

DESCRIPTION

Title of Invention REFRIGERATOR

Technical Field

5 [0001]

The present technique relates to a refrigerator. In particular, the present technique relates to changing a storage space in the height direction with a storage shelf disposed inside a storage compartment.

Background Art

10 [0002]

There has been known a refrigerator including a storage compartment whose sides are provided with support portions for supporting plural food storage shelves (hereinafter, referred to as storage shelves). Regarding such a refrigerator, the positions, in the height direction, of the support portions, which hold the storage shelves on the support portions, are changed inside the storage compartment, and the positions of the storage shelves can thereby be changed to fit the heights of foods to be stored. Thus, flexibility in food storage can be increased.

[0003]

20 However, in such a refrigerator, when the position of a storage shelf in the height direction is changed, the height, across the entire width, of the storage shelf is required to be changed. Thus, in such a refrigerator, the height of the entire storage space is required to be adjusted even when a tall food is placed in part of the storage space. Thus, there may be a wasted space in such a food storage space.

[0004]

25 For this reason, there is a refrigerator (for example, refer to Patent Literature 1) having a storage compartment divided into a right space and a left space by a partition plate extending in the up-and-down direction, and the heights of the storage spaces on the right and the left of the partition plate can be changed in a separated space basis. The refrigerator has a storage compartment divided into an upper storage compartment and a lower storage compartment. The upper storage compartment includes a

30

refrigerator compartment and a vegetable compartment, and the lower storage compartment includes a freezer compartment. The upper storage compartment has a partition plate dividing the storage compartment, from the floor to the ceiling of the storage compartment, into an upper space and a lower space. In the refrigerator, plural shelf-supporting shapes are formed on both lateral sides of the partition plate and are also formed on the inner wall surface of the storage compartment at the levels equivalent to the levels of both the sides of the partition plate. Thus, regarding the refrigerator of Patent Literature 1, storage shelves are installed between the partition plate and the inner wall surface of the storage compartment, and it is thereby possible to adjust the levels of the storage shelves installed between the partition plate and the inner wall surface of the storage compartment.

[0005]

In addition, there has been another refrigerator (for example, refer to Patent Literature 2) having a shelf supporter supported by a fixing tool mounted on the ceiling of a storage compartment and extending to a position at any height from the ceiling. With the shelf supporter, storage shelves can be separated from one another. Thus, the refrigerator of Patent Literature 2 provides increased flexibility, to a user, in use of the storage shelves in the height direction.

[0006]

Moreover, there has also been another refrigerator (for example, refer to Patent Literature 3) including, above a shelf of a storage compartment, a first shelf having side wall portions extending in the up-and-down direction and a second shelf that is disposed between the side wall portions and the inner wall surface of the storage compartment and whose shelf surface is indicated at plural positions in the up-and-down direction. The refrigerator of Patent Literature 3 can store a food having any height.

Citation List

Patent Literatures

[0007]

Patent Literature 1: Japanese Unexamined Patent Application Publication No. 2001-099563

Patent Literature 2: Japanese Unexamined Utility Model Application Publication
No. 3-000580

Patent Literature 3: Japanese Unexamined Patent Application Publication No.
2001-050647

5 Summary of Invention

Technical Problem

[0008]

10 However, regarding the refrigerator of Patent Literature 1, when the partition plate extends from the floor of the storage compartment, the left space and the right space separated by the partition plate are narrow in the width direction. Thus, the refrigerator of Patent Literature 1 is not suited for storing objects having a large width, such as a platter and a pan with a handle. In particular, in the upper storage compartment, a space near the floor of the upper storage compartment is convenient for a relatively short user. Such a short user can maintain a more comfortable posture when placing
15 objects, such as a heavy pan and a platter holding a food on the platter, on the floor of the storage compartment or on a storage shelf near the floor, compared with a case in which such objects on a storage shelf are placed at a high position. When the floor of the upper storage compartment is divided into a left region and a right region by the partition plate, it is impossible to store a wide object. Patent Literature 1 also discloses
20 a refrigerator having a partition plate that is not at the floor of the storage compartment but at a position above the floor of the storage compartment and extends in the right- and left direction in the storage compartment. However, a storage shelf is required to be disposed to support the bottom of the partition plate extending in the up-and-down direction. Thus, the position, in the height direction, of the storage shelf being contact
25 with the bottom of the partition plate cannot be changed. Consequently, the height of such a storage shelf on the low position is adjusted with low flexibility.

[0009]

30 In addition, regarding the refrigerator of Patent Literature 2, when plural storage shelves at different levels are arranged on the shelf supporter, not only the storage shelf intended to be separated but also all the storage shelves positioned above the storage

shelf to be separated are each separated into a right portion and a left portion. Thus, there is difficulty in use of a wide space. Moreover, regarding the refrigerator of Patent Literature 2, the fixing tool mounted on a ceiling portion causes some problems. For example, cleaning cannot be performed without the fixing tool, and, for example, when a component is broken, there is difficulty in replacement of the component. Furthermore, regarding the refrigerator of Patent Literature 2, the volume of the fixing tool itself is increased by the fixing tool extending to a lower position; thus, there is also a problem in that the fixing tool reduces a space for food storage.

[0010]

Moreover, structurally, the refrigerator of Patent Literature 3 requires side walls for each of the first storage shelf and the second storage shelf to support the storage shelves. Thus, regarding the refrigerator of Patent Literature 3, there is a problem of a reduction in the storage capacity inside the storage compartment. In addition, regarding the refrigerator of Patent Literature 3, the first shelf is indispensable to change the height of the storage compartment. Thus, a food having a large base area cannot be stored while the height of the storage compartment is changed.

[0011]

In view of the above-described problems, an object of the present disclosure is to provide a refrigerator having high flexibility in position adjustment, in the height direction, of a storage shelf inside a storage compartment.

Solution to Problem

[0012]

To achieve the above-described object, a refrigerator according to an embodiment of the present disclosure has a refrigerator body whose front has an opening and that has a storage compartment serving as a storage space; a plurality of storage shelves disposed, inside the storage compartment, at different positions in a height direction; storage compartment-side rail structures that are mounted on side wall surfaces of the storage compartment and support the plurality of storage shelves; and a partition having a partition body that is mounted on a bottom portion of a first storage shelf among the plurality of storage shelves, extends downward from the first storage

shelf, and serves as a wall for dividing, in a width direction, an inside of the storage compartment into a plurality of storage spaces, and partition-side rail structures that are mounted on both sides of the partition body and support the plurality of storage shelves while being paired with the storage compartment-side rail structures. The partition is mounted on the first storage shelf such that the partition is detachable from the first storage shelf. The storage compartment-side rail structures and the partition-side rail structures are arranged, in the height direction, in one or more tiers.

Advantageous Effects of Invention

[0013]

In the refrigerator according to an embodiment of the present disclosure, the storage spaces separated by the partition can have different heights without the storage shelf on the lower position being divided into portions. Thus, it is possible to achieve production of a refrigerator in which the wide floor in the storage compartment can be used and that is excellent in flexibility.

Brief Description of Drawings

[0014]

[Fig. 1] Fig. 1 is a front view of a refrigerator 100 according to Embodiment 1 of the present disclosure.

[Fig. 2] Fig. 2 is a front view for illustrating the configuration of a refrigerator compartment 101 according to Embodiment 1.

[Fig. 3] Fig. 3 illustrates the section taken along line X-X in Fig. 2 when viewed in a direction toward the left part of the refrigerator compartment 101.

[Fig. 4] Fig. 4 is a front view illustrating the arrangement relationship in a region around a partition 10 in the refrigerator compartment 101 of Embodiment 1.

[Fig. 5] Fig. 5 is a front view of the partition 10 of Embodiment 1.

[Fig. 6] Fig. 6 is a side view of the partition 10 of Embodiment 1.

[Fig. 7] Fig. 7 is a perspective view of the partition 10 of Embodiment 1.

[Fig. 8] Fig. 8 is a bottom view of a lower left shelf 5 and a lower right shelf 6 according to Embodiment 1.

[Fig. 9] Fig. 9 is an enlarged view of region C1 in Fig. 8.

[Fig. 10] Fig. 10 is a bottom view illustrating the positional relationship between the lower left shelf 5, the lower right shelf 6, and the partition 10 according to Embodiment 1.

[Fig. 11] Fig. 11 is a sectional view taken along line A-A in Fig. 10.

5 [Fig. 12] Fig. 12 is an enlarged view of region C2 in Fig. 10.

[Fig. 13] Fig. 13 is a sectional view taken along line B-B in Fig. 10.

[Fig. 14] Fig. 14 is an enlarged view of region D in Fig. 13.

[Fig. 15] Fig. 15 is a front view of the refrigerator compartment 101 with the partition 10 that is mounted in the refrigerator 100 according to Embodiment 1 being inclined.

[Fig. 16] Fig. 16 is an enlarged view of region E1 in Fig. 15.

[Fig. 17] Fig. 17 illustrates region E2 in Fig. 15.

[Fig. 18] Fig. 18 is a bottom view of a middle shelf 4 according to Embodiment 1.

15 [Fig. 19] Fig. 19 is a sectional view of the middle shelf 4 according to Embodiment 1, taken along line F-F in Fig. 18.

[Fig. 20] Fig. 20 is a top view of the middle shelf 4 according to Embodiment 1.

[Fig. 21] Fig. 21 is an enlarged view of region G of the middle shelf 4 in Fig. 20.

[Fig. 22] Fig. 22 is a top view illustrating the relationship between the middle shelf 4 and the partition 10 when the partition 10 is mounted on the middle shelf 4.

20 [Fig. 23] Fig. 23 is an enlarged view of region H in Fig. 22.

[Fig. 24] Fig. 24 is a sectional view of the middle shelf 4, taken along line L-L in Fig. 23.

[Fig. 25] Fig. 25 is a sectional view of the middle shelf 4, taken along line K-K in Fig. 23.

25 [Fig. 26] Fig. 26 is a top view illustrating the relationship between a glass surface portion 4a and a resin frame 4b of the middle shelf 4 according to Embodiment 1.

[Fig. 27] Fig. 27 illustrates the relationship between the middle shelf 4 having the glass surface portion 4a having an opening 19 and the partition 10 according to Embodiment 1.

[Fig. 28] Fig. 28 illustrates the relationship between the middle shelf 4 having the glass surface portion 4a having no opening 19 and the partition 10.

[Fig. 29] Fig. 29 is a front view illustrating the positional relationship between the middle shelf 4, the partition 10, and an air passage decorative panel 20a of the refrigerator compartment 101 according to Embodiment 1.

[Fig. 30] Fig. 30 is a perspective view of the air passage decorative panel 20a of the refrigerator compartment 101 according to Embodiment 1.

[Fig. 31] Fig. 31 is an enlarged view of region M in Fig. 30.

Description of Embodiments

[0015]

Hereinafter, refrigerators according to embodiments will be described with reference to, for example, the drawings. In the following drawings, parts denoted by the same reference signs are the same or equivalent to one another, and the same applies throughout the entire description of the embodiments below. The forms of the constituents represented in the entire description are merely examples, and the forms of the constituents are not limited to the forms in the description. In particular, the combination of the constituents is not limited to only the combination in the embodiments, and a constituent described in one embodiment can be applied to another embodiment. In addition, in the refrigerator, the surface facing a user is referred to as a front surface, and the surface opposite to the front surface is referred to as a rear surface. When the refrigerator is viewed from the front side, the surface on the upper side is referred to as a top surface, and the surface opposite to the top surface is referred to as a bottom surface. When the refrigerator is viewed from the front side, the surfaces on the right and on the left are referred to as sides. Moreover, throughout the following description, in the drawings, an upper part is referred to as the "upper side", and a lower part is referred to as the "lower side". Furthermore, the terms representing directions (such as "right", "left", "front", and "rear") when the refrigerator is mainly viewed from the front side are appropriately used for facilitating understanding; however, such terms are used for an illustration purpose and are not intended to limit the description detailed in the present disclosure. In addition, when

the refrigerator is viewed from the front side, the up-and-down direction is referred to as a height direction, the right-and-left direction is referred to as a width direction, and the front-and-rear direction is referred to as a depth direction. In the drawings, the relationship of sizes of the constituents sometimes differs from the relationship of sizes of the actual constituents.

[0016]

Embodiment 1

Fig. 1 is a front view of a refrigerator 100 according to Embodiment 1 of the present disclosure. In Fig. 1, doors for opening and closing the compartments included in the refrigerator 100 are removed. The refrigerator 100 of Embodiment 1 in Fig. 1 stores an object to be stored, such as a food to be cooled, and maintains the stored object, for example, refrigerated at a temperature at or below 10 degrees C and frozen at a temperature at or below -12 degrees C. The refrigerator 100 has a refrigerator body 100a serving as the outer contour. The refrigerator body 100a includes a storage space. The storage space is divided into plural storage compartments by plural partition plates provided inside the refrigerator body 100a. The plural storage compartments serve as a refrigerator compartment 101, an ice-making compartment 102, a versatile compartment 103, a freezer compartment 104, and a vegetable compartment 105.

[0017]

The refrigerator compartment 101 maintains a stored object refrigerated. The front of the refrigerator compartment 101 has an opening, and doors mounted at the front are opened and closed such that a stored object can be placed in and taken out. The configuration inside the refrigerator compartment 101 will be described later. The ice-making compartment 102 is a storage compartment for storing produced ice. The versatile compartment 103 is a storage compartment that enables switch between several temperature zones such as a freezing temperature zone at around -18 degree C, a refrigeration temperature zone at around 3 degree C, a chilling temperature zone at around 0 degrees C, and a mild freezing temperature zone at around -7 degree C to set any one of the temperature zones. The freezer compartment 104 is a storage

compartment for freezing a stored object. In addition, the vegetable compartment 105 is a storage compartment for storing, for example, vegetables and fruits. Here, the above-described types and number of the storage compartments included in the refrigerator 100 are not the only option. Note that a stored object will be described as a food in the following description.

[0018]

Fig. 2 is a front view for illustrating the configuration of the refrigerator compartment 101 according to Embodiment 1. Fig. 3 illustrates the section taken along line X-X in Fig. 2 when viewed in a direction toward the left part of the refrigerator compartment 101. The refrigerator compartment 101 maintains a stored object refrigerated. The floor of the refrigerator compartment 101 is at a position, in the height direction, between 90 cm and 100 cm from an installation surface of the refrigerator 100, that is, a position nearly equal to the height of the waist of an adult female. The refrigerator 100 of Embodiment 1 includes plural storage shelves installed inside the refrigerator compartment 101. Each of the storage shelves is a plate for dividing the storage space inside the refrigerator compartment 101 into upper and lower spaces and for storing a food by, for example, holding the food on the storage shelf. The refrigerator compartment 101 of Embodiment 1 includes, as such storage shelves, an upper shelf 3, a middle shelf 4, a lower left shelf 5, and a lower right shelf 6. The refrigerator compartment 101 of Embodiment 1 further includes a lower drawer case 1 and an upper drawer case 2. The lower drawer case 1 and the upper drawer case 2 are disposed below the lower left shelf 5 and the lower right shelf 6 and arranged in double tiers. The lower drawer case 1 is disposed directly above the floor of the refrigerator compartment 101. The upper drawer case 2 is disposed directly above the lower drawer case 1. A floor shelf 7 is disposed directly above the upper drawer case 2. The floor shelf 7 covers an opening of the upper drawer case 2. The floor shelf 7 is positioned below the lower left shelf 5 and the lower right shelf 6. Each of the upper shelf 3, the middle shelf 4, the lower left shelf 5, the lower right shelf 6, and the floor shelf 7 has a structure in which a flat glass plate (glass surface portion) having a high

rigidity is disposed in a central region, and a resin frame covers the periphery of the glass plate.

[0019]

As Fig. 3 illustrates, the refrigerator 100 includes a design panel 20 serving as a rear inner wall surface of the refrigerator compartment 101. The design panel 20 has an air passage decorative panel 20a as a portion of the design panel 20. The air passage decorative panel 20a has an air outlet 20b, for cold air, through which a cooling duct 21 and the refrigerator compartment 101 communicate with one another. The air passage decorative panel 20a will be described later. The refrigerator 100 further includes, between the design panel 20 and the refrigerator body 100a, the cooling duct 21 through which cold air for cooling the refrigerator compartment 101 passes.

[0020]

A partition 10 is mounted on the bottom surface of the middle shelf 4, which is a first storage shelf, such that the partition 10 is detachable. At this point, the partition 10 is mounted at a position at which the partition 10 does not overlap any air outlet 20b when the partition 10 and the air outlets 20b are projected from the rear side toward the front side of the refrigerator 100. Thus, the partition 10 does not overlap any one of the air outlets 20b when the refrigerator compartment 101 is viewed from the front side. Cold air is blown out through the air outlets 20b from the rear side toward the front side. Thus, the partition 10 not covering any one of the air outlets 20b does not prevent the cold air blown out from the air outlets 20b from flowing. In Fig. 2, the partition 10 is mounted at a position slightly shifted leftward from a substantial center, in the width direction, of the refrigerator compartment 101. The partition 10 separates the lower left shelf 5, which is a second storage shelf, and the lower right shelf 6, which is a third storage shelf, from one another. The partition 10 divides, in the width direction, the storage space between the lower left and right shelves 5 and 6 and the middle shelf 4 into two storage spaces on the left and on the right.

[0021]

Fig. 4 is a front view illustrating the arrangement relationship in a region around the partition 10 in the refrigerator compartment 101 of Embodiment 1. Fig. 5 is a front

view of the partition 10 of Embodiment 1. Fig. 6 is a side view of the partition 10 of Embodiment 1. Fig. 7 is a perspective view of the partition 10 of Embodiment 1. In Fig. 6 and Fig. 7, the partition 10 is viewed from the side of a right partition surface 10e. [0022]

5 A partition body 10a has a rectangular wall and serves as the body of the partition 10. The partition body 10a is mounted on the bottom surface of the middle shelf 4, which serves as a mounting surface, such that the partition body 10a is detachable and extends downward from the mounting surface in a direction substantially perpendicular to the middle shelf 4. A lower end 10c of the partition body 10a is positioned at a
10 preset height from the top surface of the floor shelf 7.

[0023]

The partition body 10a further has, as Fig. 6 illustrates, plural communication openings 10b. Through the communication openings 10b, two storage spaces communicate with one another. Thus, the cold air from the air outlets 20b of the
15 above-described air passage decorative panel 20a flows into the adjacent storage space through the communication openings 10b, and the temperature distribution in the two storage spaces separated by the partition 10 in the width direction can be uniformized. Thus, even when, as Fig. 3 illustrates, in the two storage spaces, the refrigerator compartment 101 has the air outlets 20b in the rear surface of the right
20 storage space and has no air outlet 20b in the rear surface of the left storage space, temperature unevenness in both the storage spaces can be limited.

[0024]

The partition 10 has partition-side rail structures 11 extending in the depth direction of the refrigerator 100 to be in a horizontal position. At a preset height from
25 the lower end 10c, each of the partition-side rail structures 11 protrudes from the partition body 10a, with a preset length, in the width direction of the refrigerator 100. The partition-side rail structures 11 guide the lower left shelf 5 and the lower right shelf 6 in the depth direction and support the lower left shelf 5 and the lower right shelf 6. A partition-side rail structure 11a1 and a partition-side rail structure 11b1 are first rail
30 structures. In addition, a partition-side rail structure 11a2 and a partition-side rail

structure 11b2 are second rail structures. The partition-side rail structure 11a1 and the partition-side rail structure 11b1 are mounted on a left partition surface 10d of the partition body 10a. The partition-side rail structure 11a2 and the partition-side rail structure 11a2 are mounted on the right partition surface 10e of the partition body 10a.

5 The partition-side rail structure 11b1 and the partition-side rail structure 11b2 are mounted higher, in the height direction, than the partition-side rail structure 11a1 and the partition-side rail structure 11a2, respectively. Here, in Fig. 6 and Fig. 7, each of the partition-side rail structure 11a2 and the partition-side rail structure 11b2 is divided into two portions at a position in the middle and is a two series structure. However, such a
10 configuration is not the only option. The partition-side rail structure 11 may have a single structure without any division or may have a structure of three or more series.

[0025]

On the other hand, as Fig. 4 illustrates, a left inner wall surface 101a on the left and a right inner wall surface 101b on the right of the refrigerator compartment 101 that
15 respectively face the left partition surface 10d on the left and the right partition surface 10e on the right have storage compartment-side rail structures 106. The storage compartment-side rail structures 106 are paired with the partition-side rail structures 11 on the partition 10, guide the lower left shelf 5 and the lower right shelf 6 in the depth direction, and support the lower left shelf 5 and the lower right shelf 6. A storage
20 compartment-side rail structure 106a1 is a first storage compartment-side rail structure. In addition, a storage compartment-side rail structure 106a2 and a storage compartment-side rail structure 106b2 are second storage compartment-side rail structures. The storage compartment-side rail structure 106a1 is mounted on the left inner wall surface 101a and positioned at the same height as or a height near the height
25 of the partition-side rail structure 11a1. Similarly, the storage compartment-side rail structure 106a2 is mounted on the right inner wall surface 101b and positioned at the same height as or a height near the height of the partition-side rail structure 11a2. In addition, the storage compartment-side rail structure 106b2 is mounted on the right inner wall surface 101b and positioned at the same height as or a height near the height
30 of the partition-side rail structure 11b2. Each of the left inner wall surface 101a on the

left and the right inner wall surface 101b on the right of the refrigerator compartment 101 has a middle-shelf rail structure 107 that guides the middle shelf 4 in the depth direction and supporting the middle shelf 4.

[0026]

5 As Fig. 6 illustrates, the partition 10 has a holding portion 11c2 and a holding portion 11d2, at the rear of the right partition surface 10e. Each of the holding portion 11c2 and the holding portion 11d2 protrudes, with a preset length, in the width direction of the refrigerator 100. The holding portion 11c2, with the partition-side rail structure 11a2, and the holding portion 11d2, with the partition-side rail structure 11a2, prevent
10 the movement, in the height direction, of the lower left shelf 5 and the lower right shelf 6 disposed on the partition-side rail structures 11. As Fig. 5 illustrates, the partition 10 also has a holding portion 11c1 and a holding portion 11d1, which are similar to the holding portions 11c2 and 11d2, at the rear of the left partition surface 10d.

[0027]

15 With the partition 10 having the above-described structure, as Fig. 4 illustrates, any one of the lower left shelf 5 and the lower right shelf 6 can be changed in mounting height or can be removed. Thus, a user of the refrigerator 100 can obtain the refrigerator 100, with excellent flexibility, enabling the user to adjust the capacities of the storage spaces between the lower left shelf 5 and the middle shelf 4, between the lower
20 right shelf 6 and the middle shelf 4, between the lower left shelf 5 and the floor shelf 7, and between the lower right shelf 6 and the floor shelf 7. In particular, the storage space, around the floor shelf 7, in a lower region of the refrigerator compartment 101 is not divided into spaces in the width direction. Thus, in the refrigerator compartment 101, the storage space between the lower left and right shelves 5 and 6 and the floor
25 shelf 7 can be used as a space required to have a large height of storage and also a space having a small height of storage such that the spaces fit foods, while storing ability is maintained.

[0028]

30 Here, regarding the configuration of the partition 10 illustrated in Fig. 4 and other figures, the partition-side rail structures 11 on the left partition surface 10d are two-tier

partition-side rail structures 11: the partition-side rail structure 11a and the partition-side rail structure 11b, and the same applies to the partition-side rail structures 11 on the right partition surface 10e. On the right and the left of the partition body 10a, the partition-side rail structures 11a are positioned at the same height, and the partition-side rail structures 11b are positioned at the same height. However, such a configuration is not the only option. For example, the partition-side rail structures 11 provided on the partition 10 may have three or more tiers. In addition, although the partition-side rail structures 11 on both sides of the partition body 10a are positioned at the same height in the refrigerator 100 of Embodiment 1, the partition-side rail structure 11 on one side and the partition-side rail structure 11 on the other side may be positioned at different heights.

[0029]

As Fig. 7 illustrates, the partition-side rail structure 11 has a rail hole 12 recessed downward, in a portion of the top side that supports the storage shelf. Thus, such a portion to be the rail hole 12 does not have a face. Here, instead of the recessed shape, the rail hole 12 may have a through hole passing through the bottom surface of the partition-side rail structure 11. The partition-side rail structure 11a2 has a rail hole 12a2, and the partition-side rail structure 11b2 has a rail hole 12b2. Although not illustrated in Fig. 7, the partition-side rail structure 11a1 also has a rail hole 12a1, and the partition-side rail structure 11b1 also has a rail hole 12b1.

[0030]

As Fig. 6 and Fig. 7 illustrate, the partition 10 has a front mounting portion 13 on a front end portion of the top surface of the partition body 10a and has a rear mounting portion 14 on a rear end portion of the top surface of the partition body 10a. The front mounting portion 13 and the rear mounting portion 14 serve as mounting portions when the partition 10 is mounted on the middle shelf 4. The rear mounting portion 14 has a base portion 14a extending upward along the rear surface of the partition 10 and an engaging portion 14b elongated frontward from the upper end of the base portion 14a. The partition 10 further has wall surface portions 15. The wall surface portions 15 are disposed at two respective places, which are at the front and the rear of the upper end

of the partition body 10a. Each of the wall surface portions 15 is provided near a portion, of the partition 10, to be mounted on the middle shelf 4 and protrudes in the width direction from the partition body 10a along the bottom surface of the middle shelf 4. The front mounting portion 13, the rear mounting portion 14, and the wall surface portions 15 will be described later.

[0031]

Fig. 8 is a bottom view of the lower left shelf 5 and the lower right shelf 6 according to Embodiment 1. Fig. 9 is an enlarged view of region C1 in Fig. 8. Region C1 in Fig. 8 is a region, in the bottom surfaces of the lower left shelf 5 and the lower right shelf 6, disposed on the partition-side rail structures 11. As Fig. 8 and Fig. 9 illustrate, a shelf protrusion 8 is provided in a region in which the resin frame of each of the lower left shelf 5 and the lower right shelf 6 overlaps the corresponding partition-side rail structure 11 in the height direction when each of the lower left shelf 5 and the lower right shelf 6 is disposed on the corresponding partition-side rail structure 11 of the partition 10. The shelf protrusion 8 is provided on the bottom surface of the resin frame and directed to extend downward. Moreover, the shelf protrusion 8 is positioned further front, in the depth direction, than the center of the resin frame. That is, as Fig. 8 and Fig. 9 illustrate, the shelf protrusions 8 are provided to protrude downward, in a region of the lower left shelf 5 and the lower right shelf 6 in which the bottom surfaces of the lower left shelf 5 and the lower right shelf 6 are placed on the partition-side rail structures 11. The shelf protrusions 8 are provided at positions to be fitted in the rail holes 12 in the partition-side rail structures 11 when the lower left shelf 5 and the lower right shelf 6 are supported by the partition-side rail structures 11 in a normal condition.

[0032]

Fig. 10 is a bottom view illustrating the positional relationship between the lower left shelf 5, the lower right shelf 6, and the partition 10 according to Embodiment 1. Fig. 10 illustrates the lower left shelf 5 and the lower right shelf 6 being disposed on and fitted in the partition-side rail structures 11 of the partition 10. Line A-A is a line extending in the depth direction while passing through a position at which the partition-side rail structures 11 and the lower right shelf 6 overlap one another. In addition, line

B-B is a line passing through the rail holes 12 and the shelf protrusions 8. Region C2 represents a region around the shelf protrusions 8 and claw portions 9. In Fig. 10, the lower left shelf 5, the lower right shelf 6, and the partition 10 are viewed from the bottom side. Thus, in Fig. 10, the partition-side rail structures 11 (the partition-side rail structure 11a1 and the partition-side rail structure 11a2) of the partition 10 can be observed, which are further front than the lower left shelf 5 and the lower right shelf 6. In addition, the claw portions 9 hold, with the resin frames of the lower left shelf 5 and the lower right shelf 6, the partition-side rail structures 11 in the up-and-down direction. The claw portions 9 are provided at positions on the bottom surfaces of the resin frames of the lower left shelf 5 and the lower right shelf 6 and have a hook shape being bent outward. The claw portions 9 will be described later.

[0033]

Fig. 11 is a sectional view taken along line A-A in Fig. 10. Here, Fig. 11 illustrates, in the section taken along line A-A, a region in which the relationship between the shelf protrusion 8 and the partition-side rail structures 11 is illustrated. As Fig. 11 illustrates, when viewed from the side, the shelf protrusion 8 has, at the front, a front wall surface being substantially perpendicular and has an inclined surface at the rear. The front wall surface of the shelf protrusion 8 is positioned near the side wall surface of the recess of the rail hole 12 provided in the partition-side rail structure 11. When the lower left shelf 5 or the lower right shelf 6 is intended to be moved frontward, the front wall surface of the shelf protrusion 8 of each of the lower left shelf 5 or the lower right shelf 6 comes into contact with the side wall surface of the corresponding rail hole 12, and the lower left shelf 5 or the lower right shelf 6 is prevented from being moved. The shelf protrusion 8 also has the inclined surface at the rear. When a user mounts the lower left shelf 5 or the lower right shelf 6 on the partition 10 by moving the shelf to the rear of the refrigerator compartment 101, the inclined surface, at the rear, of the shelf protrusion 8 comes into contact with the front end of the corresponding partition-side rail structure 11, and the lower left shelf 5 or the lower right shelf 6 then runs onto the top surface of the partition-side rail structure 11. Thus, the user can

move, rearward, the lower left shelf 5 or the lower right shelf 6 to be mounted, without the shelf protrusion 8 being caught by the partition-side rail structure 11.

[0034]

Fig. 12 is an enlarged view of region C2 in Fig. 10. Fig. 12 illustrates a region around the shelf protrusions 8 and the claw portions 9 with the lower left shelf 5 and the lower right shelf 6 being disposed on the partition-side rail structures 11. Fig. 13 is a sectional view taken along line B-B in Fig. 10. In Fig. 13, the partition 10 is mounted on the middle shelf 4, the lower left shelf 5 and the lower right shelf 6 are disposed on the partition-side rail structures 11, and the shelf protrusions 8 have fallen in and inserted into the spaces of the rail holes 12. Region D represents a region around the rail holes 12 and the shelf protrusions 8. Fig. 14 is an enlarged view of region D in Fig. 13.

[0035]

As Figs. 12 and Fig. 14 illustrate, the shelf protrusion 8 having a protruding shape and provided on the bottom surface of each of the lower left shelf 5 and the lower right shelf 6 is fitted in and engaged with the rail hole 12 provided in the top surface of the corresponding partition-side rail structure 11. Thus, the mounted lower left shelf 5 and lower right shelf 6 are prevented from being moved in the depth direction of the partition-side rail structures 11. In such a manner, the lower left shelf 5 and the lower right shelf 6 are prevented from being moved in the depth direction, and there is thus no requirement to ensure an extra portion of an overlapping margin that is a region in which, in top view, the storage shelf overlaps the partition-side rail structure 11, for the purpose of preventing the overlapping margin from being reduced because of the movement of the storage shelf. Thus, it is possible to reduce the overlapping margin in which each of the lower left shelf 5 and the lower right shelf 6 overlaps on the corresponding partition-side rail structure 11, compared with a case in which the rail hole 12 and the shelf protrusion 8 are not provided. For example, during the use of the refrigerator compartment 101 without the lower right shelf 6, when a food comes into contact with the partition 10 from the left, the partition 10 is pushed rightward to move counterclockwise around a portion at which the partition 10 is mounted on the middle

shelf 4. In such an above-described operation, because the lower left shelf 5 tends to stay at the position as it is by the law of inertia, the partition-side rail structure 11 moves in a direction away from the lower left shelf 5 (that is, to the right), and the overlapping margin in which the lower left shelf 5 overlaps on the partition 10 is reduced.

5 Regarding the refrigerator 100 of Embodiment 1, when the partition 10 is moved in the width direction by a preset amount, the side wall of the rail hole 12 provided in the partition-side rail structure 11 comes into contact with the corresponding shelf protrusion 8 having a protruding shape and provided on the bottom surface of each of the lower left shelf 5 and the lower right shelf 6. The storage shelves supported by the partition-
10 side rail structures 11 then move while following the movement of the partition 10 (refer to Fig. 17, which will be described later) and ensures a minimum overlapping margin. Thus, the partition 10 can be prevented from being moved by an amount beyond a preset amount while a reduction in the overlapping margin is achieved.

[0036]

15 In addition, as Figs. 12 to 14 illustrate, the lower left shelf 5 and the lower right shelf 6 are provided such that the bottom surface of the resin frame of each of the lower left shelf 5 and the lower right shelf 6 is provided along the ends of the partition-side rail structures 11 and positioned outside the partition-side rail structures 11. In addition, as described above, each of the lower left shelf 5 and the lower right shelf 6 has the claw
20 portion 9. As Fig. 14 illustrates, the claw portion 9 has a claw support portion 9a extending downward and an engaging portion 9b extending from the distal end of the claw support portion 9a toward the partition body 10a. The engaging portion 9b is positioned below the corresponding partition-side rail structure 11 and has a region in which the engaging portion 9b overlaps the partition-side rail structure 11.

25 [0037]

As described above, each of the lower left shelf 5 and the lower right shelf 6 has the claw portion 9 on the bottom surface of the resin frame. Thus, even when, for example, a food comes into contact with and lifts upward a portion, of the bottom surface of the lower left shelf 5, near the front end of the lower left shelf 5, the engaging
30 portion 9b of the claw portion 9 comes into contact with the bottom surface of the

partition-side rail structure 11, and the same applies to the lower right shelf 6. Thus, in the refrigerator 100 of Embodiment 1, the lower left shelf 5 and the lower right shelf 6 can be prevented from being moved in the up-and-down direction. By having the claw portion 9, each of the lower left shelf 5 and the lower right shelf 6 can be prevented from being moved in the up-and-down direction beyond the distance between the top surface of the engaging portion 9b and the bottom surface of the partition-side rail structure 11 when being lifted from below. Thus, the lower left shelf 5 and the lower right shelf 6 can be prevented from being damaged and deformed, for example. In addition, as Fig. 14 illustrates, the distance from the top surface of the engaging portion 9b to the bottom surface of the partition-side rail structure 11 is larger than the height of the shelf protrusion 8 provided on each of the lower left shelf 5 and the lower right shelf 6. Thus, a user can easily remove the lower left shelf 5 and the lower right shelf 6 from the partition 10.

[0038]

Fig. 15 is a front view of the refrigerator compartment 101 with the partition 10 that is mounted in the refrigerator 100 according to Embodiment 1 being inclined. Fig. 16 is an enlarged view of region E1 in Fig. 15. Fig. 17 illustrates region E2 in Fig. 15. Fig. 18 is a bottom view of the middle shelf 4 according to Embodiment 1. Line F-F is a line, on the middle shelf 4, extending in the depth direction in which the partition 10 is mounted. Fig. 19 is a sectional view of the middle shelf 4 according to Embodiment 1, taken along line F-F in Fig. 18. Fig. 20 is a top view of the middle shelf 4 according to Embodiment 1. Fig. 21 is an enlarged view of region G of the middle shelf 4 in Fig. 20. Fig. 22 is a top view illustrating the relationship between the middle shelf 4 and the partition 10 when the partition 10 is mounted on the middle shelf 4. Fig. 23 is an enlarged view of region H in Fig. 22. Here, region H is the same region as region G in Fig. 21. In addition, line J-J is a line passing through the center, in the width direction, of the rear mounting portion 14. Fig. 24 is a sectional view of the middle shelf 4, taken along line L-L in Fig. 23. Fig. 25 is a sectional view of the middle shelf 4, taken along line K-K in Fig. 23.

[0039]

As Fig. 16 illustrates, the partition 10 has the above-described wall surface portions 15 at two respective places, near the upper end of the partition body 10a, at which the partition 10 is mounted on the middle shelf 4. Each of the wall surface portions 15 protrudes in the width direction from the partition body 10a and has a surface that is in contact with or substantially parallel to the bottom surface of a glass surface portion 4a of the middle shelf 4. In front view of the refrigerator compartment 101, the wall surface portion 15 appears to extend diagonally upward.

[0040]

As Fig. 15 illustrates, when receiving force applied in the width direction, the partition 10 moves to rotate around the front mounting portion 13 and the rear mounting portion 14, which serve as insertion portions (described later), and the partition 10 is sometimes inclined to the height direction. For this reason, as Fig. 16 illustrates, the partition 10 of Embodiment 1 has the wall surface portions 15 protruding in the width direction from the partition body 10a, and, when the partition 10 is intended to be rotated, the bottom surface of the middle shelf 4 onto which the partition 10 is fitted comes into contact with the wall surface portion 15 to obstruct the rotation of the partition 10. Thus, with the refrigerator 100 of Embodiment 1, it is possible to prevent the partition 10 from rotating and prevent the partition 10 from being excessively inclined. In addition, the partition 10 has the wall surface portions 15 at two respective places, which are at the front and the rear of the upper end of the partition body 10a, and the partition 10 can thereby be prevented from being moved even when force is applied, in the width direction, to any position on the partition 10.

[0041]

As described above, the middle shelf 4 has the glass surface portion 4a, which is a flat glass plate having high rigidity, and has a resin frame 4b made of a resin. As Fig. 19 illustrates, regarding the middle shelf 4 of Embodiment 1, the resin covers the bottom surface of the glass surface portion 4a in addition to the front, rear, left, right end portions and the edge portion of the top surface of the glass surface portion 4a by which the frame of the glass surface portion 4a is formed. Here, the resin frame 4b includes the resin covering the bottom surface. The resin frame 4b of the middle shelf 4 has a

fitting portion 16 for mounting the partition 10. The fitting portion 16 protrudes further downward than the resin covering the bottom surface of the glass surface portion 4a, at a position near the front end of the glass surface portion 4a, and the fitting portion 16 is bent rearward to have a gap having a preset height. The fitting portion 16 is open toward the rear of the middle shelf 4 and has a bag shape into which the front mounting portion 13 of the partition 10 is inserted. The middle shelf 4 further has, in the resin frame 4b, at the rear, an engaged portion 23 to which the rear mounting portion 14 is mounted. The middle shelf 4 further has a design surface portion 24, at a position further front than the engaged portion 23. When the rear mounting portion 14 is mounted on the resin frame 4b, the design surface portion 24 is positioned further front than the front surface of the rear mounting portion 14.

[0042]

As Fig. 6 and Fig. 7, which are described above, illustrate, the partition 10 has the front mounting portion 13 and the rear mounting portion 14. Here, the front mounting portion 13 has, in a top surface portion of the partition body 10a, a protrusion 13a protruding further frontward than the front surface of the partition body 10a and serving as an inserting portion that is to be inserted into the fitting portion 16 provided on the middle shelf 4. In addition, the rear mounting portion 14 protrudes further upward than the top surface of the partition body 10a and serves as a securing claw portion that catches the middle shelf 4 from above. The rear mounting portion 14 has, as described above, the base portion 14a and the engaging portion 14b. As Fig. 20 and Fig. 22 illustrate, the middle shelf 4 has an engagement recess 17 in a portion, of the resin frame 4b, at the rear of the middle shelf 4. The base portion 14a is a portion to be inserted into the engagement recess 17 when the partition 10 is mounted on the middle shelf 4. The engaging portion 14b is positioned higher than the top surface of the resin frame 4b at the rear of the middle shelf 4. Here, as Fig. 23 illustrates, in the width direction and the depth direction in top view, the engaging portion 14b is larger than the engagement recess 17 that is illustrated by the broken line in Fig. 23.

Regarding the refrigerator 100 of Embodiment 1, because the partition 10 is inserted frontward from the rear side when being mounted on the middle shelf 4, the front

mounting portion 13 having the protrusion 13a is positioned at the front of the partition 10, and the rear mounting portion 14 having the engaging portion 14b is positioned at the rear of the partition 10. Here, when the partition 10 is inserted frontward from the rear side, the front mounting portion 13 serving as the insertion portion is positioned at the rear of the partition 10, and the rear mounting portion 14 serving as the securing claw portion is positioned at the front of the partition 10.

[0043]

As Fig. 21, Fig. 23, Fig. 24, and Fig. 25 illustrate, along the edge of the engagement recess 17, an overlapping margin 17a on which the engaging portion 14b overlaps is ensured in the depth direction and the width direction. The broken line in Fig. 23 represents the engagement recess 17.

[0044]

There is a gap between the bottom surface of the engaging portion 14b and the top surface of the partition body 10a. In mounting the partition 10, a user inserts the base portion 14a into the engagement recess 17 by sliding the partition body 10a frontward from the rear while pressing the top surface of the partition body 10a against the resin frame 4b from the bottom side of the middle shelf 4. The gap is designed to have a width sufficient to enable insertion of a rear end portion of the resin frame 4b mounted to cover the bottom surface, the rear end, and a rear edge portion of the top surface of the glass surface portion 4a of the middle shelf 4.

[0045]

In addition, regarding the overlapping margin 17a, the larger the overlapping margin 17a in the insertion direction of the partition 10 is, the more hardly the mounted partition 10 comes out, and there is exhibited an effect of preventing the partition 10, the lower left shelf 5, and the lower right shelf 6 from falling. Here, the rear mounting portion 14 receives force due to the load applied to the lower left shelf 5 and the lower right shelf 6 when foods are stored on the lower left shelf 5 and the lower right shelf 6. When a distal end of the engaging portion 14b of the rear mounting portion 14 is extended to enlarge the overlapping margin 17a in the insertion direction, large moment is applied to the rear mounting portion 14, because of the received force, to open a

proximal portion of the protruding-shaped engaging portion 14b, and the rear mounting portion 14 is likely to be broken. For this reason, as Fig. 24 illustrates, the rear mounting portion 14 is provided such that, in top view, the position of the front surface of the engaging portion 14b overlaps the glass surface portion 4a, of the middle shelf 4, having high strength. As Fig. 25 illustrates, the overlapping margin 17a is also ensured in the width direction by the engaging portion 14b having a width larger than the width of the engagement recess 17 of the middle shelf 4. By the overlapping margin 17a also being ensured in the width direction, fitting with high strength can be achieved.

[0046]

Fig. 26 is a top view illustrating the relationship between the glass surface portion 4a and the resin frame 4b of the middle shelf 4 according to Embodiment 1. The middle shelf 4 has, as described above, the rectangular glass surface portion 4a and the resin frame 4b covering an outer peripheral portion and the bottom surface of the glass surface portion 4a. In Fig. 26, to illustrate the region in which the resin frame 4b and the glass surface portion 4a overlap one another, the resin frame 4b is illustrated by the broken line, and the glass surface portion 4a is illustrated by the solid line. As Fig. 26 illustrates, the glass surface portion 4a is held between portions of the resin frame 4b and has an opening 19 for reinforcement in a region in which the glass surface portion 4a and the resin frame 4b overlap one another in the height direction (the outer edge, of the glass surface portion 4a, covered with the resin frame 4b). The opening 19 is a through-hole, which passes through the glass surface portion 4a in the up-and-down direction. The opening 19 is provided in a region in which, when the partition 10 is mounted on the resin frame 4b, the load is applied to the middle shelf 4 by the rear mounting portion 14 provided at the rear of the top surface of the partition 10.

Specifically, with the rear mounting portion 14 being mounted on the middle shelf 4, the opening 19 is provided in a portion at the front of the rear mounting portion 14 or provided near the right or the left of the portion at the front of the rear mounting portion 14. The inside of the opening 19 is filled with a resin material similar to the resin for the resin frame 4b. In the resin frame 4b covering the glass surface portion 4a, the resin covering the top surface of the glass surface portion 4a and the resin covering the

bottom surface of the glass surface portion 4a are connected to one another by the resin material filling the opening 19.

[0047]

Fig. 27 illustrates the relationship between the middle shelf 4 having the glass surface portion 4a having the opening 19 and the partition 10 according to Embodiment 1. Fig. 28 illustrates the relationship between the middle shelf 4 having the glass surface portion 4a having no opening 19 and the partition 10. Fig. 27 and Fig. 28 are sectional views taken along line J-J in Fig. 23.

[0048]

For example, when a food is placed on the lower left shelf 5 or the lower right shelf 6, the load may be applied to the middle shelf 4 through the rear mounting portion 14. At this time, in the resin frame 4b, the load may be applied to a side portion, of the resin frame 4b, not covering the top surface or the bottom surface of the glass surface portion 4a. In such a case, regarding the structure shown in Fig. 28 having no opening 19 in the glass surface portion 4a, a portion, of the resin frame 4b, covering the top surface of the glass surface portion 4a in the vicinity of the rear mounting portion 14 receives the force applied by the rear end portion of the glass surface portion 4a and is deformed. Thus, the front end of the resin frame 4b, which covers the top surface of the glass surface portion 4a and is positioned away from the rear end portion of the glass surface portion 4a, rises up to be separated from the top surface of the glass surface portion 4a, and quality of design is thereby reduced.

[0049]

For this reason, as in Fig. 27, the glass surface portion 4a of the middle shelf 4 has the opening 19, and the resin material filling the opening 19 connects the resin covering the top surface of the glass surface portion 4a and the resin covering the bottom surface of the glass surface portion 4a to one another. Thus, the resin frame 4b covering the top surface of the glass surface portion 4a, in the vicinity of the rear mounting portion 14, can be prevented from being deformed, and the front end of the resin frame 4b covering the top surface of the glass surface portion 4a can be

prevented from rising up and being separated from the top surface of the glass surface portion 4a.

[0050]

Fig. 29 is a front view illustrating the positional relationship between the middle shelf 4, the partition 10, and the air passage decorative panel 20a of the refrigerator compartment 101 according to Embodiment 1. Fig. 30 is a perspective view of the air passage decorative panel 20a of the refrigerator compartment 101 according to Embodiment 1. Fig. 31 is an enlarged view of region M in Fig. 30.

[0051]

As described above, the refrigerator compartment 101 has the design panel 20 serving as the rear inner wall surface and the cooling duct 21. As Fig. 29, Fig. 30, and Fig. 31 illustrate, the air passage decorative panel 20a, which is a portion of the design panel 20, has panel engagement portions 20c. The panel engagement portions 20c are provided on the front surface of the panel, specifically, at positions at which both the sides of the partition 10 are positioned, and the panel engagement portions 20c are arranged vertically by protruding to the positions of both the sides of the partition 10.

[0052]

Thus, even when force is applied to the partition 10 in the width direction inside the refrigerator compartment 101, the left partition surface 10d or the right partition surface 10e of the partition body 10a comes into contact with the panel engagement portion 20c, and the partition 10 can thereby be prevented from being moved in the width direction and can be prevented from being deformed.

[0053]

Embodiment 2

Regarding the above-described refrigerator 100 of Embodiment 1, the partition 10 has the partition-side rail structures 11 on both the sides of the partition body 10a. The partition 10, which has the partition-side rail structures 11 on both the sides, becomes stable when supporting the lower left shelf 5 and the lower right shelf 6. However, such a configuration is not the only option. Even when the partition 10 has the

partition-side rail structure 11 on any one of the sides, the storage spaces separated by the partition 10 can have different dimensions in the height direction.

Reference Signs List

[0054]

5 1: lower drawer case, 2: upper drawer case, 3: upper shelf, 4: middle shelf, 4a: glass surface portion, 4b: resin frame, 5: lower left shelf, 6: lower right shelf, 7: floor shelf, 8: shelf protrusion, 9: claw portion, 9a: claw support portion, 9b: engaging portion, 10: partition, 10a: partition body, 10b: communication opening, 10c: lower end, 10d: left partition surface, 10e: right partition surface, 11, 11a, 11a1, 11a2, 11b, 11b1, 11b2: partition-side rail structure, 11c1, 11c2, 11d1, 11d2: holding portion, 12, 12a1, 12a2, 12b1, 12b2: rail hole, 13: front mounting portion, 13a: protrusion, 14: rear mounting portion, 14a: base portion, 14b: engaging portion, 15: wall surface portion, 16: fitting portion, 17: engagement recess, 17a: overlapping margin, 19: opening, 20: design panel, 20a: air passage decorative panel, 20b: air outlet, 20c: panel engagement portion, 21: cooling duct, 23: engaged portion, 24: design surface portion, 100: refrigerator, 100a: refrigerator body, 101: refrigerator compartment, 101a: left inner wall surface, 101b: right inner wall surface, 102: ice-making compartment, 103: versatile compartment, 104: freezer compartment, 105: vegetable compartment, 106, 106a1, 106a2, 106b2: storage compartment-side rail structure, 107: middle-shelf rail structure

20

CLAIMS

[Claim 1]

A refrigerator comprising:

a refrigerator body whose front has an opening and that has a storage
5 compartment serving as a storage space;

a plurality of storage shelves disposed, inside the storage compartment, at
different positions in a height direction;

storage compartment-side rail structures that are mounted on side wall surfaces
of the storage compartment and support the plurality of storage shelves; and

10 a partition having a partition body that is mounted on a bottom portion of a first
storage shelf among the plurality of storage shelves, extends downward from the first
storage shelf, and serves as a wall for dividing, in a width direction, an inside of the
storage compartment into a plurality of storage spaces, and partition-side rail structures
that are mounted on both sides of the partition body and support the plurality of storage
15 shelves while being paired with the storage compartment-side rail structures,

the partition being mounted on the first storage shelf such that the partition is
detachable from the first storage shelf,

the storage compartment-side rail structures and the partition-side rail structures
being arranged, in the height direction, in one or more tiers.

20 [Claim 2]

The refrigerator of claim 1,

wherein the storage compartment has an air outlet in a rear inner wall surface,
and

wherein the partition has a plurality of communication openings through which
25 the plurality of storage spaces separated from one another in a width direction
communicate with one another, the air outlet is positioned in one of the plurality of
storage spaces separated from one another in a width direction, and the partition is
mounted at a position at which the partition does not overlap the air outlet in front view.

[Claim 3]

30 The refrigerator of claim 1 or claim 2,

wherein the first storage shelf has a flat plate having high rigidity, a resin frame covering an edge portion of the flat plate, and a fitting portion being open,

wherein the partition has a front end portion and a rear end portion of a top surface of the partition body and a mounting portion on each of the front end portion and the rear end portion, and

wherein, between the mounting portions,

the mounting portion at a front in an insertion direction regarding mounting of the partition on the first storage shelf serves as a front mounting portion having a protrusion to be inserted into the fitting portion of the first storage shelf, and

the mounting portion at a rear in the insertion direction regarding mounting of the partition on the first storage shelf serves as a rear mounting portion having an engaging portion whose distal end overlaps the flat plate in top view and that is caught in a top surface of the first storage shelf.

[Claim 4]

The refrigerator of claim 3,

wherein the first storage shelf has an engagement recess into which the rear mounting portion is inserted and that prevents the partition from being moved in a width direction, and

wherein, when the rear mounting portion is inserted into the engagement recess, the engaging portion is positioned higher than the engagement recess and has a length larger than a length of the engagement recess in a width direction.

[Claim 5]

The refrigerator of claim 3 or claim 4, wherein a top surface and a bottom surface of the flat plate are covered with the resin frame, and a portion in which the engaging portion of the rear mounting portion is caught has an opening being filled with a resin for connecting a resin covering the top surface of the flat plate and a resin covering the bottom surface of the flat plate to one another.

[Claim 6]

The refrigerator of any one of claims 1 to 5, wherein the partition has wall surface portions extending in a width direction from both sides of the partition body, along a surface, in a width direction, of the first storage shelf.

[Claim 7]

5 The refrigerator of any one of claims 1 to 6, wherein the storage compartment has, on a rear inner wall surface, panel engagement portions that protrude to both sides of the partition body and that prevent the partition from being moved in the width direction.

[Claim 8]

10 The refrigerator of any one of claims 1 to 7,
 wherein a storage shelf of the plurality of storage shelves has a shelf protrusion having a protruding shape on a portion of a bottom surface of the storage shelf that is supported by one of the partition-side rail structures,

 wherein the one of the partition-side rail structures has, in a portion of a top
15 surface of the one of the partition-side rail structures, a rail hole having a recessed shape into which the shelf protrusion is inserted, and

 wherein the rail hole is provided with a side wall with which the shelf protrusion is in contact when the partition is moved in a width direction by a preset amount.