and therefore the second cover portion 34 and the beverage container 40 do not interfere with each other. Furthermore, since the second cover portion 34 is in the reference position, the user can easily confirm the position of the container connection assembly 31. This allows for smooth placement of the container connection assembly 31 with the beverage container 40 on the first cover portion 33. Additionally, since the second cover portion 34 is in the lowered position (reference position), it can prevent misoperations such as accidentally rotating the control lever 32 during the operation.

[0047] Furthermore, after placing the container connection assembly 31 on the first cover portion 33, raising the second cover portion 34 increases the area of the beverage container 40 surrounded by the second cover portion 34, allowing the beverage container 40 placed on the dispenser 30 to maintain a prescribed posture.

[0048] Furthermore, as shown in FIG 9, the first cover portion 33 and the second cover portion 34 can also be installed in a manner detachable from the housing portion 35. In this case, the housing portion 35 preferably includes a plate member 352 for blocking the opening area 351 formed when the first cover portion 33 and the second cover portion 34 are detached. The plate member 352 mounted to the housing portion 35 serves as part of the side wall of the housing portion 35.

[0049] According to the housing portion 35 with such a configuration, the opening area 351 formed after detaching the first cover portion 33 and the second cover portion 34 can be utilized as a storage space for stored

items.

[0050] Additionally, the housing portion 35 is preferably installed in a manner detachable from the insulation door 10. In this case, the shape of the housing portion 35 is preferably similar to the shape of the storage shelf 20 provided on the inside of the insulation door 10.

[0051] According to the housing portion 35 with such a shape, the area where the housing portion 35 is removed can be equipped with, for example, a storage shelf for storing items. Thus, the housing portion 35 (dispenser 30) can be detached from the insulation door 10 according to the user's intention, and the space after removing the housing portion 35 can be utilized as a storage space for stored items.

[0052] The above detailed description explains the embodiments of the present application. However, the foregoing description is intended to facilitate understanding of the present application and is not intended to limit the essence of the present application. The present application can encompass modifications or improvements without departing from its essence. Additionally, the present application includes equivalents thereof.

Claims

1. A refrigerator, comprising:

a storage compartment;
an insulation door provided at the front side of the storage compartment for opening and closing the storage compartment; and
a dispenser provided on the inside of the insulation door and connected to a drinking spout of a beverage container for dispensing drinking water from the beverage container; wherein, when the insulation door is closed to the storage compartment, the dispenser is accommodated in the space formed by the insulation door and the storage compartment.

2. The refrigerator according to claim 1, wherein the dispenser comprises:

a container connection assembly connected to the beverage container and comprising a flow path for the drinking water of the beverage container; and
a control lever rotatably supported at a designated position for controlling the opening and closing of the flow path of the container connection assembly.

3. The refrigerator according to claim 2, wherein the dispenser further comprises a stopper device that restricts the rotation of the control lever when the insulation door is closed to the storage compartment.

4. The refrigerator according to claim 2, wherein the container connection assembly further comprises a drinking water outlet portion for discharging the drinking water when the flow path is flowing, and the control lever includes a drinking water receiving portion for receiving the drinking water falling from the drinking water outlet portion. 5
5. The refrigerator according to claim 2, wherein the dispenser further comprises: 10
 - a first cover portion for accommodating the container connection assembly and the control lever; and
 - a second cover portion for covering the first cover portion and mounted to the first cover portion in a vertically movable manner. 15
6. The refrigerator according to claim 3, wherein the dispenser further comprises a housing portion, and the first cover portion and the second cover portion are detachably mounted to the housing portion. 20
7. The refrigerator according to claim 1, wherein the dispenser is detachably mounted to the insulation door. 25
8. The refrigerator according to claim 4, wherein the container connection assembly comprises a container connection portion connected to the drinking spout of the beverage container, a fixed cylindrical portion provided radially inward of the container connection portion, and a movable cylindrical portion provided radially inward of the fixed cylindrical portion, the drinking water outlet portion being connected to the bottom ends of the fixed cylindrical portion and the movable cylindrical portion, the drinking water supplied from the beverage container to the container connection assembly is discharged to the outside from the drinking water outlet portion after passing through the fixed cylindrical portion, the movable cylindrical portion being vertically movable relative to the fixed cylindrical portion, the movable cylindrical portion is provided with a check valve, and in the case where the movable cylindrical portion is in an initial position, the check valve provided on the movable cylindrical portion contacts the upper end of the fixed cylindrical portion to close the flow path of the container connection assembly; when the movable cylindrical portion rises, the check valve is separated from the fixed cylindrical portion, the flow path of the container connection assembly is opened, and the drinking water of the beverage container flows into the fixed cylindrical portion. 30 35 40 45 50 55
9. The refrigerator according to claim 8, wherein the control lever comprises a rotation shaft portion, an operation portion for performing the rotation opera-

tion of the control lever, and an outlet abutment portion that abuts the drinking water outlet portion due to the rotation of the control lever, when the operation portion of the control lever is pushed to rotate the control lever, the outlet abutment portion of the control lever abuts the drinking water outlet portion of the container connection assembly, the movable cylindrical portion rises accordingly, the check valve rises in conjunction with the movement of the movable cylindrical portion, the check valve is separated from the fixed cylindrical portion, the flow path of the container connection assembly is opened, and the drinking water of the beverage container flows into the fixed cylindrical portion.

10. The refrigerator according to claim 5, wherein, in the case where the second cover portion is in a reference position, the upper wall of the second cover portion is located near the upper wall of the first cover portion, when the first cover portion and the second cover portion are in such a positional relationship, the container connection assembly with the beverage container is placed on the first cover portion, and after the container connection assembly is placed on the first cover portion, the second cover portion can be slid to a position higher than the reference position.

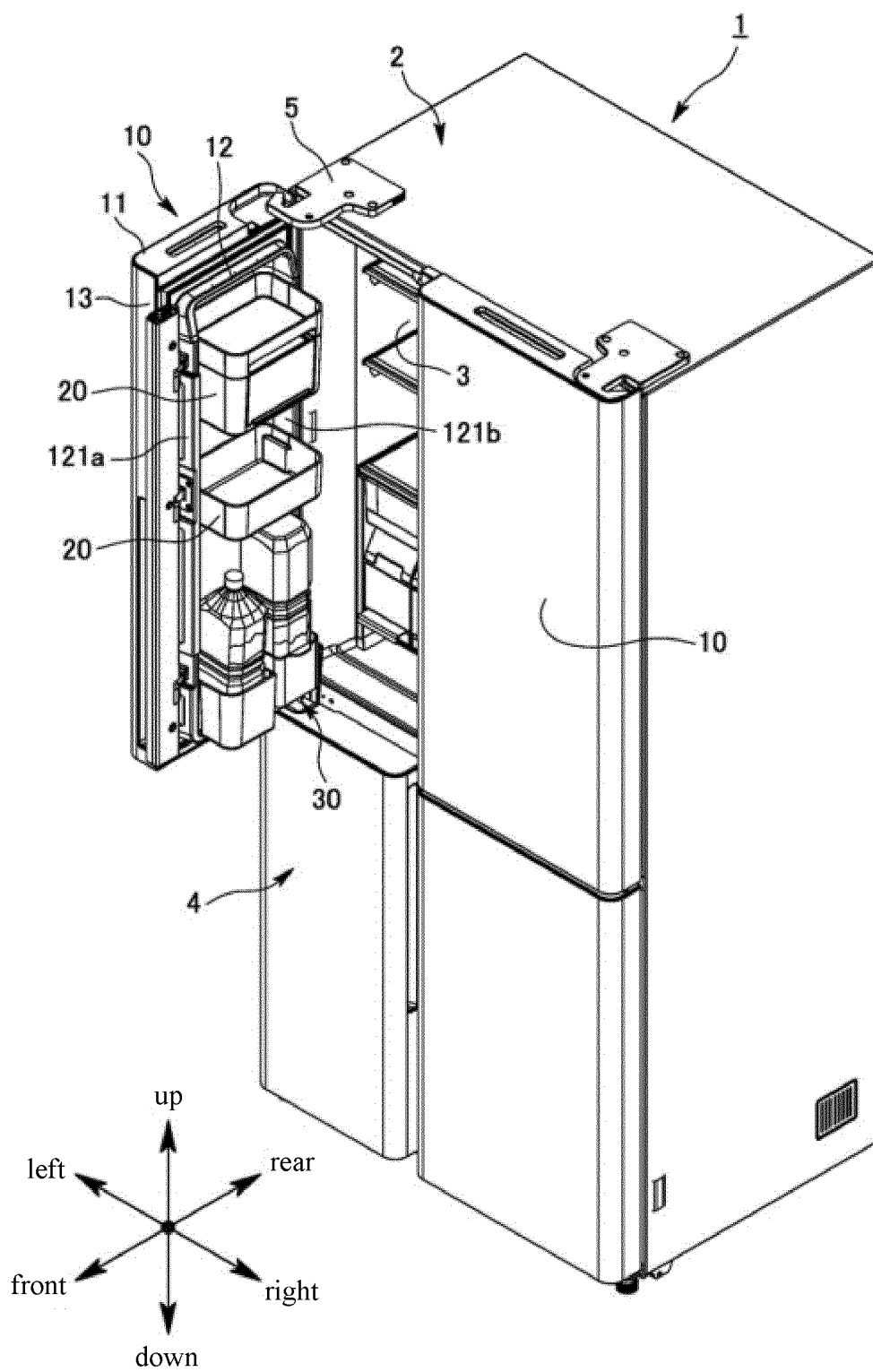


Fig. 1

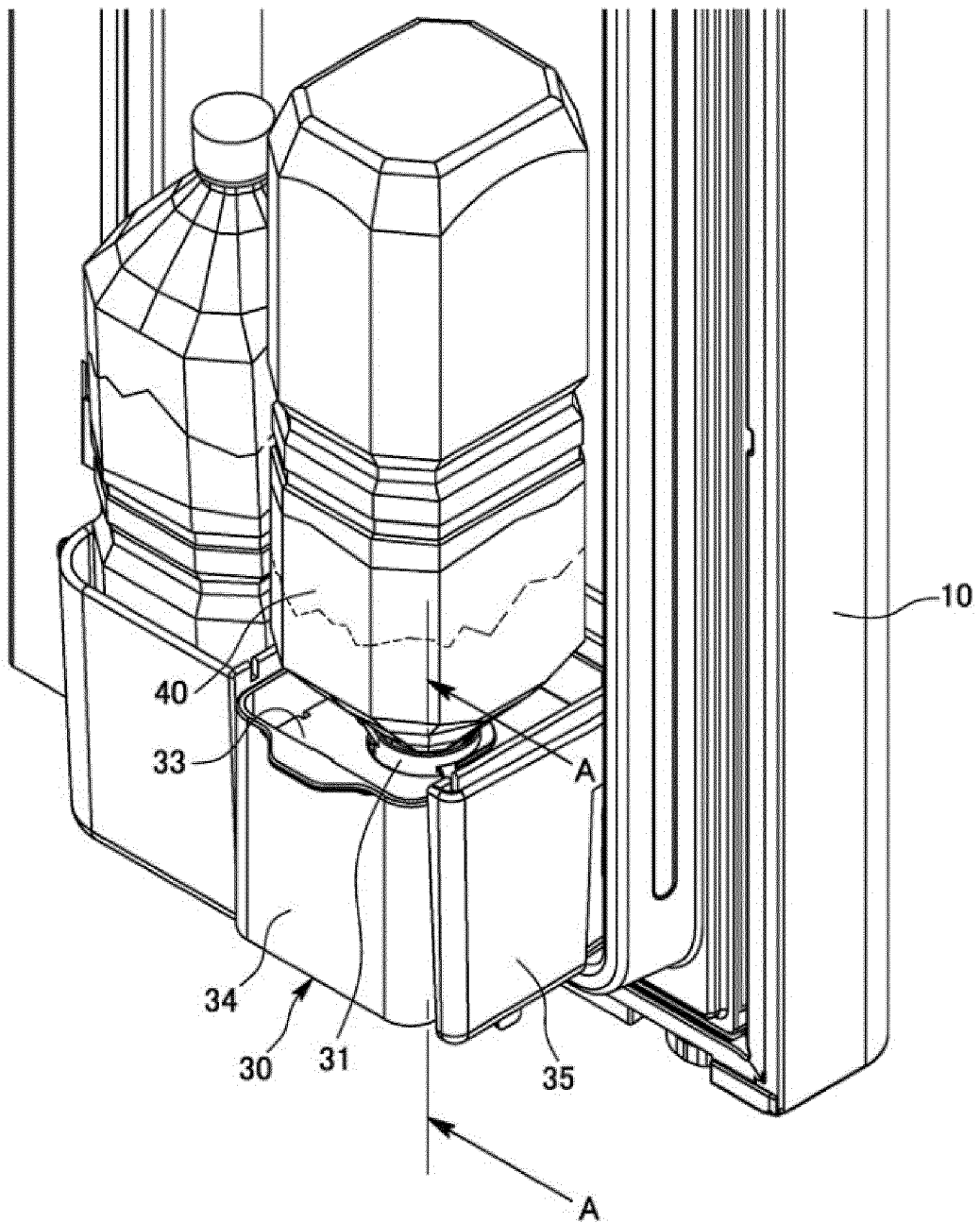


Fig. 2

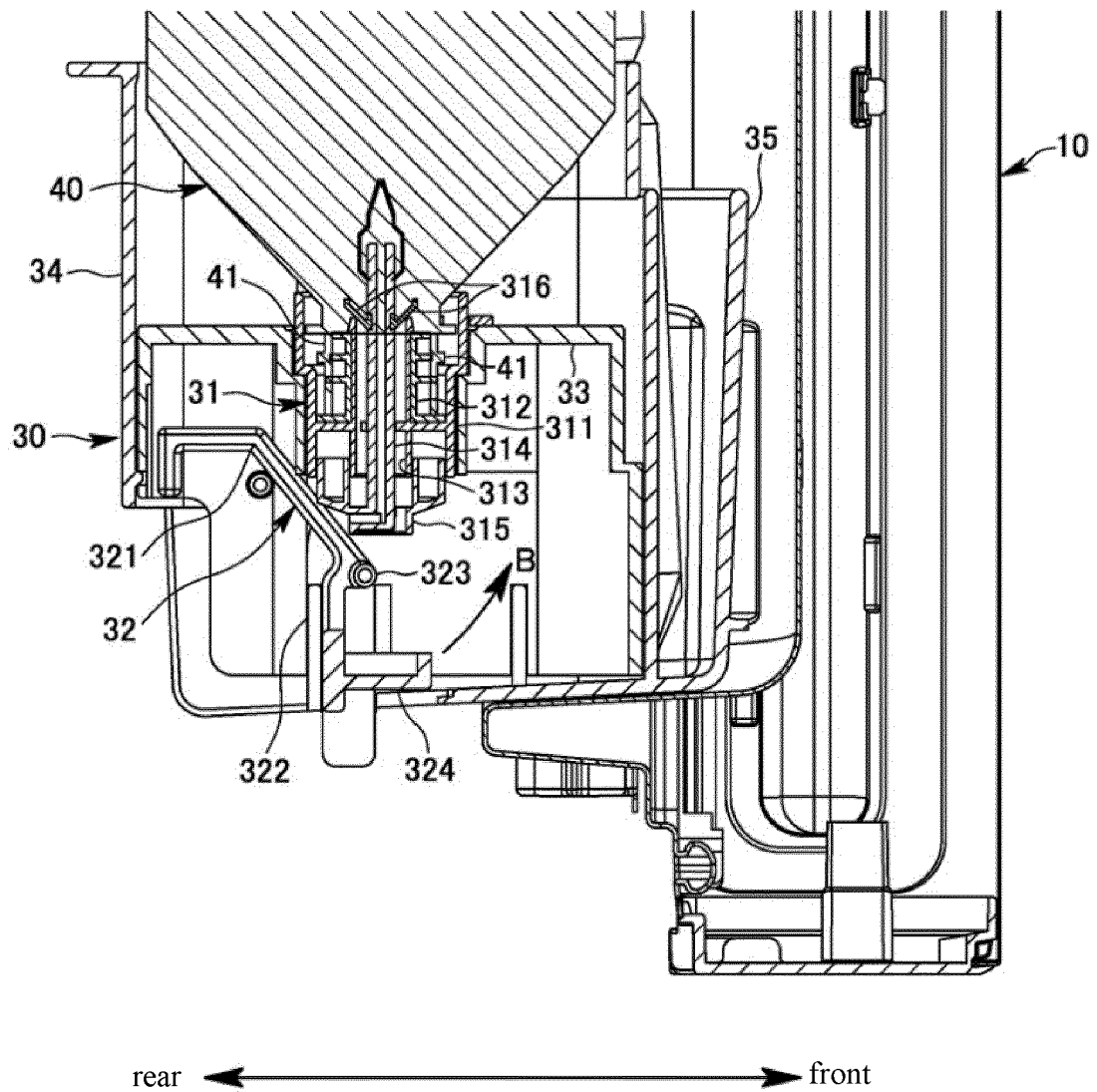


Fig. 3

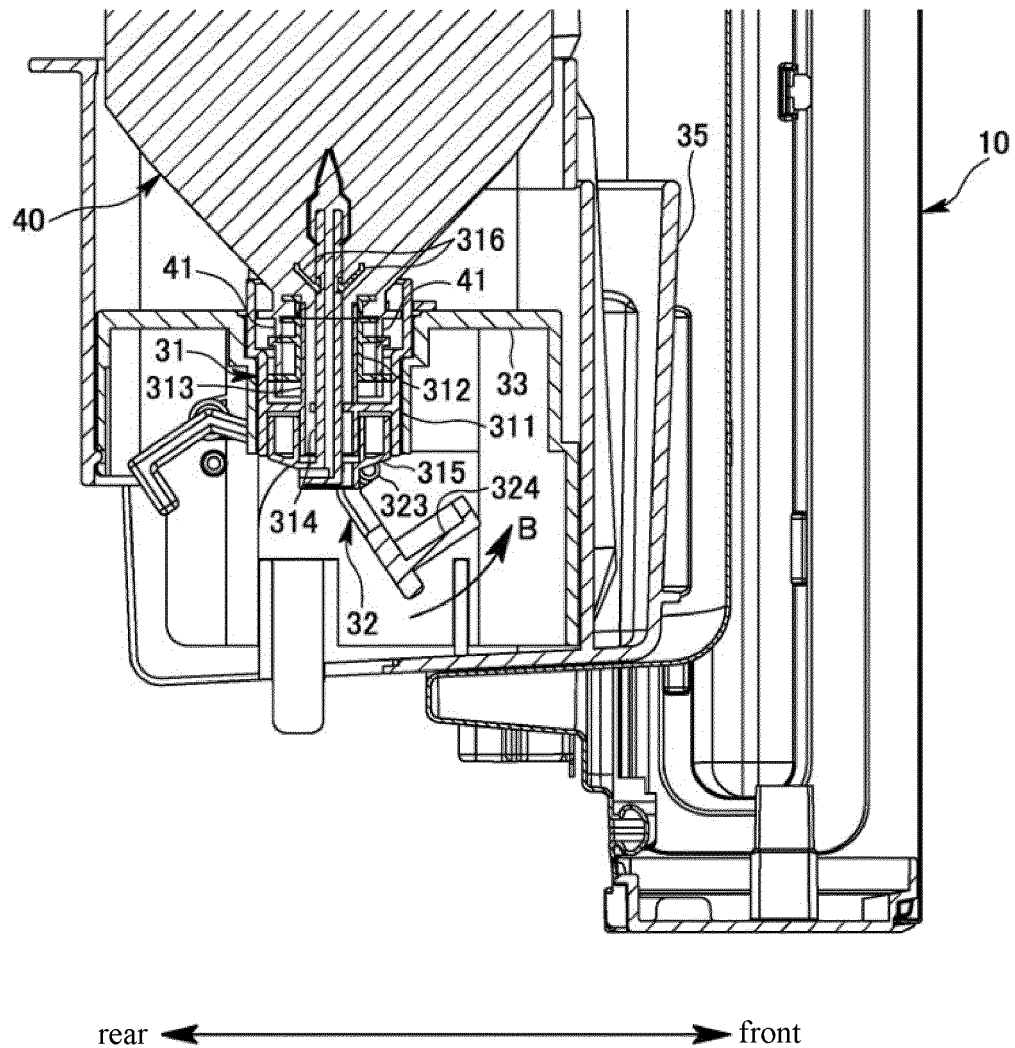


Fig. 4

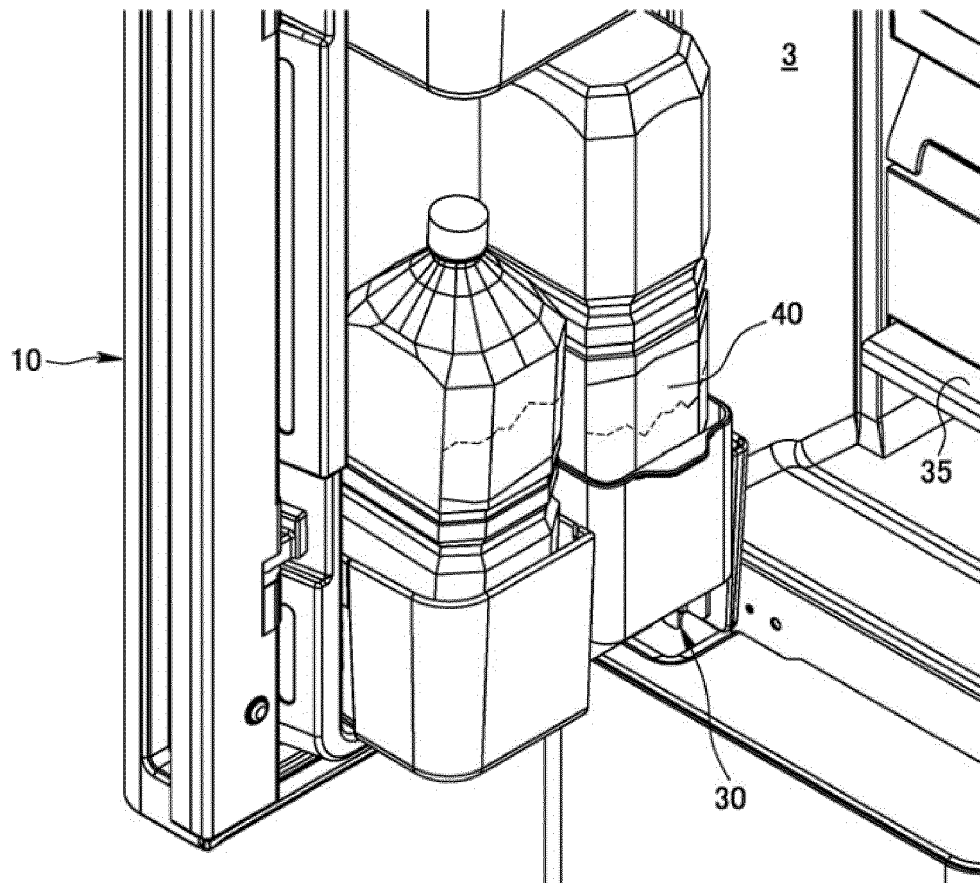


Fig. 5

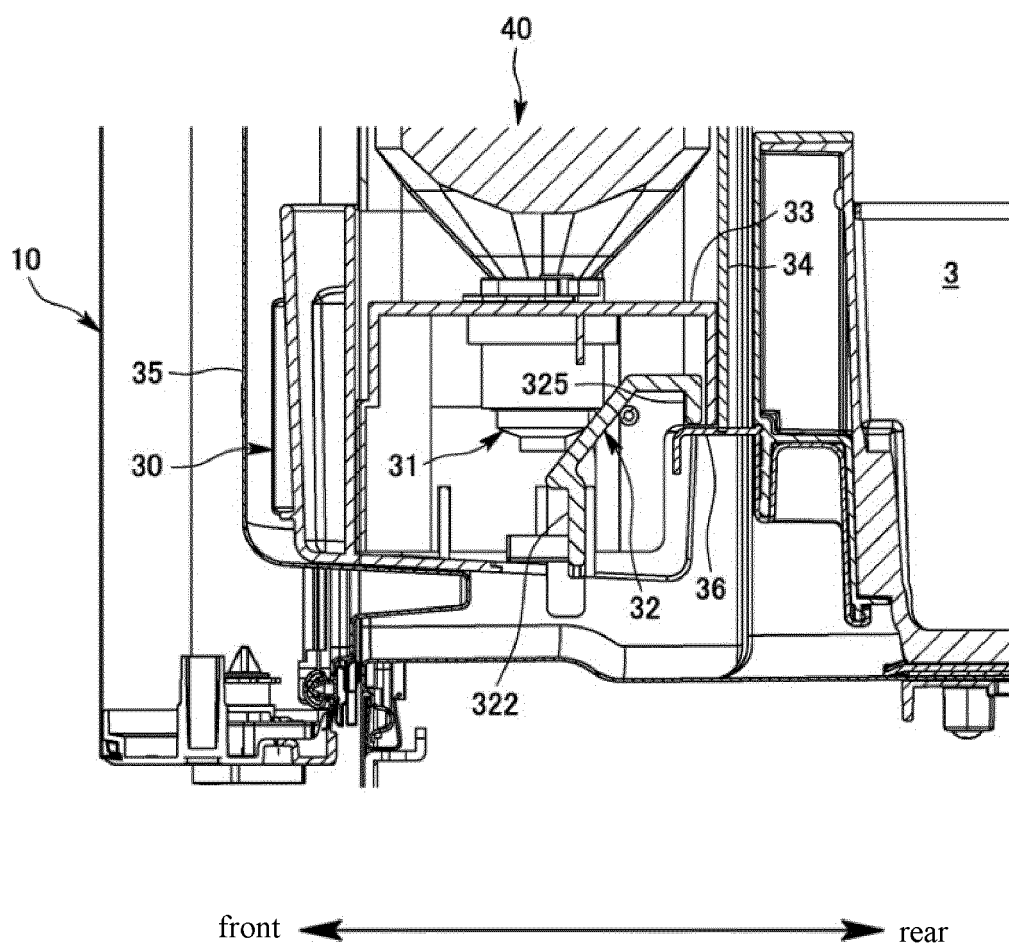


Fig. 6

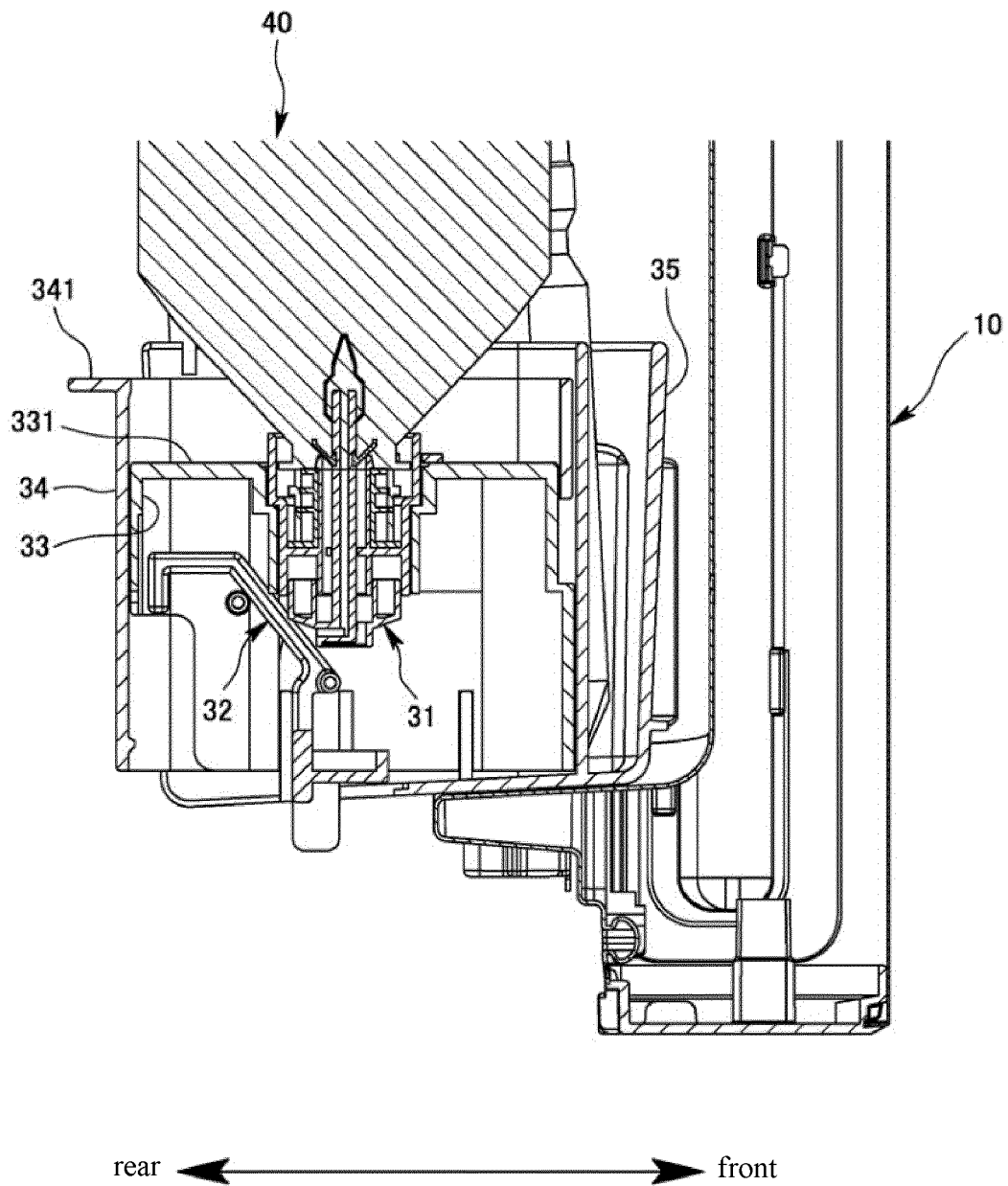


Fig. 7

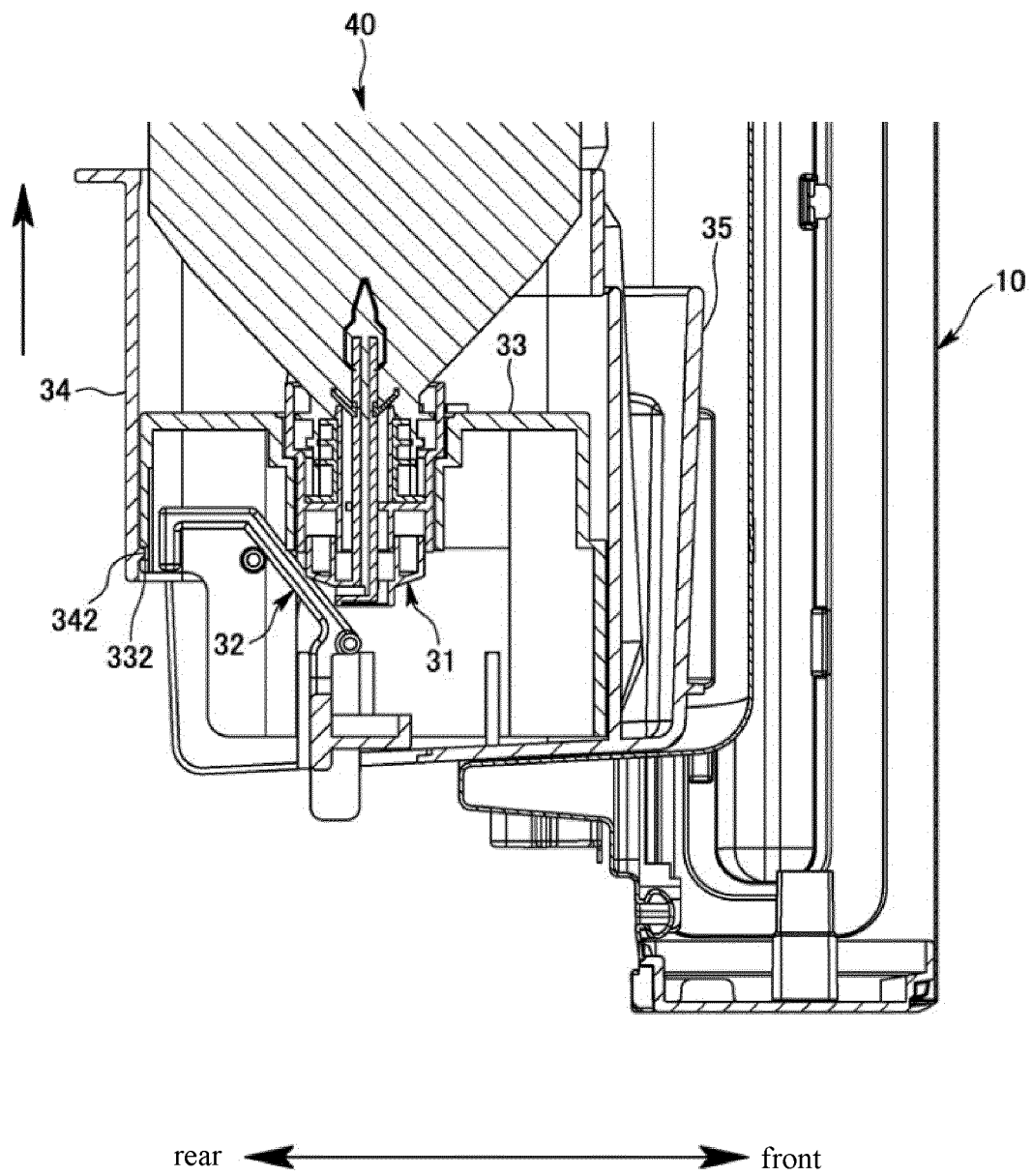


Fig. 8

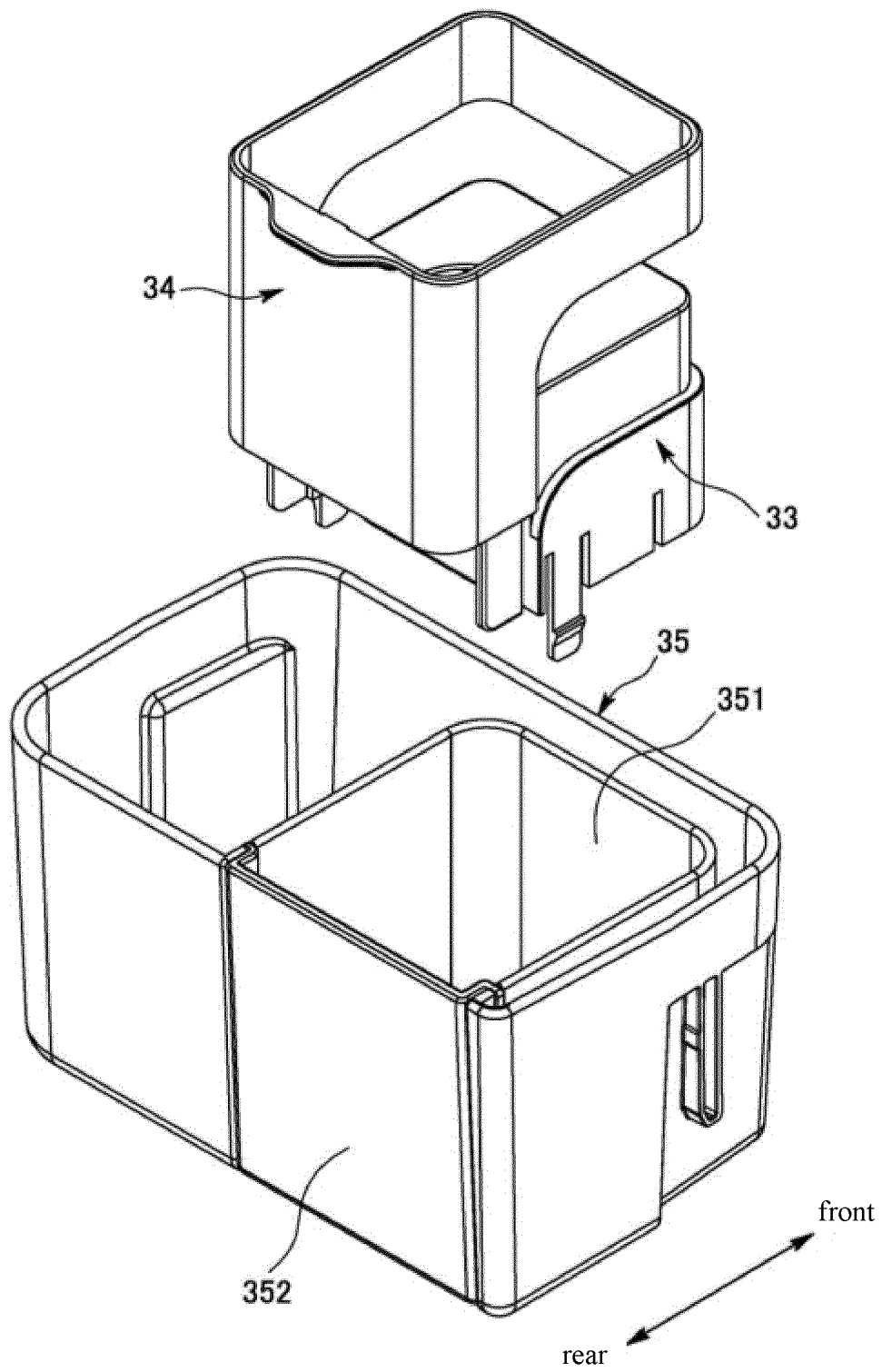


Fig. 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/141516

A. CLASSIFICATION OF SUBJECT MATTER F25D11/02(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) IPC:F25D11/02, F25D23/10,F25D23/02,F25D11/00, F25D23/00,F25D13/00		
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) CNTXT, VEN, ENTXTC, CNKI: 冰箱, 分配器, 门, 内侧, 容器, 止动, 限制, 锁定, 控制杆; RERIGERATOR, FRIDGE, DOOR, INNER, RESERVOIR, DISPENSER, HOLDING, ROD, STOPPER, LEVER, LOCK		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102301194 A (LG ELECTRONICS INC.) 28 December 2011 (2011-12-28) description, pages 3-8, and figures 1-9	1, 7
Y	CN 102301194 A (LG ELECTRONICS INC.) 28 December 2011 (2011-12-28) description, pages 3-8, and figures 1-9	2-6
Y	CN 1170129 A (DAEWOO ELECTRONICS CO., LTD.) 14 January 1998 (1998-01-14) description, pages 5-8, and figures 3-7	2-6
A	CN 1153280 A (KABUSHIKI KAISHA TOSHIBA) 02 July 1997 (1997-07-02) entire document	1-10
A	CN 110806048 A (LG ELECTRONICS INC.) 18 February 2020 (2020-02-18) entire document	1-10
A	CN 108931095 A (LG ELECTRONICS INC.) 04 December 2018 (2018-12-04) entire document	1-10
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents: “A” document defining the general state of the art which is not considered to be of particular relevance “D” document cited by the applicant in the international application “E” earlier application or patent but published on or after the international filing date “L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) “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 “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art “&” document member of the same patent family		
Date of the actual completion of the international search 03 March 2023	Date of mailing of the international search report 14 March 2023	
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088 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/CN2022/141516

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	102301194	A	28 December 2011	KR	20110112377	A	12 October 2011
				MX	2011008118	A	17 August 2011
				US	2011283734	A1	24 November 2011
				WO	2010087538	A1	05 August 2010
CN	1170129	A	14 January 1998	KR	980003416	A	30 March 1998
				US	5857596	A	12 January 1999
CN	1153280	A	02 July 1997	KR	0181656	B1	01 May 1999
				TW	305922	B	21 May 1997
				JPH	0979743	A	28 March 1997
				JP	3020845	B2	15 March 2000
CN	110806048	A	18 February 2020	BR	102019016001	A2	18 February 2020
				US	2021364213	A1	25 November 2021
				AU	2019210604	A1	20 February 2020
				AU	2019210604	B2	11 March 2021
				MX	2019009081	A	05 February 2020
				US	2020041188	A1	06 February 2020
				US	11112159	B2	07 September 2021
				KR	20200014706	A	11 February 2020
CN	108931095	A	04 December 2018	EP	3406992	A1	28 November 2018
				EP	3406992	B1	02 November 2022
				KR	20180129259	A	05 December 2018
				KR	101997259	B1	01 October 2019

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2016114253 A [0002]