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(54) **Refrigerator having a bottle rack**

(57) Disclosed is a refrigerator. The refrigerator includes a support plate (11) and at least one bottle rack (2, 3). Each bottle rack (2, 3) includes a receiving shell (21, 31) having a longitudinal groove (22, 32) for receiving a bottle and a support leg (23, 33) extending downwards from the receiving shell (21, 31) and supported on the support plate (11). As proposed by the present invention, at least one bottle rack (2, 3) includes an accommodating

space (25, 35) extending downwards from an upper surface (26, 36) of the receiving shell (21, 31) so as to receive a support leg (33, 23) of another bottle rack (3, 2) stacked on the at least one bottle rack (2, 3). Accordingly, at least two bottle racks can be stably stacked together to keep the bottle, which helps to reduce occupation of a usage space of the refrigerator by idle bottle racks.

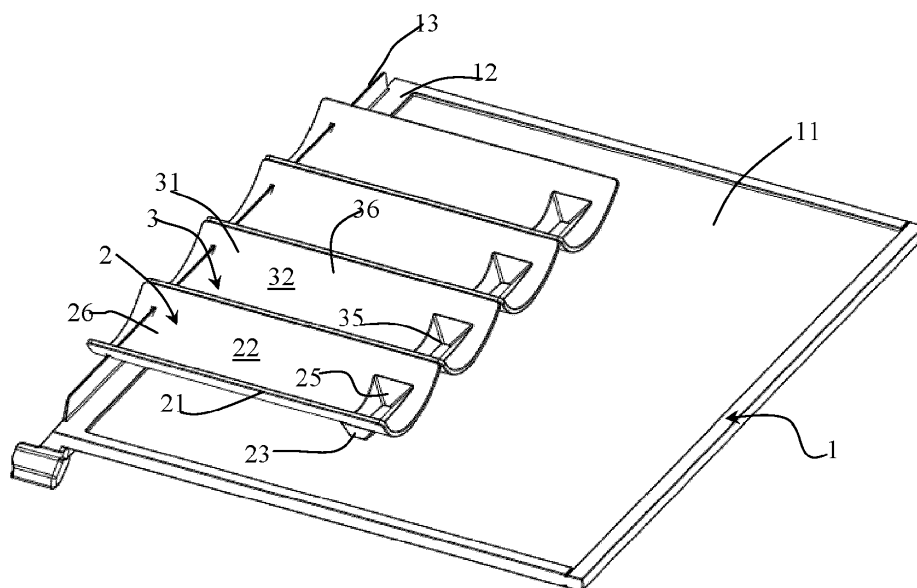


FIG. 1

Description

[0001] The present invention relates to a refrigerator, and in particular, to a refrigerator having a bottle rack.

[0002] WO2005/090883 discloses a bottle rack for a refrigerator, wherein the bottle rack includes a receiving shell forming at least one longitudinal groove for receiving a bottle. One end of the bottle rack is detachably inserted into a frame of a storage shelf, the bottle rack has support legs extending downwards from a lower surface of the receiving shell, and the support legs are supported on the shelf.

[0003] When one bottle rack is stacked on another bottle rack, a support leg of the bottle rack located above is supported on an inner surface of a curved receiving shell of the bottle rack located below, so that the stacked bottle racks cannot stably store any wine bottle. When the refrigerator is provided with a plurality of bottle racks and the user only needs to use one or some bottle racks, a waste of a usage space of the refrigerator will be rendered if idle bottle racks are placed in the refrigerator.

[0004] An objective of the present invention is to overcome the above at least one technical problem, and particularly to provide a refrigerator favourable for improving space utilization.

[0005] The objective can be achieved through features the independent claim. The preferable embodiments of the present invention are subject matters of the accompanying drawings, the specification and the dependent claims.

[0006] Therefore, an aspect of the present invention relates to a refrigerator, which includes a support plate and at least one bottle rack, wherein the bottle rack includes a receiving shell having a longitudinal groove for receiving a bottle, and a support leg extending downwards from the receiving shell and supported on the support plate; characterized in that the bottle rack includes an accommodating space extending downwards from an upper surface of the receiving shell so as to at least partially receive a support leg of another bottle rack stacked on the at least one bottle rack.

[0007] As the support leg of the bottle rack stacked above may be at least partially inserted into the accommodating space extending downwards from the upper surface of the receiving housing, this helps to make the bottle rack stably supported above the bottle rack having the accommodating space. Thus, the user may longitudinally store a bottle in a groove of the bottle rack stacked above, which facilitates the user to more flexibly use the bottle rack and may improve space utilization of the refrigerator. For example, when it is only necessary to use some bottle racks to store bottles, some unused bottle racks may be stacked to save the space.

[0008] It should be understood that, in the embodiments of the present invention, there may be only one or some bottle racks in the plurality of bottle racks having accommodating spaces for receiving support legs of the rest arbitrary or particular bottle racks, and apparently, it

is also feasible that each bottle rack is provided with an accommodating space adapted to receive the support leg of any one of the rest bottle racks, for example, when all the bottle racks have the same structure and size, the user may freely stack any two bottle racks when necessary.

[0009] It should be understood that, in the embodiments of the present invention, each bottle rack may have one or more grooves to respectively place wine bottles. Each bottle rack may have the same number of grooves, or may have the different number of grooves, for example, one or some bottle racks have a groove, while other bottle racks may have two or more grooves.

[0010] In addition, "a plurality of bottle racks" herein should cover two or more bottle racks.

[0011] Preferably, the accommodating space may include a through hole penetrating the receiving housing. In an alternative embodiment, the accommodating space also may be formed by a concave portion, which is recessed downwards, of the receiving housing. The through hole has the advantage that material can be saved.

[0012] Preferably, the support leg of the at least one bottle rack is disposed around the accommodating space. This means that each support leg can be stacked on another support leg in a space-saving manner.

[0013] Preferably, the support leg of the at least one bottle rack defines at least a part of the boundary of the accommodating space.

[0014] Preferably, the accommodating space is located in the corresponding support leg. This provides a possibility that the accommodating space and the support leg may be formed at the same time through a simple manufacturing process and/or mould, and helps to avoid significant complication of the bottle rack.

[0015] Preferably, the accommodating space of the at least one bottle rack and the support leg of the another bottle rack are disposed in a shape matching manner. This helps to stably support the bottle rack stacked above on the bottle rack below.

[0016] Preferably, the accommodating space is tapered in a downward direction. This not only facilitates the bottle rack above to be inserted into the accommodating space of the bottle rack below, but also facilitates the support leg of the bottle rack above to be supported on an inner wall of the accommodating space.

[0017] Preferably, the plurality of bottle racks have the same shape and size. The refrigerator of the present invention therefore preferably comprises a plurality of bottle racks.

[0018] Preferably, each of the bottle racks includes a connecting portion, the connecting portions are detachably connected to a frame connected to an edge of the support plate, and in a stacked state, the connecting portions of the bottle rack located above and the bottle rack located below are connected to the frame.

[0019] Preferably, in a stacked state, a receiving shell of the another bottle rack among the plurality of bottle

racks is in surface contact with a pair of opposite upper edge regions of the receiving shell of the at least one bottle rack. This particularly helps to prevent the stacked bottle racks from shaking, thereby improving stability of the stacked bottle racks.

[0020] Preferably, in a stacked state, the support leg of the another bottle rack among the plurality of bottle racks is supported on an inner side of the support leg of the at least one bottle rack in a shape matching manner. This helps to prevent the stacked bottle racks from shaking, thereby improving stability of the stacked bottle racks.

[0021] The structure and other invention objectives as well as beneficial effects of the present invention will be clearer and more comprehensible with reference to the accompanying drawings and the description about the preferable embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] As a part of the specification and for providing further comprehension about the present invention, the following accompanying drawings illustrate the specific embodiments of the present invention, and describe the principle of the present invention together with the specification. Wherein,

FIG. 1 is a schematic three-dimensional view of a combination of a shelf and a bottle rack for a refrigerator according to a preferable embodiment of the present invention;

FIG. 2 is a schematic three-dimensional view of a bottle rack according to a preferable embodiment of the present invention;

FIG. 3 is a schematic three-dimensional view of a combination of a shelf and a bottle rack according to a preferable embodiment of the present invention, wherein two bottle racks are in a stacked state; and

FIG. 4 is a schematic sectional view opened along A-A in FIG. 3.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0023] FIG. 1 is a schematic three-dimensional view of a combination of a shelf and a bottle rack for a refrigerator according to a preferable embodiment of the present invention. Referring to FIG. 1, a shelf 1 is adapted to be mounted in a storage chamber of the refrigerator (not shown), for storing food to be cooled. A plurality of bottle racks are supported on the shelf 1. In FIG. 1, four bottle racks are supported on the shelf 1, but only two bottle racks 2, 3 are marked.

[0024] The shelf 1 includes a horizontal support plate 11 and a frame 12 connected to an edge of the support plate 11. In this embodiment, the frame 12 is disposed

along four edges of the support plate 11, and in an alternative embodiment, the frame 12 also may be disposed along a part of the edges of the support plate 1, for example, disposed along a rear edge and a front edge of the support plate 11. The portion of the frame 12 disposed along the rear edge of the support plate 11 includes a projecting plate 13 extending vertically upwardly.

[0025] Referring to FIG. 1 and FIG. 2, each of the bottle racks 2, 3 is manufactured separately and has the same shape and size. Each of the bottle racks 2, 3 includes a receiving shell 21, 31 having a longitudinal groove 22, 32 for receiving a bottle and a support leg 23, 33 extending downwards from the receiving shell 21, 31 and supported on the support plate 11. The support leg 23, 33 may extend downwards from a lower surface of the receiving shell 21, 31.

[0026] A rear end of each of the bottle racks 2, 3 has a connecting portion 27, 37 for being inserted into the frame 12. In this embodiment, the connecting portion 27, 37 is formed by curved elongated holes 271, 371 extending in a circumferential direction of the receiving shell 21, 31 and penetrating the receiving shell 21, 31. The projecting plate 13 is inserted into the elongated holes 271, 371 to assemble the bottle racks 2, 3 on the shelf 1. In this embodiment, the bottle racks 2, 3 may slide left and right along the projecting plate 13, but movement of the bottle racks 2, 3 in front and back directions is restricted.

[0027] By connecting the bottle racks 2, 3 to the frame 12 and supporting the support leg 23, 33 on the support plate 11, each of the bottle racks 2, 3 may be stably mounted on the shelf 1 to allow bottles to be stored.

[0028] Referring to FIG. 1 to FIG. 4, in order to enable the bottle racks 2, 3 to be stacked longitudinally and stably keep the bottles, each of the bottle racks 2, 3 includes an accommodating space 25, 35 extending downwards from an upper surface 26, 36 of the receiving shell 21, 31.

[0029] The accommodating space 25, 35 includes a through hole 28, 38 penetrating the receiving shell 21, 31. The support leg 23, 33 of the bottle racks 2, 3 is disposed along the accommodating space 25, 35. In this embodiment, the accommodating space 25, 35 is hollow, so as to locate the accommodating space 25, 35 into the corresponding support leg 23, 33. The boundary of the accommodating space 25, 35 is defined by the support leg 23, 33.

[0030] The support leg 23, 33 and the accommodating space 25, 35 located therein are tapered in a downward direction. In this embodiment, the support leg 23, 33 is in a hollow chamfer cone shape.

[0031] Preferably, the accommodating space 25, 35 of the bottle racks 2, 3 and the support leg 33, 23 of the another bottle rack 3, 2 are disposed in a shape matching manner. In this embodiment, the accommodating space 25, 35 is also in a hollow pyramid frustum shape.

[0032] As shown in FIG. 4, when one bottle rack 3 is stacked on another bottle rack 2, the accommodating space 25 of the bottle rack 2 located below is adapted to at least partially receive the support leg 33 of the bottle

rack 3 located above, and vice versa.

[0033] In a stacked state, the support leg 33 of the bottle rack 3 located above is supported on an inner side of the support leg 23 of the bottle rack 2 located below in a shape matching manner. Preferably, the receiving shell 31 of the bottle rack 3 located above is in surface contact with a pair of opposite upper edge regions 29 of the receiving shell 21 of the bottle rack 2 located below. In the stacked state, the connecting portions 27, 37 of the two bottle racks 2, 3 both may be engaged with the frame 12.

[0034] As the two bottle racks 2, 3 may be stably stacked together, the bottle rack 3 located above may still be used to store a bottle.

[0035] Various embodiments of individual parts described with reference to FIG. 1 to FIG. 4 can be combined with each other in any given manners, so as to achieve the advantages of the present invention. In addition, the present invention is not limited to the illustrated embodiments, and generally, other means except the illustrated means also may be used, as long as the means can achieve the same effect.

List of reference numerals

[0036]

1	shelf	
2	bottle rack	
3	bottle rack	
11	support plate	
12	frame	
13	projecting plate	
21	receiving shell	
23	support leg	
25	accommodating space	
26	upper surface	
27	connecting portion	
28	through hole	
29	upper edge region	
31	receiving shell	
33	support leg	
35	accommodating space	
36	upper surface	
37	connecting portion	
38	through hole	
39	upper edge region	
271	elongated hole	
371	elongated hole	

Claims

1. A refrigerator, comprising:

a support plate (11); and at least one bottle rack (2, 3), wherein the bottle rack (2, 3) comprises a receiving shell (21, 31) having a longitudinal groove (22, 32) for receiving a bottle, and a sup-

port leg (23, 33) extending downwards from the receiving shell (21, 31) and supported on the support plate (11);

characterized in that the bottle rack (2, 3) comprises an accommodating space (25, 35) extending downwards from an upper surface (26, 36) of the receiving shell (21, 31) so as to receive a support leg (33, 23) of another bottle rack (2, 3) stacked on the at least one bottle rack (2, 3).

2. The refrigerator according to claim 1, **characterized in that** the accommodating space (25, 35) comprises a through hole (28, 38) penetrating the receiving shell (21, 31).

3. The refrigerator according to claim 1 or 2, **characterized in that** the accommodating space is formed by a concave portion, which is recessed downwards, of the receiving housing.

4. The refrigerator according to any one of the preceding claims, **characterized in that** the support leg (23, 33) of the at least one bottle rack (2, 3) is disposed along the accommodating space (25, 35).

5. The refrigerator according to any one of the preceding claims, **characterized in that** the support leg (23, 33) of the at least one bottle rack (2, 3) defines at least a part of the boundary of the accommodating space (25, 35).

6. The refrigerator according to any one of the preceding claims, **characterized in that** the accommodating space (25, 35) is located within the corresponding support leg (23, 33).

7. The refrigerator according to any one of the preceding claims, **characterized in that** the accommodating space (25, 35) of the at least one bottle rack (2, 3) and the support leg (33, 23) of the another bottle rack (3, 2) are disposed in a shape matching manner.

8. The refrigerator according to any one of the preceding claims, **characterized in that** the accommodating space (25, 35) is tapered in a downward direction.

9. The refrigerator according to any one of the preceding claims, **characterized in that** a plurality of bottle racks are provided which have the same shape and size.

10. The refrigerator according to any one of the preceding claims, **characterized in that** the bottle rack comprises a connecting portion (27, 37), the connecting portions (27, 37) are detachably connected to a frame (12) connected to an edge of the support plate (11), and each of the connecting portions (27, 37) of the bottle racks in a stacked state are con-

nected to the frame (12).

11. The refrigerator according to any one of the preceding claims, **characterized in that** in the stacked state, a receiving shell (31, 21) of the another bottle rack (3, 2) among the plurality of bottle racks is in surface contact with a pair of opposite upper edge regions (29) of the receiving shell (21, 31) of the at least one bottle rack (2, 3).
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12. The refrigerator according to any one of the preceding claims, **characterized in that** in the stacked state, the support leg (33, 23) of the another bottle rack (3, 2) among the plurality of bottle racks is supported on an inner side of the support leg (23, 33) of the at least one bottle rack (2, 3) in the shape matching manner.
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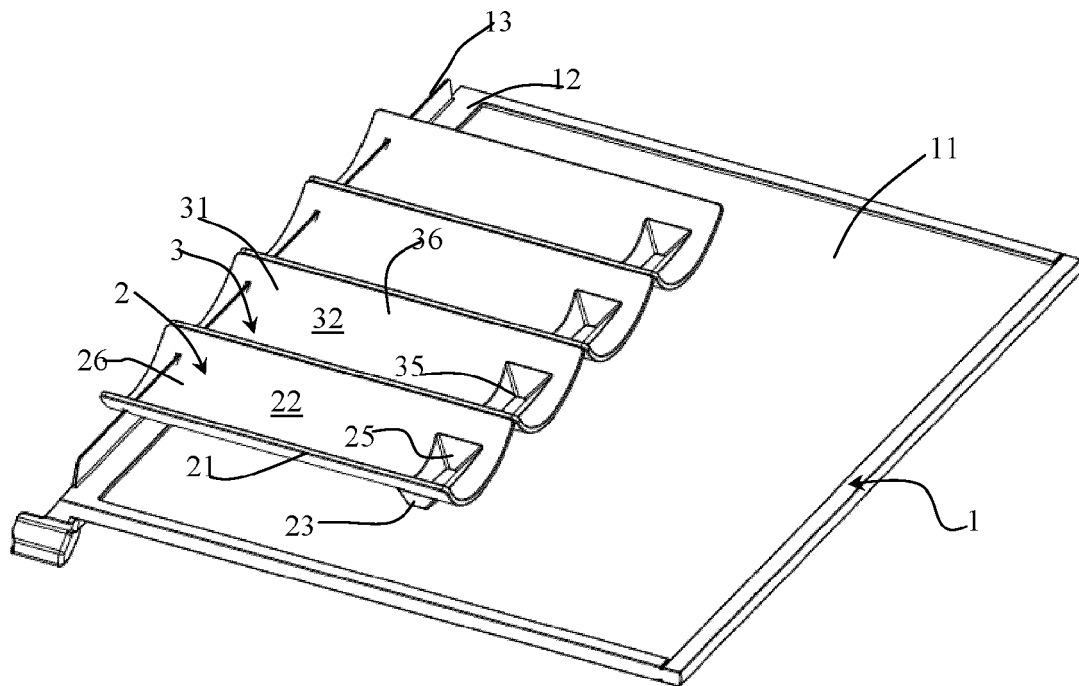


FIG. 1

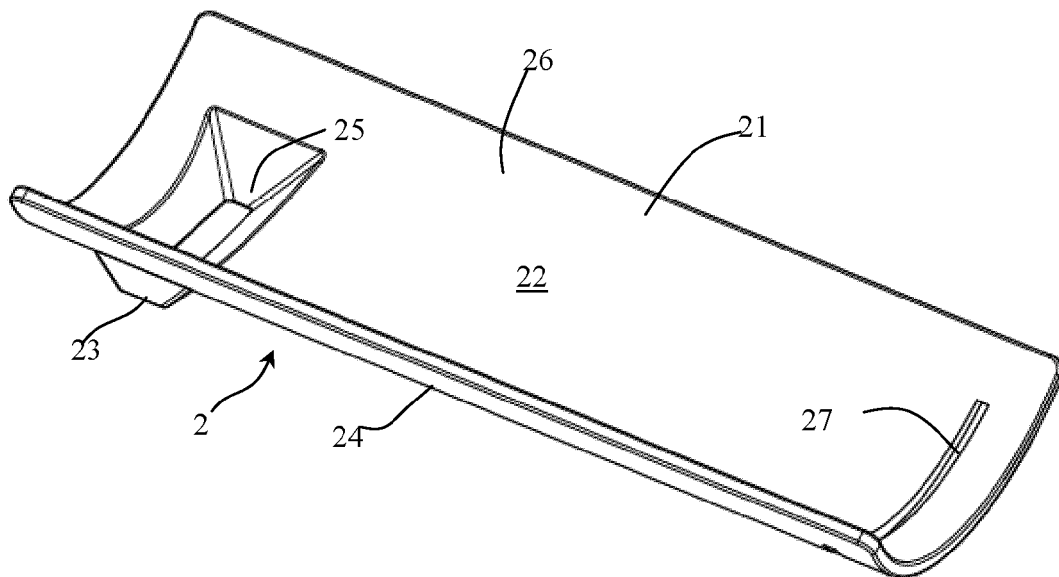


FIG. 2

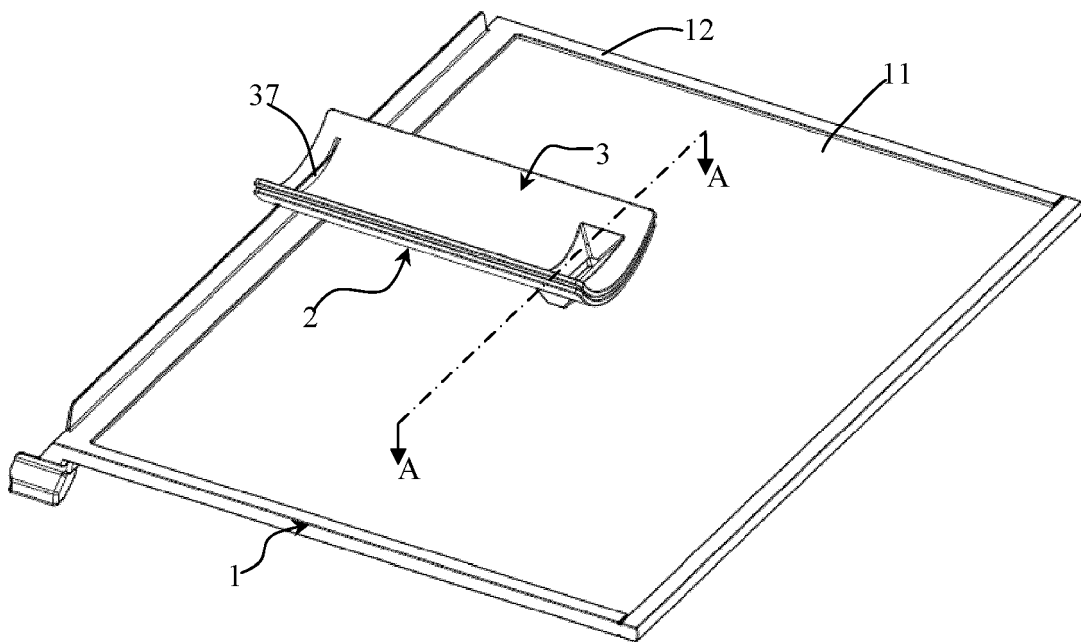


FIG. 3

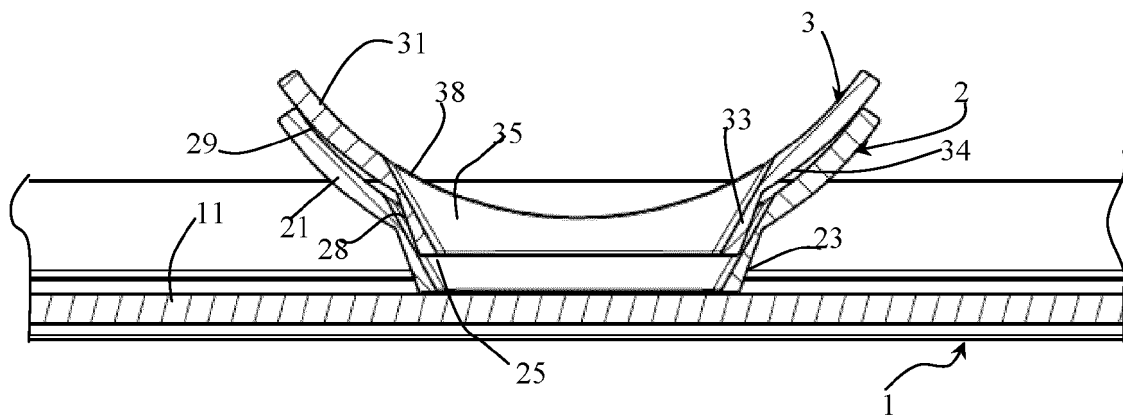


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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