United States Patent

[11] **3,538,860**

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[54] **REFRIGERATOR SHELF ARRANGEMENT**
4 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **108/1,** 108/152, 211/49, 248/242, 312/136
[51] **Int. Cl.** **A47f 3/06,** A47f 7/28
[50] **Field of Search** 108/1, 152; 248/242; 211/49D, 90; 312/116, 128, 136, 236, 313

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ABSTRACT: An adjustable refrigerator shelf supported in cantilever fashion at the rear of the refrigerator and adjustable from a horizontal position to a forwardly inclined position to permit forward feeding of cylindrical objects such as beverage cans and bottles by gravity.

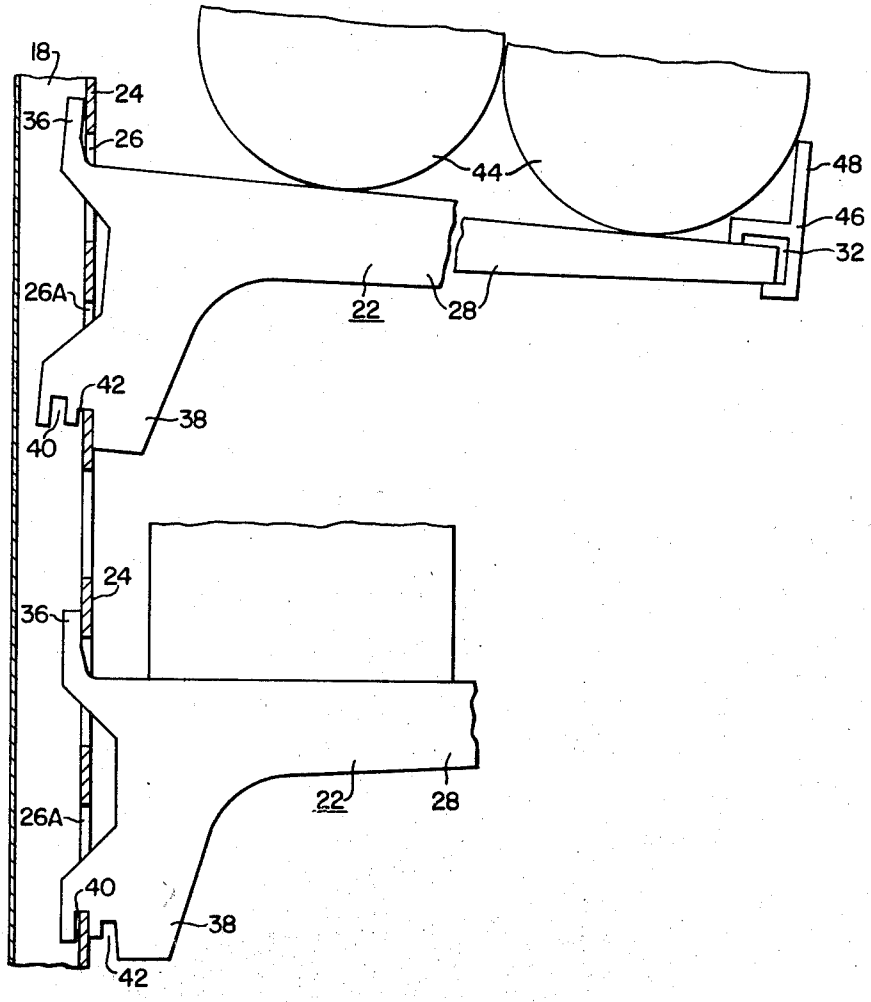


FIG. 1.

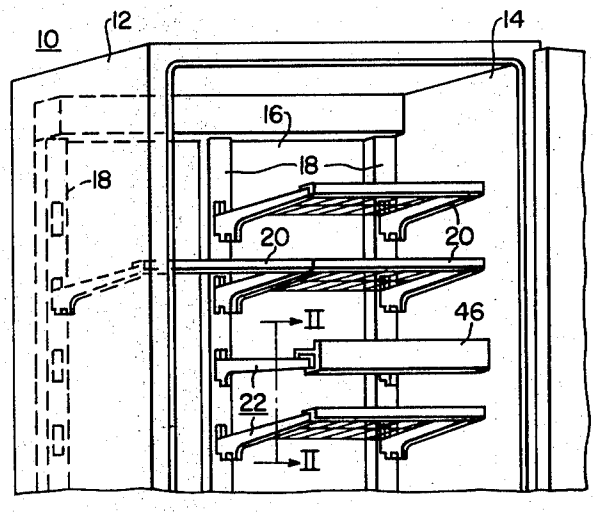
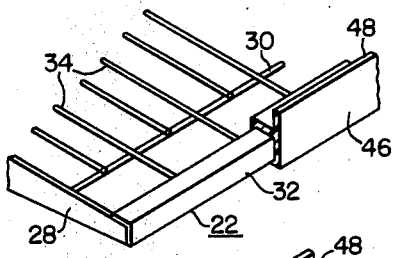


FIG. 4.



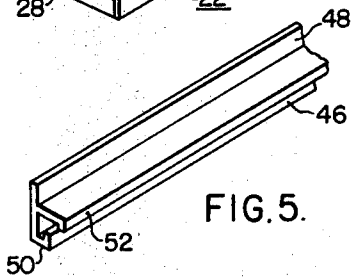


FIG. 5.

FIG. 2.

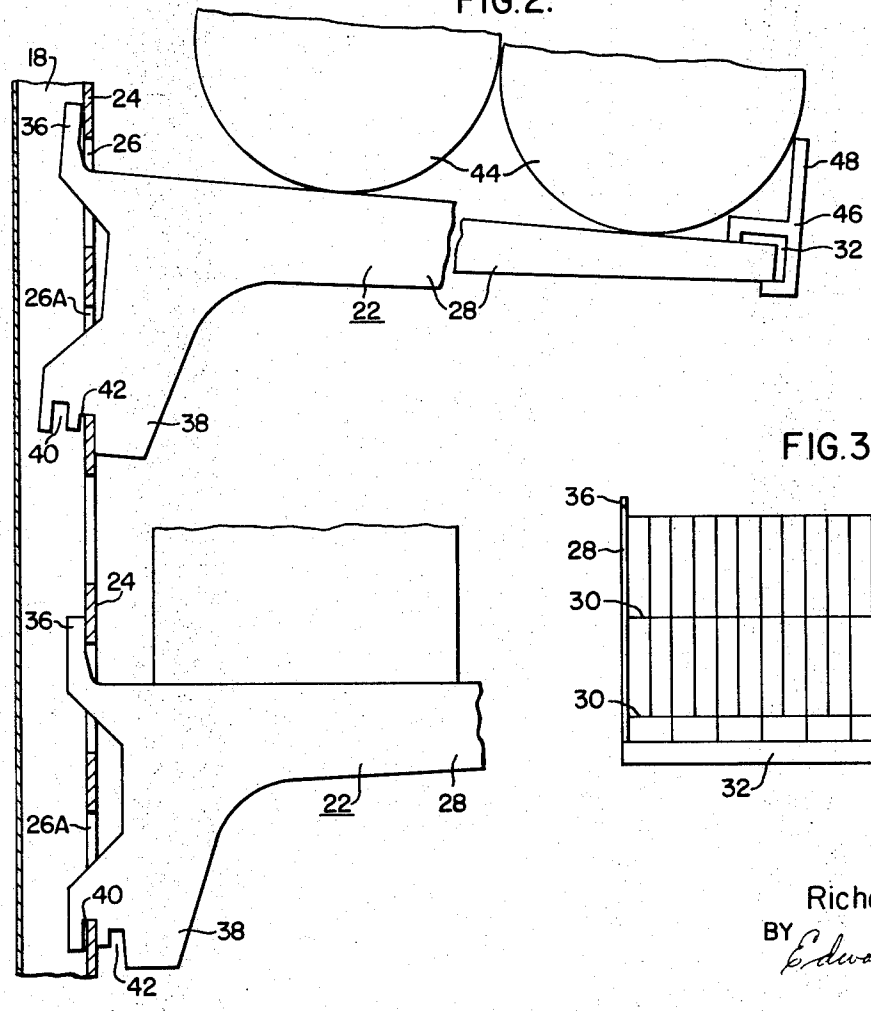


FIG. 3.

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REFRIGERATOR SHELF ARRANGEMENT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention pertains to the art of refrigerator shelves and their support arrangements.

2. Description of the Prior Art

Refrigerator shelves which are arranged to be supported in cantilever fashion at the rear, and adjustable to provide different vertical spaces between the shelves, are known. My invention deals with shelves of this general character, but which are structurally arranged to be supported in a fashion which permits them to be adjusted from a normal horizontal position to a slightly forwardly tilted or inclined position in which beverage cans and other cylindrical objects may be fed forwardly as the front object is removed.

It will be appreciated that such an arrangement is desirable to facilitate dispensing cans and such objects without having to reach into rear areas in the refrigerator. However, it is also desirable that a refrigerator owner who does not wish to store beverages in this fashion not be penalized by usurping part of the storage area of the refrigerator with an elaborate beverage dispenser where other food storage is considered more important, and that the flexibility of an adjustable shelf arrangement not be restricted by having such a dispenser occupy a given vertical space. Finally, the arrangement facilitates identifying a beverage container by presenting the labeled side rather than the typical unlabeled top of the container.

SUMMARY OF THE INVENTION

In accordance with the invention, the refrigerated storage cabinet has a shelf and shelf support arrangement including first engaging means extending vertically along the rear of the cabinet storage space, for supporting shelves in cantilever fashion at selected heights, and one or more shelves including a rear portion having second engaging means complementary to the first engaging means, the second engaging means being engageable with the first engaging means in a first selected position supporting the shelf in a substantially horizontal position and in a second selected position supporting the shelf in an inclined position to feed cylindrical objects forwardly by gravity as the front object is removed. Further in accordance with the invention, the first engaging means preferably comprise at least a pair of upright stringer means having forward walls provided with vertically-spaced openings therein to receive the second engaging means, the second engaging means of the shelf being located at the rear of the side members of the shelf in the form of an upper lug, and a lower lug which includes a rear notch and a forward notch for selective seating in a stringer opening below the opening in which the upper lug is received.

To facilitate the removal of the front object on the inclined shelf, the arrangement preferably includes the provision of a deck which is sufficiently open immediately behind the front edge of the shelf to permit the insertion of the user's fingers from below to elevate the front object.

The shelf according to the invention also preferably includes means adjacent the forward edge of the shelf projecting above the deck of the shelf to prevent the cylindrical objects from rolling off the forward edge of the shelf when the shelf is in the inclined position. Such means may be fixed or detachable.

DRAWING DESCRIPTION

FIG. 1 is a fragmentary perspective view of the upper part of a refrigerator provided with a shelf arrangement according to the invention;

FIG. 2 is a fragmentary vertical sectional view corresponding to one taken along the line II–II of FIG. 1;

FIG. 3 is a top view of a shelf according to a preferred form of the invention;

FIG. 4 is a fragmentary perspective view of a front corner of a shelf illustrating a portion of one form of a trim strip of the front edge of the shelf; and

FIG. 5 is a fragmentary perspective view of the rear face of the trim strip of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention is illustrated in FIG. 1 in the refrigerated storage space of a domestic refrigerator **10** or freezer, for example. The outer shell **12** and the inner liner **14** of the cabinet are of conventional construction, the liner including a rear wall **16** to which three upright stringers **18** are secured. As shown, one stringer is provided in each of the rear vertical corners, and the third stringer is centered on the rear wall between the other two stringers. It will be appreciated however that in some instances it may be preferable to provide only two stringers spaced for full width shelves, or part width shelves. The stringers provide the engaging means for the rear portion of the shelves **20** and **22**.

As best seen in FIG. 2, each stringer **18** is generally channel-shaped in transverse section and includes a front wall (*i.e.*, web) **24** provided along its length with a series of openings **26** spaced from each other. For greater flexibility in arranging the shelves at their various heights in the refrigerator, it is normally considered desirable to provide shelves which have a width equal to about half the width of the refrigerator storage cabinet. Thus the shelves on the two sides may be staggered to accommodate different height objects to be stored on the shelves. To the end of accommodating the half shelves, the center stringer, as distinguished from the corner stringers, has openings **26** which are wide enough to accommodate the lug portions at the rear of the side members of both the right and left shelves when they are placed at the same level in the cabinet.

It is considered preferable normally to provide only one or two shelves which will accommodate being downwardly inclined to handle beverage cans and the like. Accordingly the two shelves designated **22** in FIG. 1 are of this character in accordance with the invention, while the shelves **20** will typically be of conventional character in that they are adapted for mounting in cantilever fashion to extend horizontally only.

As best illustrated in FIGS. 2—4, each shelf **22** includes a pair of opposite side members **28**, a series of heavy cross rods **30** extending between the opposite side members, a front cross member **32** also extending between the side pieces **28** at their front ends, and a series of front-to-rear extending wires **34** which form the surface or deck upon which articles rest on the shelf. In the form illustrated, the side members **28** may be of right-angle shape in lateral cross section, with the vertical leg portion tapering from rear to front, and having a rear end portion of extended height. The rear portion of the side members **28** is structured to form the second engaging means complementary in shape to the first engaging means defined by the stringers **18** and their openings **26**. The side member rear portion includes an upper lug **36** which is received in one of the openings of the stringer with the upstanding part of the lug engaging behind the front wall **24** of the stringer above an upper opening **26**, and a lower lug **38** received in an opening designated **26A** spaced downwardly from the upper opening, the lower lug **38** including a rear notch **40** and a forward notch **42** which selectively seat upon the portion of the stringer front wall **24** immediately below the opening **26A**. It will be seen from FIG. 2 that when the rear notch **40** is so seated, the shelf **22** is supported in a horizontal position, while if the forward notch **42** is so seated the shelf is tilted down in front so that cylindrical objects **44** placed thereon will feed forwardly by gravity as each front object is removed.

It will be appreciated that the openings **26** and **26A** must be of sufficient height to accommodate removal of the shelf to adjust it to different levels, as well as accommodating the change in position from a horizontal to an inclined position.

To hold the objects 44 on the shelf, a means is provided for blocking the front object from rolling off. Such means may take the form of a permanently fixed part, such as upright welded studs at the front edge of the shelf, or upwardly projecting bends near the front edge in the wires 34. However it is considered preferable that any blocking means be detachable during horizontal use of the shelf. Thus in a preferred form, the forward trim edge 32 of the shelf accommodates a supplementary trim member 46 (FIGS. 4 and 5) which includes a flange 48 which projects above the shelf deck level formed by the wires 34. The supplementary trim member 46 is removed when the shelf is to be used in a horizontal position. Accordingly, as is illustrated in FIG. 5, the trim member may be of an extruded shape which can be slid off the end, or of some flexibility, and provided with stub flanges 50 and 52 to permit hooking the supplemental trim member upon the front fixed trim piece 32.

Further, as best illustrated in FIGS. 3 and 4, at least a portion of the front-to-rear extending wires 34 forming the deck of the shelf are omitted in the area immediately behind the trim member so that when the shelf is used in its inclined position, with the cans thereon, the removal of each can at the front is facilitated by inserting the fingers from below the shelf immediately behind the trim member 32 and pushing the front can up so it can be grasped to be carried over the upstanding flange 48.

It is noted that the illustrated and described embodiment is the best mode of carrying out the invention as currently contemplated, and that variations and details of the structure will likely suggest themselves to those skilled in the art in the light of the concepts disclosed herein.

I claim:

1. In a refrigerator storage cabinet, a shelf and shelf support arrangement comprising:

first engaging means extending vertically along the rear of the cabinet storage space for engaging the rear portion of each shelf to support said shelf in cantilever fashion at a selected height;

said shelves including at least one shelf having a rear portion having second engaging means complementary to said first engaging means for mating therewith, said second engaging means being engageable with said first engaging means in a first selected position supporting said shelf in a substantially horizontal position, and in a second selected position supporting said shelf in an inclined position to accommodate feeding rearward located cylindrical objects forwardly by gravity as the forward located objects are removed;

said one shelf includes means adjacent the forward edge of said one shelf projecting above the deck of said one shelf to prevent said cylindrical objects from rolling off the forward edge when said one shelf is in said inclined position; and

said projecting means comprises a trim member frictionally engaging and detachable from the forward portion of said shelf.

2. In an arrangement according to claim 1: said first engaging means comprise a pair of upright stringers having a forward face provided with vertically-spaced openings therein to receive said second engaging means.

3. In an arrangement according to claim 2: said shelf includes opposite side members having said second engaging means located at the rear thereof in the form of an upstanding upper lug for engaging said stringer above one of said openings, and a lower lug having rear downwardly-open notch means and forward downwardly-open notch means for engaging with said stringer below an opening spaced downwardly from said one opening of said stringer to provide said first and second support positions, respectively.

4. An arrangement according to claim 1: said deck of said shelf is of sufficiently open work structure immediately behind said projecting means to permit the insertion of the user's fingers from below to elevate the front cylindrical object to facilitate carrying it over said projecting means.