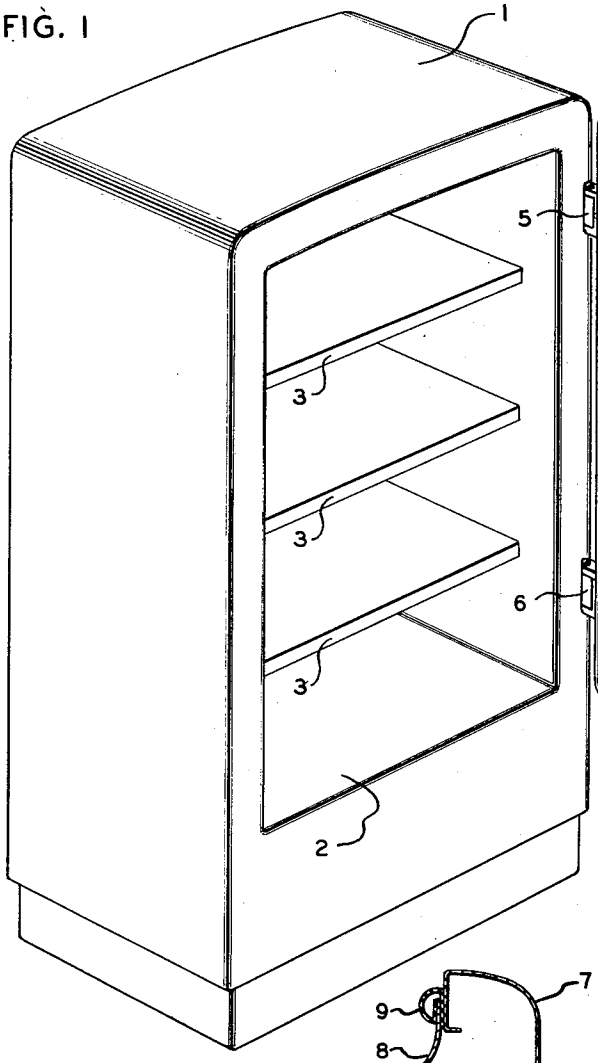
Nov. 19, 1957 D. R. BERG ET AL 2,813,767

DOOR RACKS FOR REFRIGERATING APPARATUS

Filed Sept. 9, 1953

FIG. 1



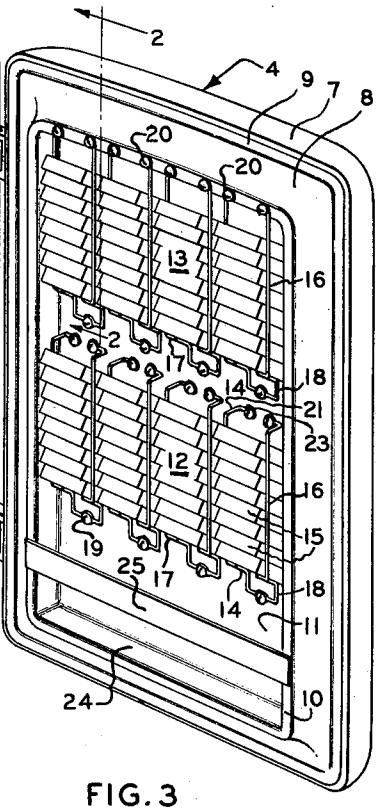


FIG. 3

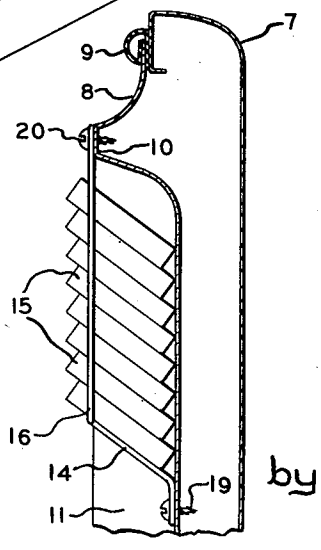
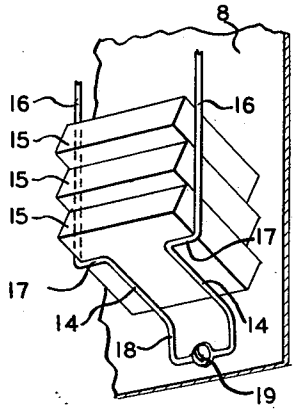


FIG. 2



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DOOR RACKS FOR REFRIGERATING APPARATUS

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Application September 9, 1953, Serial No. 379,186

1 Claim. (Cl. 312—214)

Our invention relates to refrigerating apparatus and more particularly to means for supporting packaged articles within such apparatus.

In their normal use a very wide variety of food products are stored in both household refrigerators and home freezers. To support most of these foods the ordinary horizontal shelving arrangements are quite satisfactory. For example, bottled articles, meats, and vegetables may be reached very easily if supported on such shelves. However, when it is attempted to store packaged articles, such as for example, the common frozen food package, on the shelves, a very definite problem is presented. First of all, if these packages are stacked on a horizontal shelf, it is very difficult to remove any package but the top one. Secondly, to make full use of the horizontal shelf it is usually necessary to position stacks of these articles one behind another, which often means that to remove a particular package from one of the rear stacks all the packages in front of it must be moved. Thus from the point of view of easy access, the storing of packaged articles on horizontal shelves has proved quite unsatisfactory. Moreover, to store these articles on the horizontal shelves takes space which may better be used for irregularly shaped foods.

It is, therefore, an object of our invention to provide a new and improved means for storing packaged articles within household refrigerating apparatus.

A more specific object of our invention is to provide a packaged article supporting means which may be mounted on the doors of household refrigerating apparatus.

Our invention also has as its object the provision of a supporting rack for use in household refrigerating apparatus, which will hold packaged articles in stacked relationship so that any specific article may be removed no matter what its position in the stack.

In carrying our invention into effect we employ refrigerating apparatus having vertically mounted doors and on the inner side of these doors we mount our new and improved package supporting means. This means comprises a rack which has a pair of spaced inclined portions that support the packages in a stacked relationship, each package therein being inclined or tilted from the horizontal. The rack further includes a pair of spaced vertically extending portions which prevent sideward movement of the packages and a pair of connecting portions which join the inclined support portions to the vertically extending portions. Preferably, we mount this rack on the door by securing the inclined portions and the vertically extending portions to the door at their ends remote from the connecting portions. This rack thus holds the packages on the door in such a manner that any package within the stack may be removed at any time.

The novel features which we believe to be characteristic of our invention are set forth with particularity in the appended claim. Our invention itself, however,

both as to its organization and method of operation may best be understood by reference to the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a perspective view of a preferred embodiment of our new and improved package supporting means;

Fig. 2 is an enlarged fragmentary vertical section taken on line 2—2 of Fig. 1; and

Fig. 3 is an enlarged fragmentary view in perspective showing the lower portions of the improved package supporting means.

Referring now to Fig. 1, we have shown therein household refrigerating apparatus 1 which includes a low temperature chamber 2. This refrigerating apparatus can be either a household refrigerator or a home freezer, although our invention will most commonly be used with home freezers. In the latter case, chamber 2 would, of course, be a freezing compartment. Ordinarily chamber 2 may be provided, as shown, with a plurality of horizontal shelves 3; however, these shelves do not constitute any part of our invention and other shelving arrangements may be used if desired. But in accordance with our invention the opening to chamber 2 is closed by a door 4 which is mounted on pivots 5 and 6 to turn about a vertical axis. The door is comprised of an outer wall 7 and an inner liner 8 and carries a gasket 9 which effectively isolates chamber 2 from the atmosphere when the door is closed.

In the preferred manner of carrying out our invention this door is utilized to mount our new and improved package supporting means; and for that purpose inner liner 8 is provided with a continuous boss 10 which defines a large recess 11 centrally positioned in the door. The recess 11 is of value for it serves as a space wherein the packaged articles may be supported without taking up any appreciable amount of space within chamber 2 even when door 4 is closed. Although this recess is not essential to the use of our novel package supporting means, nonetheless, through its utilization a maximum efficiency may be made of the refrigerated space within refrigerator 1.

The novel means whereby we support or store packaged articles within recess 11 comprise the racks 12 and 13, the racks 12 being positioned in a spaced row along the center of recess 11 and the racks 13 being positioned in a spaced row thereabove. The racks 12 and 13 actually support the packages in exeactly the same manner and their only real difference lies in the manner in which they are secured to liner 8 at their upper ends. The essential configuration of the racks whereby the packages are supported is the same in both, this configuration or structure being best shown in Fig. 3.

As there shown, each of the racks includes a pair of spaced portions 14 inclined somewhat upwardly from the horizontal. These inclined portions 14 hold any packaged articles 15 stacked thereon in a tilted relationship so that the rear ends of the packages rest against the door inner liner 8. This inclined relationship of the stacked packages is important for it allows any one package to be identified and removed from the stack without disturbing those packages lying above or below it. As the package is removed, those packages above it will merely slide down liner 8 until they rest on the lower packages. However, in order to make sure that none of the packages 15 can slide sidewards off the stack we have also provided in our racks a pair of vertically extending side portions 16. Preferably the side portions 16 are spaced apart a distance approximately equal to the packages to be stored so that no package

can become even slightly turned on the stack. But with regards to their distance from liner **8**, these portions **16** are spaced outwardly therefrom a distance somewhat shorter than the length of the packages **15**. The resulting protrusion of the front ends of the packages **15** past vertical rack portions **16** allows the housewife to grasp any package **15** for easy removal from the stack.

At their adjacent ends the inclined portions **14** and the vertically extending portions **16** are joined by means of connecting portions **17**. Preferably, as shown, these connecting portions **17** extend horizontally so as to provide additional support for packages **15**.

The racks may be mounted on the door by securing the inclined portions **14** and the vertically extending portions **16** to the door at their ends remote from connecting portions **17**. In our preferred embodiment in which each rack consists of a unitary, basically U-shaped member formed of a single piece of wire the inclined portions **14** are joined together by means of a bight **18** and it is by this bight that the lower portion of the rack is secured to the door, a screw **19** being utilized for that purpose. For best results bight **18** is provided with an aperture to accommodate screw **19**. However, it should be understood that we also contemplate a structure in which the opposite sides of the racks are formed of separate members, these members then being secured individually to the inner liner at their lower ends. The illustrated construction is thought somewhat superior because it requires only one mounting hole to be pierced through the inner liner. Moreover, it is somewhat less expensive to form the rack of a single member.

Although the racks **12** and **13** are thus secured to liner **8** in the same method at their lower ends, they are, however, secured to the liner by slightly different means at their upper ends. Specifically, the vertically extending portions of racks **13** reach upwardly to make contact with the top horizontal portion of boss **10** and are attached to the boss by means of the screws **20**. In fact, to secure the firmest mounting the ends of the rack portions are hooked-over to accommodate the screws **20**. Since, however, the vertically extending portions of rack **12** cannot reach as high as the boss, some additional means must be provided to secure them to the inner liner. These means comprise inwardly extending rack portions **21** which are joined to the tops of the vertically extending portions of rack **12** and stretch inwardly therefrom to contact liner **8**. These inwardly extending rack portions **21** are then secured to the door by any suitable means as by the screws **23**. To secure the best mounting results, these inwardly extending portions **21** themselves include turned in portions which lie against liner **8** and which include hooked-over ends to accommodate screws **23**.

From this it may be seen that the racks are firmly secured to the door in a manner sufficient to support packages of quite great weight. The racks are, however, not positioned contiguous to each other, but are spaced somewhat apart. This spacing is supplied not only to facilitate removal of an individual package by the housewife placing a finger on each side of the package but also to promote and encourage the passage of thermal air currents past the packages. These thermal air currents are desirable in order to pick up the heat necessarily entering the refrigerated space through the door insulation.

In the diagram the racks **12** and **13** have been shown as being all of roughly the same size. Such however, is not necessarily the best arrangement. Since the most popular types of frozen food packages come in various widths, it will ordinarily be desirable to provide various size racks in order to accommodate these various widths. In addition, we have provided in our preferred embodiment a shelf **24** positioned below the racks **12** to hold any large odd size packages. A restraining bar **25** is included to hold such packages on this shelf.

Summing up, by our invention we have provided a package supporting means which is positioned within the refrigerated space of the refrigerating apparatus, but yet utilizes very little of the primary storage area thereof. Because of the inclined positioning of the stacked packages there is little tendency for them to be thrown from the support means when the door is slammed. In addition, the storing of the packages in the manner described makes them all readily visible and accessible. Finally, any package can easily be removed so that there is no tendency to let the oldest packages remain at the bottom of the stack.

Now in accordance with the patent statutes, we have described what at present is considered to be the preferred embodiment of our invention. However, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore, aimed in the appended claim to cover all such changes and modifications as fall within the true spirit and scope of our invention.

What we claim as new and desire to secure by Letters Patent of the United States is:

In a refrigerating apparatus, a refrigerator door having storage means for food packages, said storage means comprising a continuous inner wall portion of said door defining a central recess and a basically U-shaped rack formed of a single piece of wire, said rack including a bight portion having means for securing said bight portion to said door wall within said recess, a pair of spaced inclined portions extending forwardly and upwardly from said bight portion for supporting said packages in stacked relation, a pair of spaced vertically extending portions for engaging the sides of said articles to prevent sidewards movement of said packages, a pair of horizontally extending portions in substantially the same plane as said inclined portions and each joining the forward end of one of said inclined portions to the lower end of one of said vertically extending portions and means for securing the upper ends of said vertically extending portions to said door wall above said recess.

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