Dec. 22, 1936. J. J. NANCE 2,065,391

REFRIGERATING APPARATUS

Filed Oct. 19, 1933 4 Sheets-Sheet 1

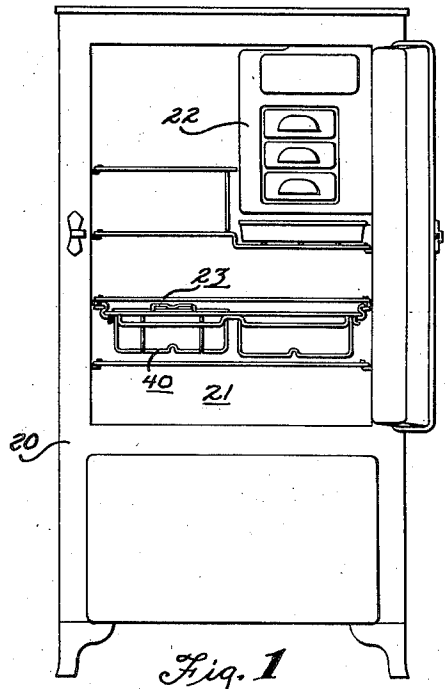

Fig. 1

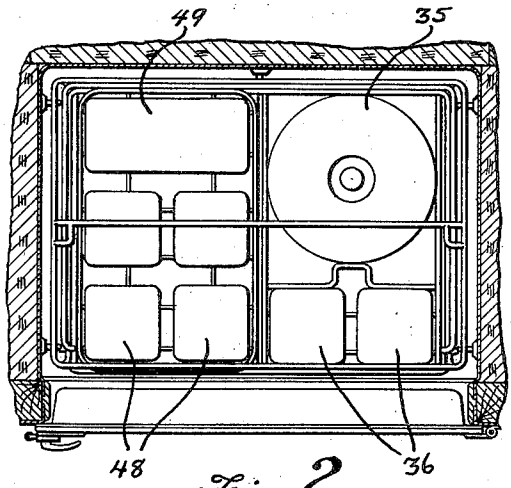

Fig. 2

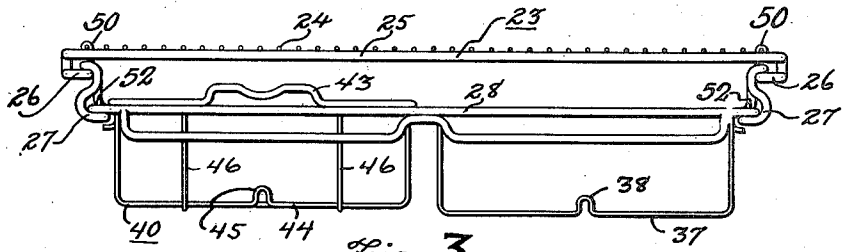

Fig. 3

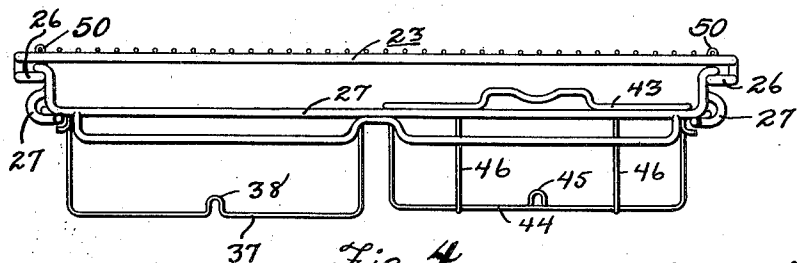

Fig. 4

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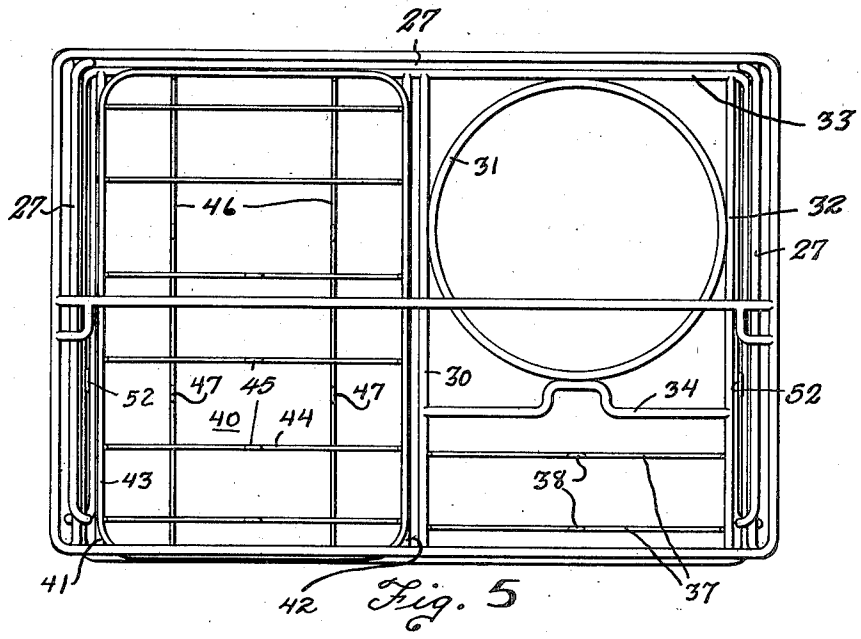

Fig. 5

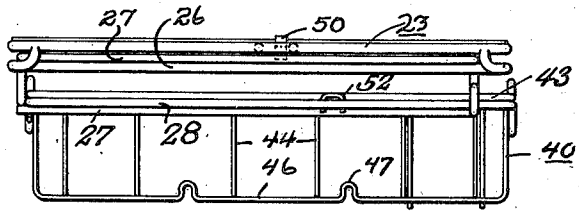

Fig. 6

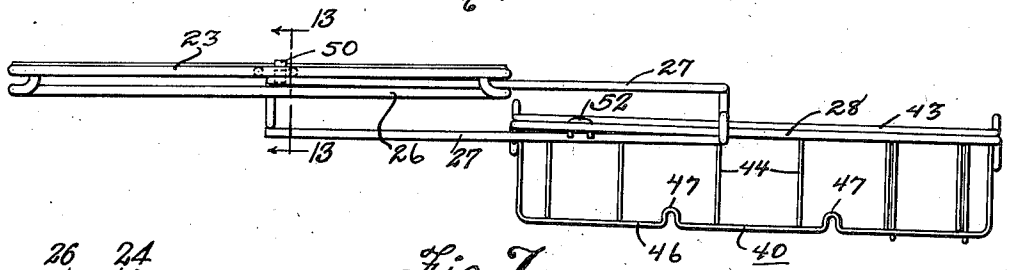

Fig. 7

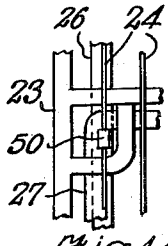

Fig. 14.

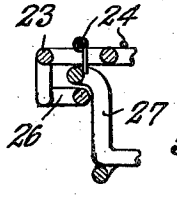

Fig. 13.

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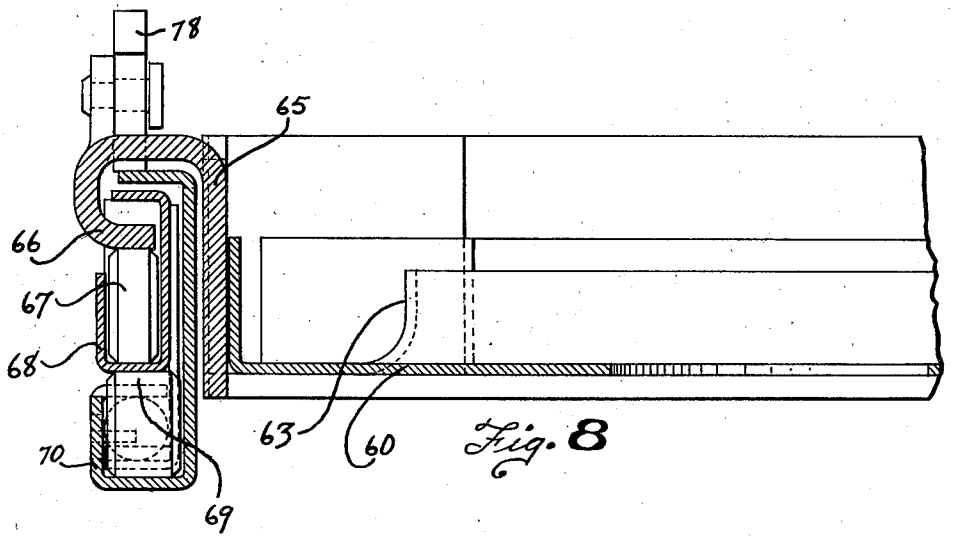

Fig. 8

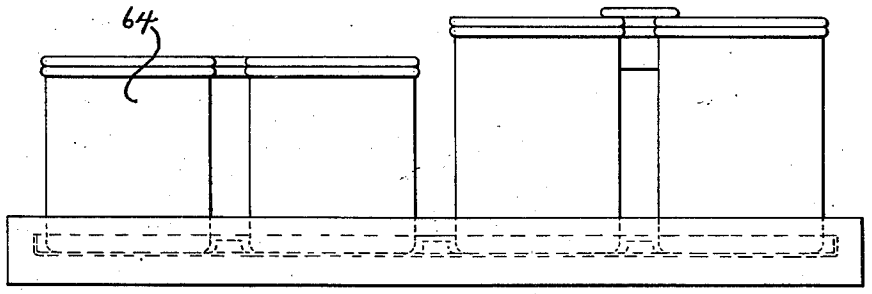

Fig. 9

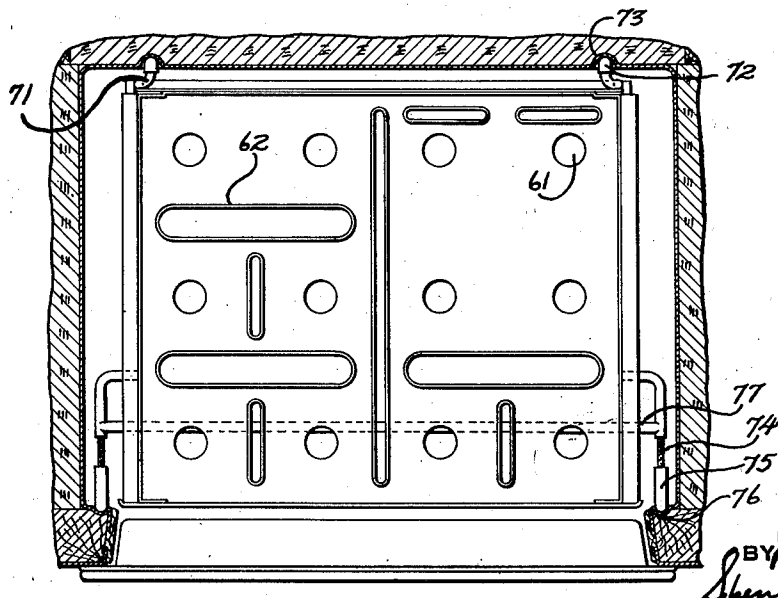

Fig. 10

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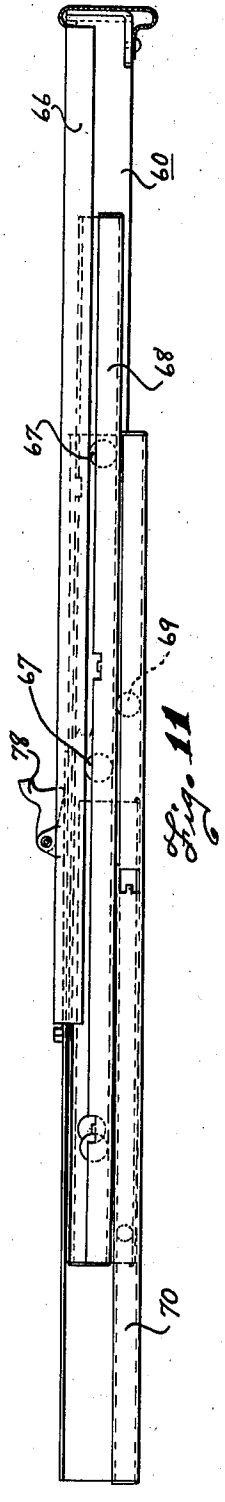

Fig. 11

Fig. 12

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UNITED STATES PATENT OFFICE

2,065,391

REFRIGERATING APPARATUS

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Application October 19, 1933, Serial No. 694,281

4 Claims. (Cl. 211—153)

This invention relates to refrigerating apparatus and more particularly to refrigerator shelves.

When stationary shelves are provided in a refrigerator cabinet, the articles which are stored thereon first are usually placed at the rear and the articles which are placed in the cabinet later are placed in the front of the shelves. This makes the articles in the rear of the shelf relatively inaccessible and it is usually necessary to remove the articles placed in the front of the shelf in order to gain access to those placed at the rear. In order to overcome this, sliding shelves or removable shelves of some form or other have been provided by various manufacturers. However, with such type of shelves when they are withdrawn from the refrigerator, the articles placed thereon tend to shift their position and some articles tend to topple over.

It is an object of my invention to provide a sliding shelf means having means to properly support and to hold the receptacles in position thereon.

In many cases a number of articles on a shelf need to be removed at one time for particular purposes. In such a case, it is very convenient to be able to readily remove all of these articles at one time. It is an object of my invention to provide a shelf means having a removable member thereon which will support a plurality of articles or receptacles which can be conveniently removed together with all of its articles.

It is another object of my invention to provide a sliding shelf means which is entirely removable but which is provided with a latch means for preventing the accidental removal of the shelf from the refrigerator.

In order to properly support a sliding shelf, it is necessary to have a stationary support within the refrigerator. In an electric refrigerator, space within the refrigerator is at a premium and each extra bit of space that is made useful is the equivalent of that much added food storage space at no extra cost. It is an object of my invention to provide a sliding shelf which is slidably suspended beneath a stationary shelf so that it takes up very little ordinarily useable space within the refrigerator.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a front view of a refrigerator cabinet with the door open;

Fig. 2 is a horizontal sectional view of the refrigerator cabinet showing a fixed shelf with the supporting wires removed holding in suspension my sliding shelf provided with receptacles and means for holding the receptacles;

Fig. 3 is a front view of the fixed shelf and the sliding shelf without the receptacles;

Fig. 4 is a rear view of the fixed shelf and the sliding shelf without the receptacles;

Fig. 5 is a top view of the fixed shelf with the supporting wires removed and with the receptacles removed from the sliding shelf;

Fig. 6 is a side view of the fixed shelf and the sliding shelf with the sliding shelf in retracted position without the receptacles;

Fig. 7 is a side view of the fixed shelf and the sliding shelf with the sliding shelf in extended position without the receptacles;

Fig. 8 is a sectional view of a form of sheet metal sliding shelf provided with rollers so that it may be easily operated;

Fig. 9 is a front view of the sheet metal shelf provided with receptacles;

Fig. 10 is a top view of the sheet metal shelf;

Fig. 11 is a side view of the sheet metal shelf together with the latch and roller mechanism in extended position;

Fig. 12 is a side view of the roller type shelf in retracted position;

Fig. 13 is a fragmentary sectional view taken on the line 13—13 of Fig. 7 and showing an arrangement of a stop member employed in the sliding shelf structure; and

Fig. 14 is a top plan view of the arrangement shown in Fig. 13.

Referring to the drawings and more particularly to Fig. 1, there is shown a refrigerator cabinet 20 having a food compartment 21 provided with an evaporating means 22 for cooling the air therein. Within the food compartment 21 there is provided a plurality of stationary shelves, one of which is designated by the reference character 23. This shelf 23 is provided with bars 24 extending from the front to the rear of the shelf. These bars are supported by a heavy wire 25 to which the ends of the bars are welded. This heavy wire 25 extends around the perimeter of the shelf 23 and the side portions are bent downwardly and inwardly so as to provide ledges 26 at either side beneath the shelf. Supported upon the ledges 26 is an intermediate member 27 formed of a pair of rectangular wire loop portions connected by a cross-

wire. The rectangular wire portions serve as a means for slidably connecting the stationary shelf 23 with a sliding shelf means 28 which is slidably supported beneath the stationary shelf 23. With the provision of this intermediate member 27 which has its longitudinal portions connected to the stationary shelf 23 and has the looped portions at the front thereof formed to receive the sliding shelf 28, the member 27 is connected to both the stationary shelf and the sliding shelf. The sliding shelf 28 may be drawn entirely clear of the other shelves so that the extreme back portion of the sliding shelf may be readily reached.

Extending down the middle of the sliding shelf 28 is a pair of heavy central bars or wires 30 and 42. At one side of the wire 30 is a heavy wire ring 31 which is welded to the wire 30 as well as to the wire 32 which extends from front to rear of the sliding shelf near the right edge thereof and parallel to the central heavy wires or bars 30 and 42. The ring 31 is also welded at its rear edge to a heavy wire 33 which extends around the perimeter of the sliding shelf 28. The front edge of the ring 31 is preferably welded to a cross wire 34 which extends from the central wire 30 to the side wire 32. The ring 31 provides a firm support for a round receptacle or dish 35 shown in Fig. 2. In the front of this sliding shelf 28 there is provided a pair of square receptacles 36 which are supported by a pair of cross wires 37 which are provided with humps 38 in the center to hold the receptacles 36 in proper position. These humps 38 act as partitions for the receptacles 36, along with the cross bar or wire 34 and the wire 33 which extends around the perimeter of the shelf.

At the other side of the sliding shelf 28 there is provided a removable wire basket generally designated by the reference character 40. This basket is removably supported by a left side bar 41 and the central left side bar 42 which extend from the front to the rear of the sliding shelf and are fastened to the heavy wire 33 which extends around the perimeter. This basket 40 has a wire 43 which extends around its perimeter and which is provided with a plurality of cross wires 44 having humps 45 at their center portions which serve as partitions. Cross wires 46 also extend from the front to the rear of the basket 40 and are provided with humps 47 which serve as partitions for holding the pair of square receptacles 48 and the long receptacles 49 within the basket on the left side of the sliding shelf.

With this basket if it is desired to remove all of the receptacles from the refrigerator, it is merely necessary to pull out the sliding shelf 28 and remove the wire basket 40 therefrom and to carry the basket wherever it is needed. This is very convenient in serving dishes or in dishing out foods in proper ration for meals.

In this way, by the use of wires and bars, a sliding shelf is provided with means for holding the covered refrigerator dishes in place upon the shelf. The shelf is supported beneath a stationary shelf so that a minimum of space is required and an intermediate sliding member is provided so that the sliding shelf may be drawn entirely clear of the stationary shelf. The stationary shelf 23 is provided with stop members 50 each formed of a flat metal strip which has its upper end curled around one of the bars 24 of the shaft to form a pivoted connection and which hang downwardly so that they engage the rear portion of the intermediate member 27 in order to limit the outward movement of this intermediate member. In order to completely withdraw the sliding shelf, the stop pins are moved inwardly, turning about their pivoted support to release the intermediate member. In this way an adequate support is insured for the intermediate member 27. I find that this type of shelf means is very simple and relatively easy to clean. A wire member formed into an inverted U-shaped element as shown at 52 is secured to and extends upwardly from the lower longitudinal part of the sliding member 27. The element 52 is positioned in the path of the back rim of member 28 and provides a stop for preventing detachment of the member 28 from the sliding member 27 during the act of sliding the member 28 forwardly relative to member 27.

Referring now to the modification shown in Figs. 8 to 12 inclusive, there is provided a sliding shelf 60 formed of sheet metal which is provided with a plurality of circular apertures 61 to permit the circulation of air therethrough. This sheet metal shelf is also provided with a plurality of long apertures generally designated by the reference character 62 which are provided with up-turned flanges 63 serving as partitions between the refrigerator receptacles or dishes 64 which are shown in position upon the shelf in Fig. 9. The longitudinal apertures 62 permit the flow of circulating air between the dishes and thus insure proper circulation within the refrigerator and proper cooling of the receptacles upon the sliding sheet metal shelf. The sliding sheet metal shelf 60 is provided with a heavy wall 65 which extends around its perimeter and which is curled as shown at 66 so as to rest upon a set of rollers 67 which operate within a groove 68. The groove 68 which is formed of a G-shaped piece of sheet metal rests upon another set of rollers 69 which operate in another stationary G-shaped groove or track member 70. This groove or track 70 is provided with threaded means 71 which extend therefrom and which are provided with a rubber cushioned adjusting means 72 threaded thereon which engages depressions 73 formed in the rear wall of the refrigerator cabinet. Adjacent the front end of the groove or track means 70 is provided threaded extension members 74 which extend forwardly and which are provided with rubber cushioned threaded adjusting means 75 which extend into the depressions 76 formed in the front portion of the refrigerated cabinet. This structure is further strengthened by a cross bar 77 which extends from one of the threaded extensions 74 to the other.

With this type of construction, the rolling or sliding shelf 60, as this type of shelf is generally called, may be entirely withdrawn from the cabinet and from the grooves or tracks and rollers upon which it operates. However, in order to prevent this from being done accidentally, I provide a pivoted latch means 78 which, unless released, will engage a notch 79 formed in the groove or track member 68 to prevent the entire withdrawal of the sliding shelf 60. However, when the entire withdrawal of the sliding shelf is desired, it is merely necessary to lift up the latch 78 out of the notch 79 and in this way the entire shelf may be removed. The use of the rollers in this shelf make it very easy to operate.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A shelf structure including a stationary shelf support member, a slidable shelf support member slidably connected to the stationary member, and a sliding shelf slidably connected to the slidable support member, said slidable member having metal loop portions connecting the stationary member and the sliding shelf.

2. A stationary shelf support member adapted to be removably supported by a cabinet, a slidable shelf support member slidably connected to the stationary member, a sliding shelf slidably connected to the slidable support member, said slidable support member having metal loop portions interengaging and connecting the stationary member and the sliding shelf, and means for limiting the relative sliding movement between the slidable support member and one of the other members.

3. A shelf structure for a refrigerator cabinet having a supporting surface adapted to be stationarily mounted within the cabinet, a slidable device carried by said structure on the underside thereof, said slidable device having a supporting surface on one side thereof and being provided with means forming an opening on the other side thereof, a basket removably suspended within the opening, and said basket being formed of an open wire framework provided with means engaging the means on said slidable device to provide a support for the basket.

4. A shelf for a refrigerator cabinet comprising a supporting surface stationarily mounted in the cabinet, a member slidably supported by said shelf and having interconnected metal members extending in a plurality of directions, said metal members being arranged to define an opening in said slidable member, and a basket having a flange portion extending over the metal members defining the opening in said slidable member for removably supporting the basket within the opening in said slidable member.

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