

[54] SEPARATOR WALL STRUCTURE

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[58] Field of Search 62/443, 445, 447, 441, 62/329

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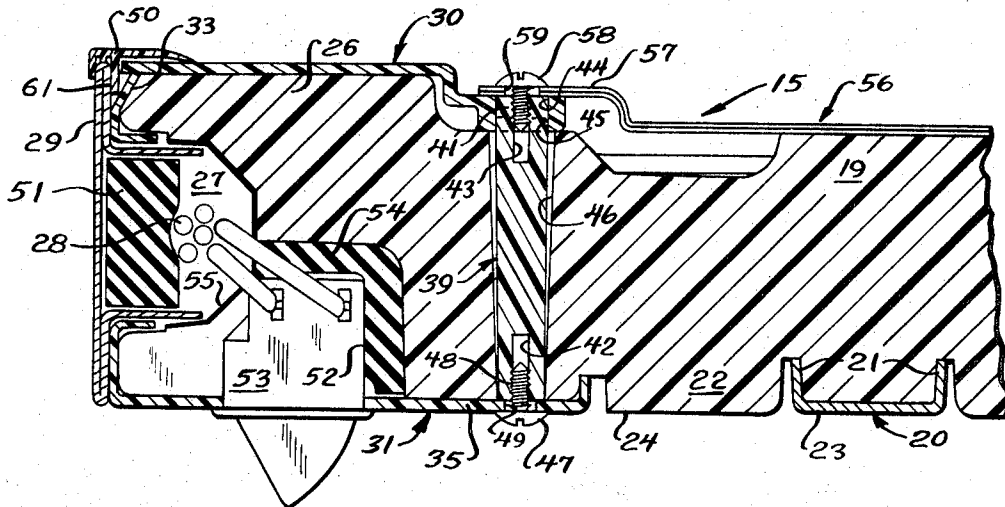
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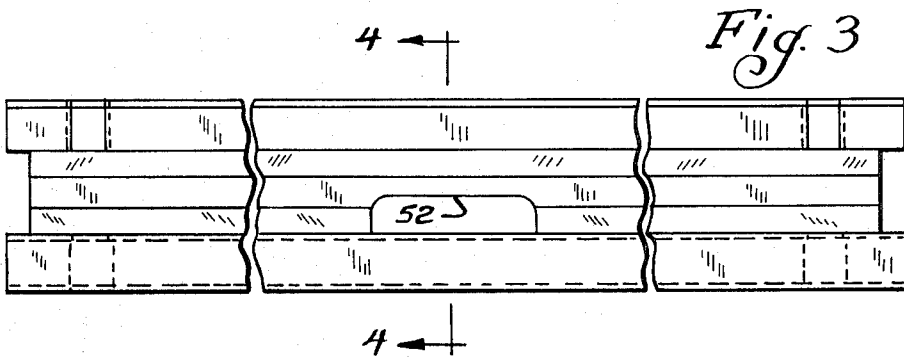
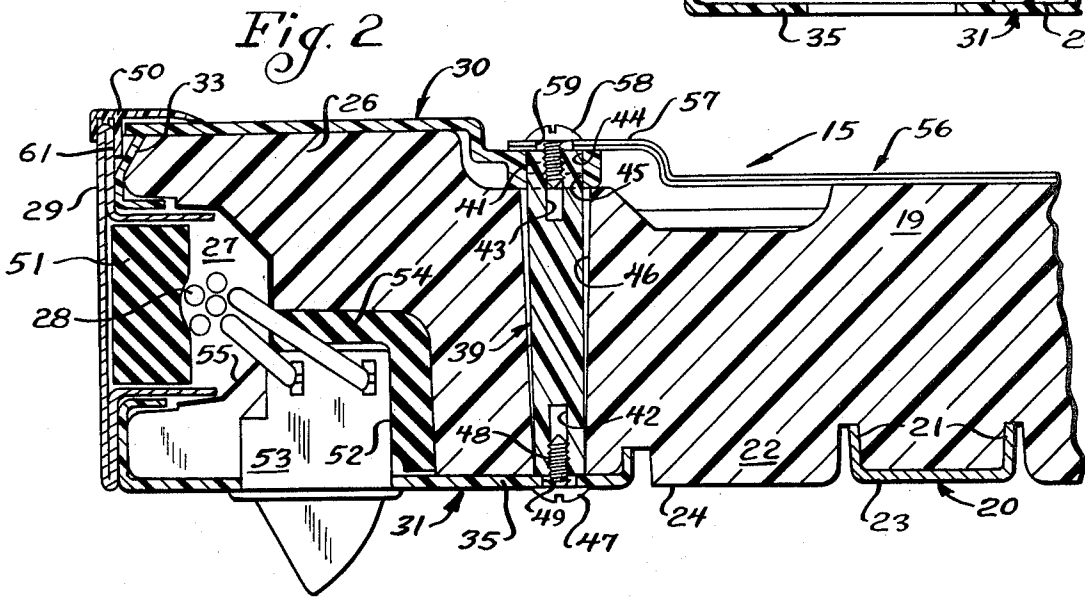
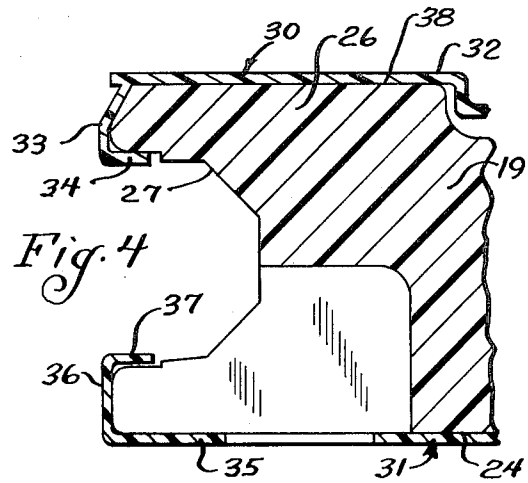
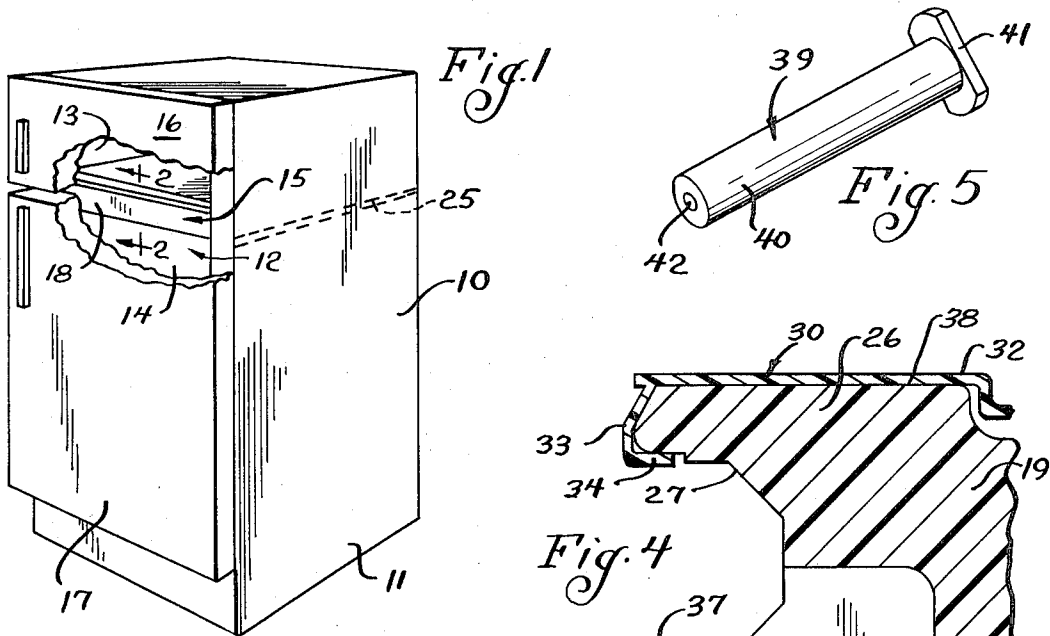
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[57] ABSTRACT

A separator wall structure for dividing a space into two compartments. The wall structure may comprise a horizontal partition separating a freezer section from an above-freezing refrigerated section of a household refrigerator. The evaporator of the refrigerator may be mounted to the separator wall structure. The wall structure may be formed of expanded foamed plastic and simplified means are provided for securing the breaker trim, center rail and evaporator to the wall structure.

15 Claims, 5 Drawing Figures





SEPARATOR WALL STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to refrigeration apparatus, and in particular to a separator wall structure such as for use in separating compartments thereof.

2. Description of the Prior Art

In one conventional form of refrigeration apparatus, a cabinet is provided having the internal space thereof divided into two compartments by a separator wall. Typically in such apparatus, the upper compartment is refrigerated to a temperature below freezing to define a freezer compartment, and the lower compartment is refrigerated to a temperature slightly above freezing to define an above-freezing refrigerated compartment.

In one conventional form of refrigerator cabinet construction, foamed plastic is provided between inner and outer sheet metal panels to provide rigidity to the cabinet and define the insulation means thereof. At the cabinet openings, breaker strips are provided for cooperating with suitable trim to extend across the plastic and provide a finished structure.

In certain prior art refrigerator structures, the dividing walls are similarly defined by spaced metal or rigid plastic panels having foamed plastic disposed therein. One example of such a refrigerator construction is shown in U.S. letters Pat. No. 3,240,029 of C. H. Wurtz.

To permit flexibility in the size of the different compartments, slide means have been provided for slidably mounting such divider walls. One example of such apparatus is that shown in the U.S. letters Pat. No. 2,103,683 of M. Kalischer.

In another form of conventional refrigeration apparatus, the dividing wall is arranged to house the evaporator. An example of such structure is shown in U.S. letters Pat. No. 3,572,049 of Earl J. Moorman.

Different devices for securing different portions of refrigerator structures are utilized in the prior art, including that of U.S. letters Pat. No. 1,647,794 of C. J. Gibson for suspending a refrigeration unit in the refrigerator.

SUMMARY OF THE INVENTION

The present invention comprehends an improved separator wall structure which is formed of a synthetic plastic material having improved means at the forward exposed end of the wall for providing a front trim thereon. The front edge of the plastic wall may be molded to define a suitable recess for accommodating electric wires and the like. Breaker strips may be secured to the front portion of the wall by a new and improved simple securing means. In the illustrated embodiment, only a single screw is required for securing the breaker strips to the wall structure. The evaporator also may be secured to the securing means. The construction eliminates the need for rigid outer panel structures in the wall means. U-shaped channel means may be disposed in fitted relationship with the foamed plastic wall structure adapted to be slidably received in a channel support for improved mounting of the wall structure in the cabinet.

Thus, the invention broadly comprehends the provision, in a refrigeration apparatus having a cabinet defining an internal space, of a horizontal separator wall means for dividing the space including a wall formed of

synthetic plastic material and defining a forward end, a top surface, and a bottom surface, trim means on the wall including a top breaker strip having a first portion overlying the wall top surface and a turned second portion embracing a portion of the wall forward end, and a bottom breaker strip having a first portion underlying the wall bottom surface and a turned second portion embracing a portion of the wall forward end, and means for securing the breaker strips to the wall including a connector element extending through the wall and having integral first retaining means at one end confronting the first portion of one of the breaker strips, and second retaining means confronting the first portion of the other of the breaker strips and removably secured to the other end of the connector element for maintaining the retaining means against the breaker strip first portions to secure the breaker strips to the wall.

The wall may be formed of a foamed synthetic plastic. The connector element may be defined by a T-shaped stud. The breaker strips may define J-section elements having one leg thereof secured to the foamed wall by the connector element. The evaporator means of the refrigeration apparatus may be secured to the connector element.

The foamed wall structure may be provided with a U-shaped upwardly opening channel with the web of the channel extending generally coplanar with the bottom of the wall.

The cabinet may be provided with spaced slides at opposite sides of the wall means and means may be provided on the wall means for slidably engaging the slides to support the wall means in the cabinet. The opposite ends of the U-shaped channels may effectively define such slide means.

Thus, the separator wall means of the present invention is extremely simple and economical of construction while yet providing the desirable features discussed above.

BRIEF DESCRIPTION OF THE DRAWING

Other features and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawing wherein:

FIG. 1 is a perspective view of a refrigeration apparatus having portions broken away to illustrate the disposition therein of a separator wall means embodying the invention;

FIG. 2 is a fragmentary enlarged vertical section of the wall means taken substantially along the line 2—2 of FIG. 1;

FIG. 3 is a broken front elevation of the wall means with the front trim removed;

FIG. 4 is a fragmentary enlarged vertical section thereof taken substantially along the line 4—4 of FIG. 3; and

FIG. 5 is a perspective view of the connector element thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the exemplary embodiment of the invention as disclosed in the drawing, a refrigeration apparatus generally designated 10 is shown to include a cabinet 11 defining an internal space 12 which is separated into an upper chamber 13 and a lower chamber 14 by a separator wall means 15. Access to the upper chamber 13

may be had by a door 16 hingedly mounted to the cabinet and access to the lower chamber 14 may be had by a door 17 hingedly mounted to the cabinet. As seen in FIG. 1, wall means 15 extends horizontally across space 12 and is provided with a front trim means 18.

The present invention comprehends an improved construction of the separator wall means 15 which may be best seen by reference to FIGS. 2-5. As shown, the separator wall means is defined by a wall 19 formed of foamed synthetic plastic. Illustratively, wall 19 may be formed of expanded polystyrene beads to define a strong insulating wall element eliminating the need for upper and lower rigid panels as in conventional divider wall constructions. As shown in FIG. 2, wall 19 may be provided with an upwardly opening U-channel 20 having the legs 21 thereof embedded in the bottom portion 22 of the wall with the web portion 23 thereof substantially coplanar with the bottom surface 24. Cabinet 11 may be provided with horizontal slides 25 for slidably carrying the opposite ends of the channel 20 and supporting the separator wall means 15 across space 12.

The front portion 26 of wall 19 defines a forwardly opening channel recess 27 for accommodating electrical wiring 28 rearwardly of a front mullion element 29. The front mullion element 29 cooperates with a top breaker strip 30 and a bottom breaker strip 31 to define a trim embracing the wall front portion 26, as best seen in FIG. 2.

As shown in FIG. 4, top breaker strip 30 comprises a J-section element having a long leg 32, and a turned short leg 33 having a distal end 34 projecting into recess 27. Bottom breaker strip 31 similarly defines a J-section element having a long leg 35, and a turned short leg 36 terminating in a distal end 37 received in recess 27. As shown in FIG. 2, top breaker strip leg 32 lies against the upper surface 38 of wall 19 and leg 35 of bottom breaker strip 31 lies against the undersurface 24.

The breaker strips are secured in this disposition by means of a T-connector 39 having a frustoconical shank 40 and a cross head 41. The end of the shank remote from head 41 is provided with an axial recess 42 and head 41 is provided with a corresponding axial recess 43. Top breaker strip 39 defines a channel 44 adapted to receive cross head 41, and is provided with a hole 45 adapted to pass the shank 40 of the connector downwardly therethrough and through a frustoconical hole 46 extending vertically through wall 19. A screw 47 having a threaded shank 48 extending through an opening 49 in leg 35 of bottom breaker strip 31 threadedly engages the connector in recess 42, as shown in FIG. 2, to secure the breaker strips to the front wall portion 26.

A gasket 50 is provided at the front end of the top breaker strip 30 and includes a leg 51 which is received between leg 33 of the top breaker strip and the mullion 29.

A body of insulation 51 may be provided between the mullion and the wiring 28. A recess 52 may be provided in the front portion 26 of wall 19 for receiving a rocker arm switch 53 connected to wiring 28. A body of insulation 54 may be provided between the rocker arm switch and wall 19. A layer of aluminum foil 55 may be provided lining recess 27, as illustrated in FIG. 2.

Connector 39 may further be utilized for securing the evaporator 56 to wall 19. Thus, as shown in FIG. 2, a

front portion 57 of the evaporator may be placed in overlying relationship to connector cross head 41 and secured thereto by a suitable screw 58 extending through an opening 59 in the evaporator and into axial recess 43 of connector 39.

Thus, connector 39 utilizes a single screw for connecting the breaker strips 30 and 31 to the front portion 26 of wall 19 and may utilize a single additional screw to secure the evaporator 56 to wall 19 at the opposite end of the connector.

The breaker strips and the mullion, or center rail, may be quickly and economically secured to the front portion 26 of wall 19 leaving the remaining bottom portion 24 and top 38 of the wall 19 exposed thereby eliminating the need for the conventional outer panel means of the prior art. The breaker strips are quickly and efficiently installed by means of the T-shape connector and screw means. The connecting means is further adapted for facilitated securing of the evaporator thereto notwithstanding the omission of a top panel on the wall structure.

The channels 20 provide improved slide means for mounting the wall structure in the cabinet 11 and similarly are readily installed in the foamed wall by simple embedment of the legs thereof in the foamed plastic.

Thus, the wall construction of the present invention is extremely simple and economical while yet providing the highly desirable features discussed above.

The foregoing disclosure of specific embodiments is illustrative of the broad inventive concepts comprehended by the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a refrigeration apparatus having a cabinet defining an internal space, horizontal separator wall means for dividing said space, comprising:

a wall formed of synthetic plastic material and defining a forward end, a top surface, and a bottom surface;

trim means on said wall including a top breaker strip having a first portion overlying said wall top surface and a turned second portion embracing a portion of said wall forward end, and a bottom breaker strip having a first portion underlying said wall bottom surface and a turned second portion embracing a portion of said wall forward end; and

means for securing said breaker strips to said wall including a connector element extending through said wall and having integral first retaining means at one end confronting the first portion of one of said breaker strips, and second retaining means confronting the first portion of the other of said breaker strips and removably secured to the other end of said connector element for maintaining said retaining means against said breaker strip first portions to secure said breaker strips to said wall.

2. The refrigeration apparatus wall means of claim 1 wherein said connector element comprises a T-shaped stud.

3. The refrigeration apparatus wall means of claim 1 wherein said apparatus includes an evaporator means and means for securing the evaporator means to said connector element.

4. The refrigeration apparatus wall means of claim 1 wherein said breaker strips define J-section elements.

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5. The refrigeration apparatus wall means of claim 1 wherein said wall means forward end defines a forwardly opening recess, the distal end of each said breaker strip turned portion extending into said recess.

6. The refrigeration apparatus wall means of claim 1 wherein said wall is formed of a molded synthetic plastic.

7. The refrigeration apparatus wall means of claim 1 wherein said wall is formed of a molded synthetic plastic and is provided with a U-shaped upwardly opening reinforcing channel extending laterally across said bottom surface thereof with the upwardly extending bags of said channel embedded in said wall.

8. The refrigeration apparatus wall means of claim 1 wherein said wall defines a recess opening outwardly through one of said wall surfaces and arranged to receive said first retaining means, said recess and first retaining means being complementarily arranged to preclude turning movement of the first retaining means in the recess.

9. The refrigeration apparatus wall means of claim 1 wherein said second retaining means comprises a screw extending through said first portion of said other breaker strip and threaded to said other end of the connector element.

10. The refrigeration apparatus wall means of claim 1 wherein said cabinet includes spaced sliders at opposite sides of said wall means, and means are provided on said wall means for slidably engaging said slides and supporting said wall means thereon.

11. A compartment separator comprising:
a foamed synthetic plastic wall defining a front edge;

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a first breaker strip overlying one face of the wall and embracing the portion of said front edge adjacent said one face;

a second breaker strip overlying the opposite face of the wall and embracing the portion of said front edge adjacent said opposite face; and

securing means extending successively through said first breaker strip, said wall, and said second breaker strip remotely from said front edge for securing said breaker strip to said wall.

12. The compartment separator of claim 11 wherein said securing means comprises an element extending through said wall and including a turned end portion engaging one of said breaker strips to maintain said one breaker strip in engagement with the confronting wall face, and threaded means at the opposite end portion removably secured to said element for engaging the other of said breaker strips for maintaining said other breaker strip in engagement with the confronting wall face.

13. The compartment separator of claim 12 wherein said element comprises a synthetic plastic element having a recess at said opposite end, and said threaded means comprises screw means extending through said other of said breaker strips and threaded into said recess.

14. The compartment separator of claim 11 wherein the breaker strips are formed of molded rigid plastic.

15. The compartment separator of claim 11 further including slide means embedded in said foamed wall for slidably supporting the wall on a subjacent slide surface.

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