Jan. 22, 1963 J. E. BERGSTEDT 3,074,124

DISPLAY REFRIGERATOR DOORS

Filed July 1, 1959 2 Sheets-Sheet 1

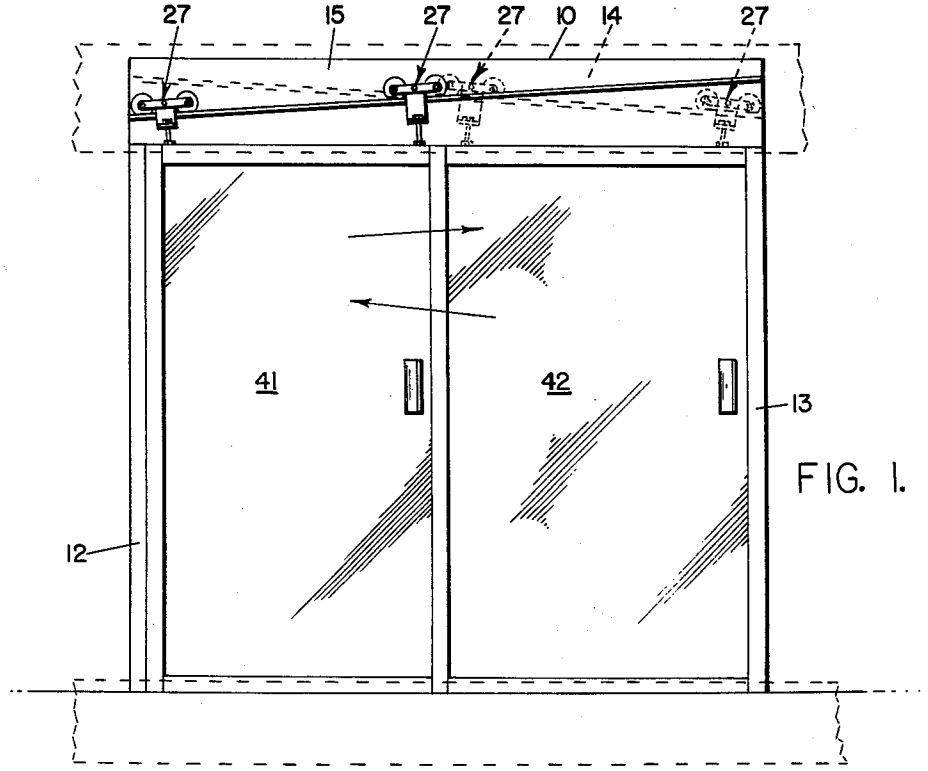


FIG. 1.

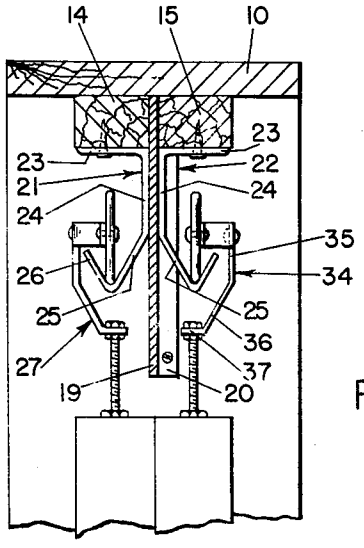


FIG. 2.

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DISPLAY REFRIGERATOR DOORS

Filed July 1, 1959 2 Sheets-Sheet 2

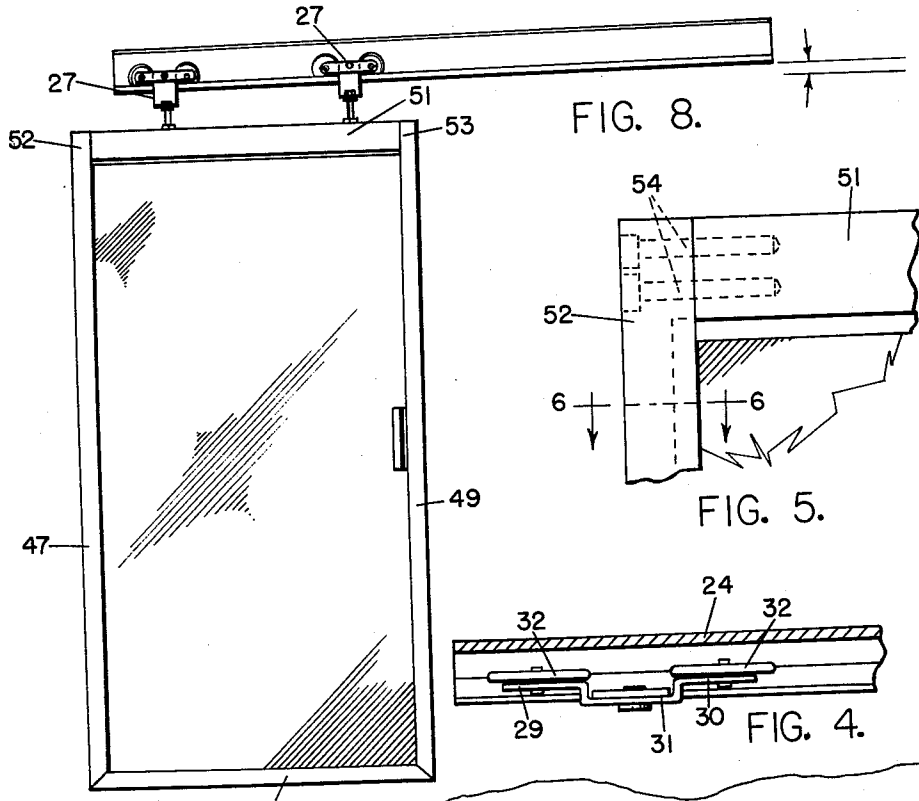


FIG. 8.

FIG. 5.

FIG. 4.

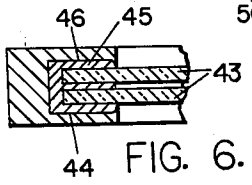


FIG. 6.

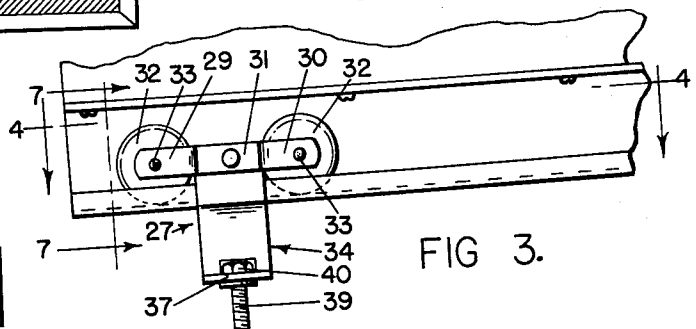


FIG 3.

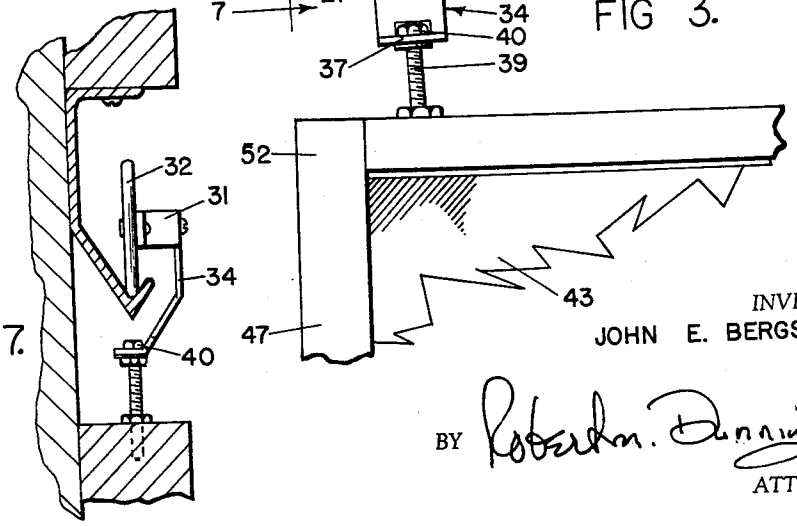


FIG. 7.

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3,074,124

Patented Jan. 22, 1963

3,074,124

DISPLAY REFRIGERATOR DOORS

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Filed July 1, 1959, Ser. No. 824,302
2 Claims. (Cl. 20—19)

This invention relates to an improvement in display refrigerator doors and deals particularly with a self closing display refrigerator door and means of supporting the same.

During recent years, the production of display refrigerators has greatly increased. For example, in stores selling bottled beverages such as liquors and the like, it has become common practice to incorporate as a part of the store, a cooling compartment or refrigerator within which beer and similar beverages may be maintained at a cold temperature. While in some instances such products are merely stored in walk-in coolers and the like, newer establishments of this type have incorporated coolers provided with glass doors so that the contents may be displayed. A feature of the present invention lies in the provision of a door or closure for such a display refrigerator and to provide a novel means of supporting the doors.

A feature of the present invention resides in the provision of a door preferably composed of two panes of glass sealed in parallel relation so that the surface of the glass will not become covered with frost when used to close a refrigerator compartment. In order to support and protect the glass, the edges of the two panes are enclosed in a light metal channel. In forming the door, the side edges and the bottom of the glass pane are inserted into grooved side of a narrow strip of metal such as stainless steel or the like concealing the channel shaped edge enclosing the panes. The three sided metal frame thus formed is attached to a transverse solid bar which extends across the top of the door and through which the door supports are anchored.

A feature of the present invention resides in the provision of a door formed of a pair of spaced panes of glass marginally sealed together, the edges of which are enclosed within a U-shaped frame, the ends of which project above the panes of glass. A cross member comprising a solid bar of aluminum or similar material overlies the top of the panes and extends between the portions of the U-shaped frame which projects above the pane. The upwardly projecting ends of the U-shaped frame are bolted directly to the ends of the cross bar. Supports are anchored to the cross bar to extend upwardly therefrom and trolleys are adjustably supported by the upright supports to permit the door to be suspended from a suitable track.

A further feature of the present invention resides in the provision of a pair of doors which are slidably supported by trolley units slidably supported in a pair of opposed tracks which are inclined. Each track is inclined in such a direction that the door, when released, will automatically slide down into closed position, thus forming a refrigerator closure. As the door is moved from closed to open position, the door raises slightly so as to free itself from the floor to eliminate excess friction. However, when the door is in closed position, it is in sealed relation to the floor so that cold air will not flow from the refrigerator.

A feature of the present invention resides in a structure of the type described in which the two doors when in closed position overlap an amount substantially equal to the width of a side of the U-shaped frame. When in open position, the doors almost completely overlap providing access to virtually the entire width of the refrigerator compartment. In other words, while the doors are slidable, when either door is open, access is provided

to virtually one-half of the space between the sides of the door frame.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification:

FIGURE 1 is a front elevational view of a pair of doors and the manner in which they are supported.

FIGURE 2 is a cross sectional view through the upper portion of the door and the door supporting means.

FIGURE 3 is an enlarged fragmentary side elevation of one of the door trolleys.

FIGURE 4 is a sectional view through a portion of the support, the position of the section being indicated by the line 4—4 of FIGURE 3.

FIGURE 5 is an enlarged detail view of an upper corner of the door.

FIGURE 6 is a sectional view through the side of the door, the position of the section being indicated by the line 6—6 of FIGURE 5.

FIGURE 7 is an enlarged sectional view taken substantially on line 7—7 of FIGURE 3.

FIGURE 8 is a front elevational view of a single door and the manner in which it is supported.

The door unit includes a generally rectangular frame structure normally employing a top frame member 10, a bottom frame member 11, and side frame members 12 and 13. The side frame members 12 and 13 as well as the bottom frame member 11 may be slightly grooved to accommodate the edges of the doors but in usual practice the edges of the door merely rest against the frame side and bottom in closed position of the door panels.

A pair of wedge shaped blocks 14 and 15 are mounted on the under surface of the top frame member 10, these wedge shaped blocks being positioned in opposed relation with the thick end 16 of one block 15 adjoining one frame side 12 and the thinner or pointed end 17 of this black adjacent the other frame side member 13. The other block 14 is arranged oppositely with its thick end adjoining the frame side 13 and its thin end adjoining the side 12.

The blocks 14 and 15 are separated by an intermediate partition member 19 having flanged ends 20 which are secured to the end frame members 12 and 13. Similar tracks 21 and 22 are secured to the under surfaces of the blocks 14 and 15. Each of the tracks 21 and 22 include a horizontal flange 23, a vertical flange 24 depending from an edge of the flange 23 and in face contact with the partition member 19, and generally V-shaped flanges 25 and 26 connected to the lower ends of the flanges 24. The bases of the tracks are formed by the juncture between the flanges 25 and 26.

Each door is provided with a pair of spaced trolleys 27 which include coplanar end portions 29 and 39 connected by an offset intermediate portion 31. Wheels or rollers 32 are pivotally supported to the end portions 29 and 30 by pivots 33. A supporting bracket 34 is connected to the offset center portion 31 and is bent to include a generally vertical upper portion 35, an inclined intermediate portion 36, and a horizontal flange 37. The horizontal flange 37 is apertured to accommodate a bolt or stud 39 which extends into the door frame and which is provided with a head or nut 40 which bears against the flange 37.

A pair of door panels 41 and 42 are slidably supported by the trolleys 27 one door 41 being supported by the track 22 while the other door 42 is connected for support by the track 21. The door panels are similar in construction but are arranged in opposed relationship. Each door includes a pair of glass panels 43 which are marginally sealed together as indicated at 44 and enclosed

with a thin walled channel 45. Sealed glass units enclosed in a conventional frame cannot be used as sliding closure panels or doors without additional frame structure because attachments such as tracks or rollers cannot be attached thereto by drilling holes or the like in the frames. Furthermore, frames such as disclosed in this application greatly minimize the frame material required to form a door or closure assembly.

The side and bottom edges of the panes 43 are engaged in grooves such as 46 on the inner surfaces of frame side strips 47 and 49 and a frame bottom strip 50. The lower edges of the frame sides 47 and 49 are preferably mitered and connected to the ends of the bottom strip 50.

A bar 51 of aluminum or other suitable material is interposed between the upper ends 52 and 53 of the side strips 47 and 49 which project above the level of the glass panes. Bolts such as 54 extend through the upper frame ends 52 and 53 and into the ends of the bar 51 to form a tight connection between these parts. Thus the bar 51 acts as a support for the U-shaped frame comprising the sides 47 and 49 in the bottom strip 50.

As will be noted in FIGURE 1 of the drawings, the door panels are supported on a horizontal level by the supporting bolts 39, the bolts being adjusted to accommodate the different elevation of the two trolleys 27 supporting each door panel. Due to the slant of the supporting tracks 21 and 22, the doors will travel by gravity to the low ends of the tracks in which position the doors are closed. The incline of the tracks is slight so that the door will travel slowly into closed position. Due to the fact that the frame sides 47 and 49 are narrow in width, and due to the fact that the doors overlap but slightly in closed position, the doors may be moved open to expose virtually the entire area of the refrigerator. This is important, particularly where the refrigerator is used to contain cases of beer or the like as it is essential to use as much of the shelf space within the refrigerator as is possible. Normally a considerable area behind the juncture of the doors is unexcessible where the goods must be inserted and withdrawn in a direction at right angles to the planes of the doors.

In accordance with the patent statutes, I have described the principles of construction and operation of my improvement in display refrigerator doors, and while I have

endeavored to set forth the best embodiment thereof, I desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. In combination a generally rectangular door frame, a pair of wedge-shaped blocks secured in side by side relation beneath the top of said frame with the thicker ends of said blocks adjoining opposite sides of said frame, a track secured to the undersurface of each said block, a pair of trolleys slidable in each said track, and a door panel suspended from the trolleys in each track and normally biased by gravity to the lower end of each said track, said door panels being engageable with the bottom of said frame in lower extreme position of said doors, said door panels each including a pair of rectangular glass panels marginally sealed together in spaced relation, a V-shaped frame enclosing the side and bottom edges of each glass panel and projecting above said glass panels, and a rectangular square ended bar secured between the upper ends of said V-shaped frame and overlying the upper edges of said panes, said last named means extending horizontally through the portions of said sides of said frame that project above said glass panels and into the opposite ends of said bar, and means connecting said bar to each of said trolleys.

2. The structure of claim 1 and in which said last named means comprises bolts threaded into said bar in adjusted relation thereto.

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