United States Patent

Winsler et al.

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[54] **MULLION CONSTRUCTION FOR REFRIGERATOR DOOR FRAME**

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[21] Appl. No.: **101,384**

Related U.S. Application Data

[60] Continuation of Ser. No. 5,392, Jan. 2, 1970, abandoned, which is a division of Ser. No. 611,020, Jan. 23, 1967, Pat. No. 3,499,245.

[52] **U.S. Cl.** **219/218**, 62/248, 312/236

[51] **Int. Cl.**.....**H05b 1/00**

[58] **Field of Search**.....219/213, 218; 49/70, 386, DIG. 1, 49/DIG. 2; 62/248, 275; 312/236, 114

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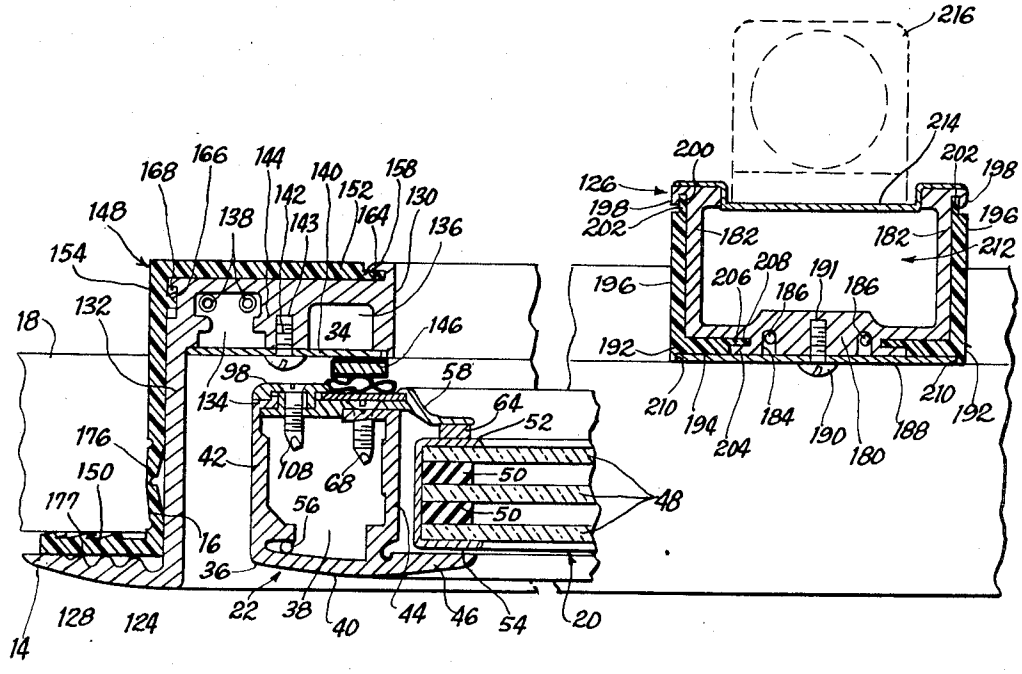
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[57] **ABSTRACT**

A mounting frame for a refrigerator door is disclosed, having a channel-shaped mullion with a front wall and a pair of side walls. Two angle-shaped insulating cover strips are mounted on the mullion. Each cover strip has a side leg covering one of the side walls thereof, and a front leg covering the adjacent portion of the front wall. A lip is provided on each side wall to retain the corresponding side leg. The front wall is formed with a pair of lips to retain the front legs. A cover plate, made of magnetic stainless steel or the like, is secured to the front wall so as to cover the front legs. The cover plate serves as an armature for a magnetic gasket on the door.

5 Claims, 7 Drawing Figures



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SHEET 1 OF 3

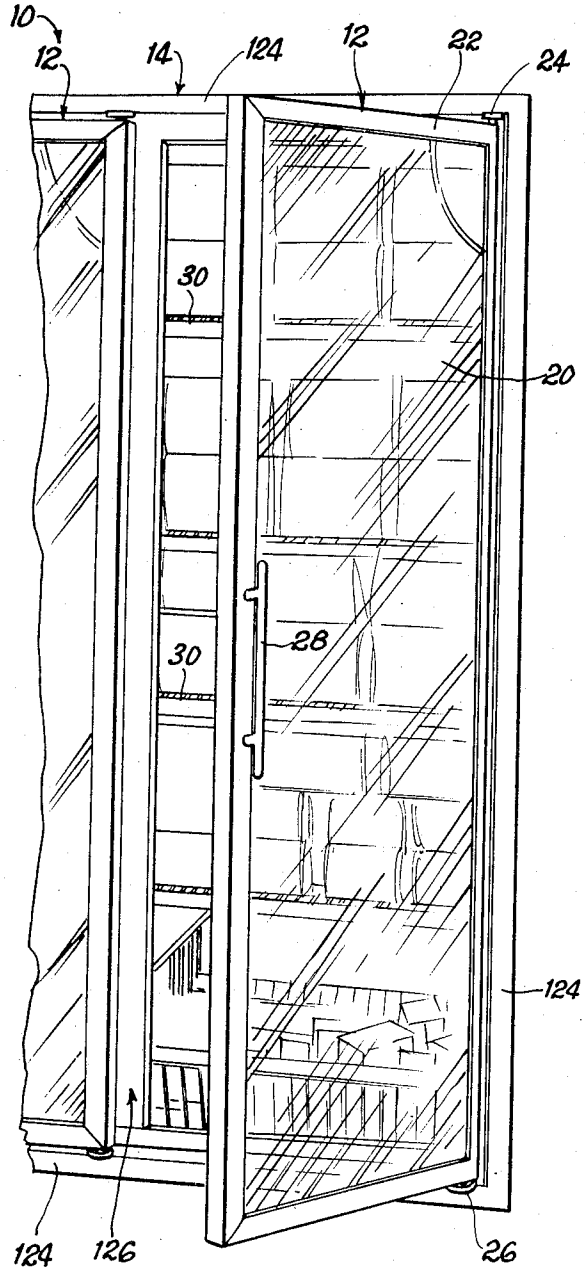


FIG. 1

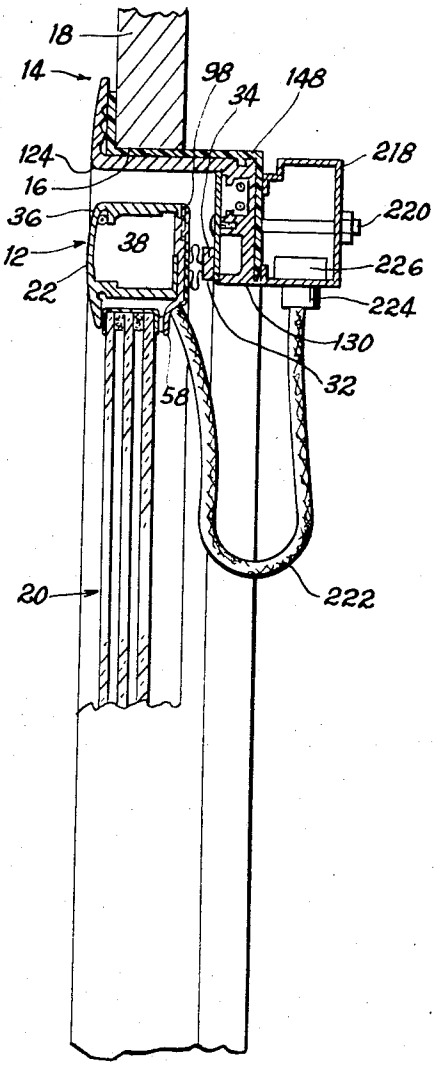


FIG. 2

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FIG. 4

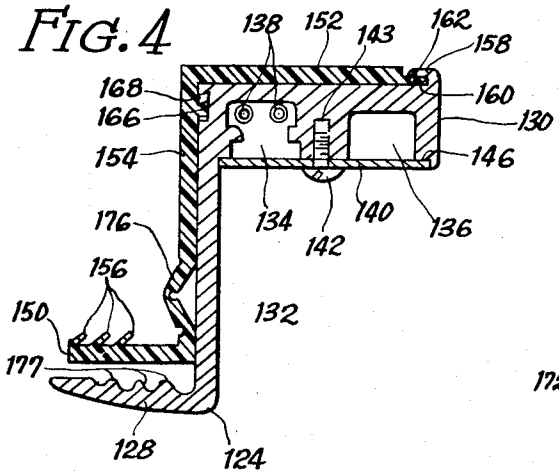


FIG. 3

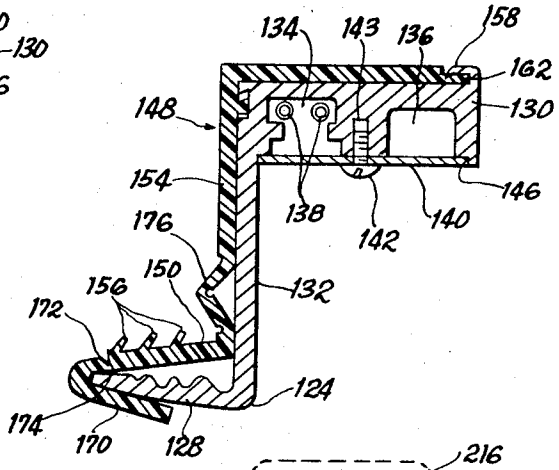


FIG. 5

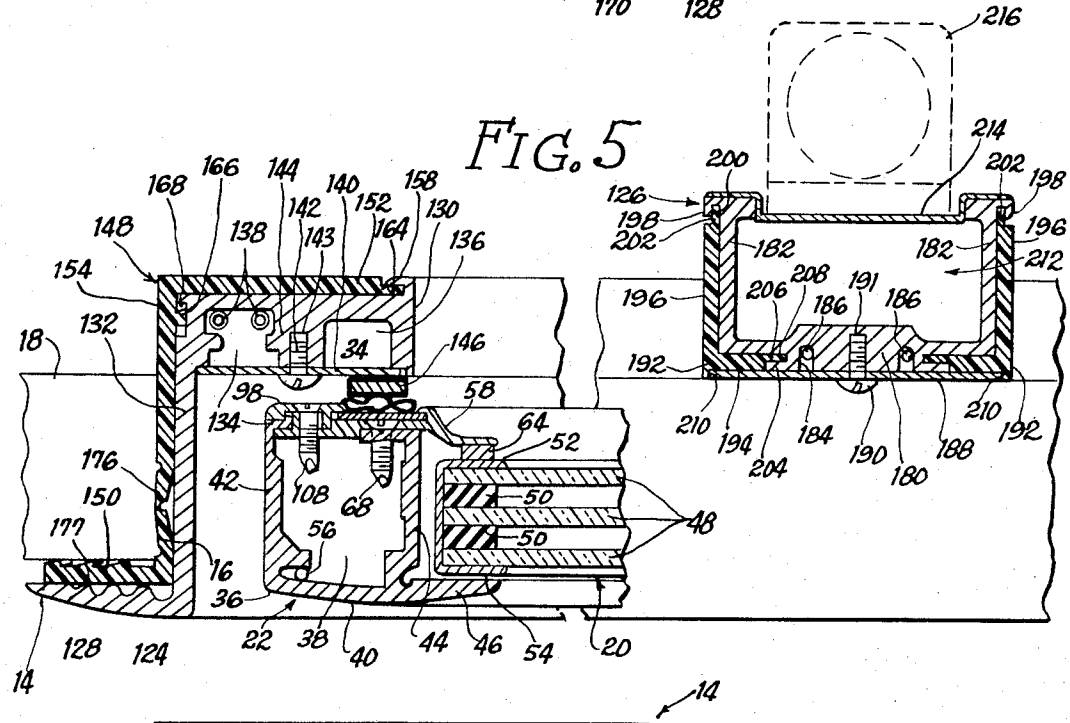


FIG. 7

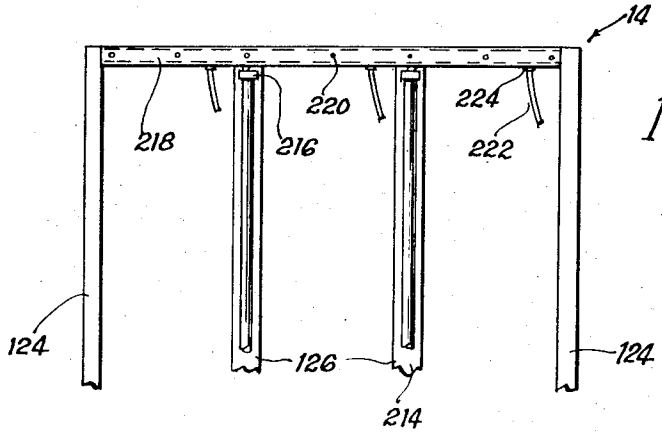
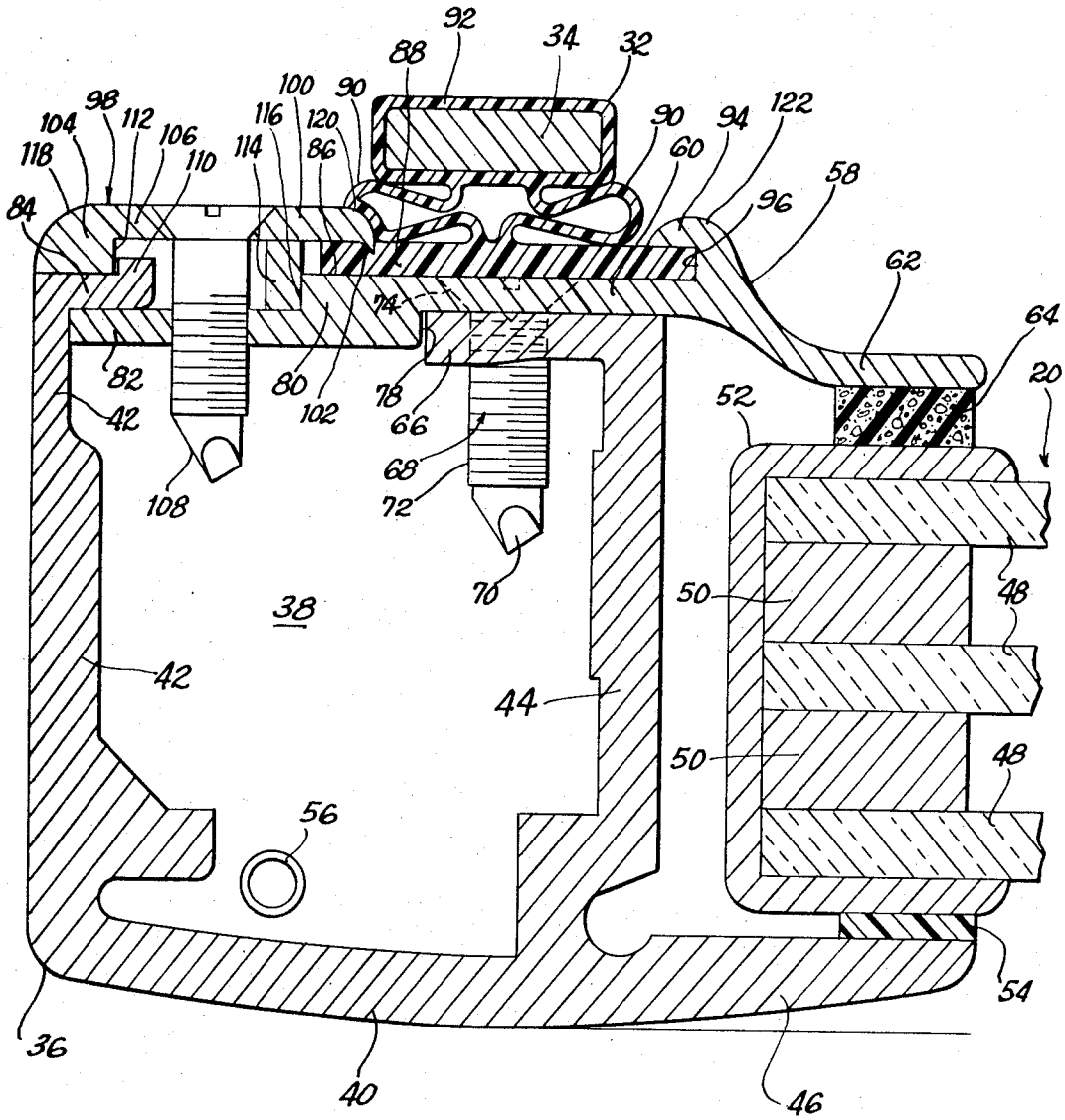


FIG. 6


92
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MULLION CONSTRUCTION FOR REFRIGERATOR DOOR FRAME

This application is a continuation of application Serial No. 5,392, filed January 2, 1970, now abandoned, which is a division of application Serial No. 611,020, filed January 23, 1967, now Patent No. 3,499,245.

This invention relates to glass panel refrigerator doors of the general type represented by the Kurowski patents, U.S. Pat. No. 2,987,782, patented June 13, 1961, and U.S. Pat. No. 3,131,421, patented May 5, 1964. Such refrigerator doors are widely used in supermarkets, convenience food stores, beverage stores and the like for refrigerated display cases and cabinets from which purchasers may select refrigerated beverages, foods and other products. Such doors are used for both normal temperature and low temperature refrigerated cases and cabinets. Normal temperature applications involve the display of dairy products and the like, slightly above freezing temperatures. Low temperature applications involve the display of frozen foods, ice cream and the like, well below freezing temperatures.

The present invention relates particularly to refrigerator doors of the type in which the glass panel is mounted in a metal supporting frame. The metal is generally aluminum, although other metals could be employed. Generally, the door frame is fabricated from aluminum extrusions. The door is generally mounted in a metal outer frame or casing which usually is arranged to support a plurality of doors, side by side. Each door is normally provided with a gasket to form a seal between the door and the frame.

One object of the present invention is to provide a refrigerator door of the foregoing character in which the glass panel and the gasket are mounted on the metal frame of the door in a new and improved manner.

A further object is to provide such a new and improved refrigerator door in which the glass panel and the gasket are secured to the metal frame by means of metal molding strips which are fastened directly to the metal frame.

It is a further object to provide a new and improved refrigerator door of the foregoing character which employs a first set of metal molding strips which are screwed or otherwise secured directly to the metal frame and which support the gasket as well as securing the glass panel in the frame; and a second set of metal molding strips which are screwed or otherwise secured to the first molding strips and have a clamping action between the gasket and the frame, so as to clamp the gasket against the first molding strips, while clamping the first molding strips against the frame.

Another object is to provide a new and improved refrigerator door of the foregoing character in which the door frame is made of metal extrusions with a hollow core, and in which the metal molding strips close the rear side of the hollow core.

A further object is to provide such a refrigerator door in which the metal molding strips are secured directly to the metal extrusions in a new and improved manner, without the aid of a wood core or the like within the extrusions, the need for any such wood core thereby being obviated.

Another object is to provide a glass panel refrigerator door having an outer frame or casing of new and improved construction.

A further object is to provide such a new and improved refrigerator door in which the outer casing is provided with one or more hollow cores which are closed by readily removable cover plates.

A further object is to provide such a refrigerator door in which heating cables are mounted in a new and improved manner within the hollow core of the outer frame, so as to be readily removable and replaceable by removing the metal cover plates.

It is a further object to provide such a new and improved door in which the metal cover plates on the outer frame are made of magnetic stainless steel or other magnetic material, for cooperation with gaskets of the magnetic type on the doors.

Another object is to provide such a new and improved refrigerator door in which heating cables are mounted in hollow cores or channels in the mullions as well as the border members of the outer frame, such channels being closed by readily removable cover plates made of magnetic material.

Further objects and advantages of the present invention will appear from the following description, taken with the accompanying drawings, in which:

FIG. 1 is a general perspective view of a refrigerator door assembly to be described as an illustrative embodiment of the present invention.

FIG. 2 is a fragmentary vertical section taken through one of the doors and the outer frame.

FIG. 3 is an enlarged cross section taken through the outer frame, and showing the sealing strip for the frame in the condition in which it is shipped from the factory to the point of installation.

FIG. 4 is a cross section similar to FIG. 3, but showing the sealing strip after the protective cover portion thereof has been removed, preparatory to final installation of the frame.

FIG. 5 is a fragmentary horizontal section taken through the door and the outer frame, the sealing strip for the outer frame being shown in its installed position.

FIG. 6 is a fragmentary enlarged section corresponding to a portion of FIG. 5 and taken through the door.

FIG. 7 is a fragmentary, somewhat diagrammatic rear elevation of the outer frame for the door assembly.

As already indicated, FIG. 1 illustrates a refrigerator door assembly **10**, comprising a plurality of doors **12** which are swingably mounted in an outer frame or casing **14**. As shown to best advantage in FIGS. 2 and 5, the outer frame **14** is adapted to be mounted within an opening **16** in a wall **18** or the like. It will be understood that the door assembly **10** is adapted to be used on a free standing refrigerated case, or in connection with a built-in cooler or cabinet for refrigerated merchandise.

It will be seen that each door **12** comprises a transparent panel **20** made of glass or other suitable transparent material. The panel **20** is mounted in a frame **22**, preferably made of aluminum or some other suitable material. The door frame **22** is swingably mounted in the outer casing **14** by means of suitable upper and lower hinges **24** and **26**. Appropriate hinges are disclosed and claimed in the previously mentioned Kurowski patents. A suitable handle **28** is also mounted on the door for use in opening the door.

In the usual case, a plurality of shelves **30** are mounted behind the doors **12** to support merchandise of various kinds. The merchandise may comprise dairy

products or the like in the case of a normal temperature cooler, or frozen food or ice cream in the case of a low temperature cooler.

Each door **12** is preferably provided with a gasket or sealing strip **32** to form a seal between the door and the outer frame **14**, when the door is closed. It is preferred to employ a gasket of the magnetic type, having magnets **34** therein to hold the door shut and provide firm sealing pressure between the gasket and the outer frame **14**.

The door frame **22** is preferably fabricated from a plurality of rectangularly related extrusions or other members **36** made of aluminum or some other suitable metal. As shown in FIGS. **5** and **6**, each extrusion **36** is formed with a hollow core **38**. The extrusion has a front wall **40**, an outer side wall **42**, and an inner side wall **44**. The side walls **42** and **44** project rearwardly from the front wall **40**. The hollow core **38** is formed by the channel-shaped space bounded by the walls **40, 42** and **44**.

The glass panel **20** is mounted in the door frame **22**, within the space bounded by the inner side walls **44** of the extrusions **36**. As shown, each extrusion **36** is formed with a panel supporting flange or lip **46** against which the glass panel **20** is mounted. The flange **46** extends inwardly beyond the inner side wall **44** and constitutes an extension of the front wall **40**.

The glass panel **20** is normally of the insulated type, having a plurality of spaced panes **48**. The illustrated panel **20** has three panes, but double and quadruple panes are also well known. Spacers **50** are hermetically sealed between the edges of the panes **48**, so that moisture will be excluded from the spaces between the panes. The dry air between the panes has a good insulating value.

As shown, a channel-shaped frame may be provided around the edges of the glass panes **48**. A soft sealing strip **54** is preferably mounted between the panel **20** and the flange **46**. The sealing strip **54** may be made of plastic, rubber or any other suitable soft material.

One or more electrical heating cables **56** are preferably mounted in the hollow core **38** of the door frame **22**, to heat the door frame so as to prevent any possible condensation of moisture upon the outer surface of the frame. In the absence of any such heating cable, the frame **22** may be cooled to such an extent by the refrigerator that moisture will be condensed from the atmosphere on the frame, particularly under conditions of high atmospheric humidity.

Molding strips **58**, preferably made of aluminum or other suitable metal, are provided to hold the glass panel **20** in the frame **22**. The molding strips **58** are preferably in the form of aluminum extrusions. As shown to best advantage in FIGS. **5** and **6**, each molding strip **58** has a body portion **60** which is screwed or otherwise secured to the door frame **22**. The molding strip **58** has a glass retaining flange **62** which is adapted to project inwardly beyond the inner side wall **44** of the frame extrusion **36**. The exact shape of the glass retaining flange **62** depends upon the thickness of the glass panel **20**. As shown, the glass retaining flange curves forwardly from the body portion **60** of the molding strip **58**.

A soft strip or pad **64** is preferably interposed between the glass retaining flange **62** and the glass panel **20**. The pad **64** may be made of rubber, plastic or some other suitable soft material.

A body portion **60** of the glass retaining strip **58** is preferably screwed or otherwise secured to a flange or lip **66** formed on the inner wall **44** of the frame extrusion **36**. The illustrated flange **64** extends generally at right angles to the inner wall **44** and projects toward the outer wall **42**.

A plurality of self-drilling screws **68** are preferably employed to secure the body portion **60** of the molding strip **58** to the flange **66**. The screws **68** extend through the body portion **60** and the flange **66**. It will be seen that each screw **68** has a self-drilling point **70**, a self-tapping screw shank **72**, and a flat self-countersinking head **74** which is recessed into the body portion **60**. A suitable power tool may be employed to insert the self-drilling screws **68**. To facilitate the accurate location of the screws **68**, a locating groove **76** is preferably formed in the rear side of the flange **66**. The illustrated groove **76** is generally V-shaped in cross section. The groove **76** extends along the entire length of the flange **66** and is adapted to locate the self-drilling screws **68** in whatever positions they may be inserted.

To provide further assistance in locating the panel molding strips **58**, each strip is preferably provided with a shoulder **78** which is adapted to engage the edge of the flange **66**. The body portion **60** of the molding strip **58** has an outer portion **80** of the increased thickness to form the shoulder **78**.

The illustrated molding strip **58** has an outer flange **82** which projects from the body portion **60** toward the outer side wall **42** of the door extrusion **36**. The flange **82** is preferably of reduced thickness relative to the thickened portion **80** and is offset rearwardly relative to the body portion **60**.

A rear retaining flange **84** is preferably formed on the outer side wall **42** to engage the flange **82** of the molding strip **58**. The retaining flange **84** projects inwardly, generally at right angles to the outer side wall. It will be seen that the flange **84** is offset rearwardly relative to the rear flange **66** on the inner side wall **44**.

In addition to retaining the glass panel **20**, it will be seen that the molding strip **58** closes the rear side of the hollow core or channel **38** in the door extrusion **36**. Moreover, the gasket **32** is preferably mounted across the rear side of the molding strip **58**. Thus, the body portion **60** is formed with a flat rear surface **86** against which the gasket **32** is mounted. The illustrated gasket **32** has a flat mounting portion or strip **88** adapted to engage the flat surface **86**. A pair of flexible pleats or folds **90** are formed integrally with the flat mounting strip **88** and are adapted to extend between the mounting strip and a tubular outer portion **92**, within which the magnets **34** of the gasket **32** are mounted.

To retain the gasket **32**, the molding strip **58** is formed with a flange or lip **94** which is spaced rearwardly from the inner edge of the body portion **60**. The lip **94** forms a channel **96** adapted to receive the inner edge of the flat mounting strip **88**. It will be understood that the flat mounting strip **88** of the gasket **32** fits snugly within the channel **96**.

A second molding strip **98** is preferably provided to clamp the gasket **32** against the molding strip **58**, while also clamping the outer flange **82** of the molding strip **58** against the retaining flange **84** on the door extrusion

36. Preferably, the molding strip 98 is screwed or otherwise secured to the molding strip 58. The second molding strip 98 is preferably in the form of an extrusion made of aluminum or other suitable material.

The illustrated molding strip 98 has an outer gasket retaining flange 100, adapted to clamp the outer edge of the gasket mounting strip 88 against the body portion 60 of the molding strip 58. The flange 100 has a pointed lip or edge 102 which is turned forwardly and is adapted to bite into the mounting portion 88 of the gasket, so as to prevent any possible dislodgement of the gasket.

The illustrated molding strip 98 has an outer flange 104 adapted to engage the retaining flange 84 on the outer side wall 42 of the door extrusion 36. The flange 104 projects forwardly beyond the flange 100.

The molding strip 98 has a body portion 106 between the flanges 100 and 104. It is preferred to employ self-drilling screws 108 to secure the molding strip 98 to the molding strip 58. The construction of the screws 108 may be the same as that of the screws 68. It will be seen that the screws 108 extend through the body portion 106 of the molding strip 98, and the outer flange 82 of the molding strip 58. The screws 108 are tapped into the flange 82. The tapering heads of the screws 108 are recessed into the molding strip 98 so as to be flush with the body portion 106.

It will be understood that the screws 108 clamp the flange 100 against the mounting portion 88 of the gasket 32. At the same time, the screws clamp the outer flange 82 of the molding strip 58 against the retaining flange 84 on the outer side wall 42 of the door extrusion 36. Moreover, the screws 108 clamp the outer flange 104 of the molding strip 98 against the rear side of the retaining flange 84.

To assist in locating the molding strip 98, the retaining flange 84 is formed with a rearwardly turned lip 110 which is adapted to be engaged by a shoulder 112, formed on the molding strip 98 between the flange 104 and the body 106. In addition, the molding strip 98 is formed with a locating flange or leg 114 which projects forwardly from the body portion 106 and is adapted to engage the rear side of the flange 82 of the molding strip 58. A shoulder 116 is formed between the flange 82 and the body portion 60 of the strip 58 to engage and locate the flange 114. It will be understood that the flange or leg 114 limits the extent to which the gasket mounting member 88 may be compressed by tightening the screws 108.

The illustrated molding strip 98 has a curved contour 118 on the outside of the flange 104 to form a smoothly rounded corner at the rear of the outer side wall 42. Similarly, the flange 100 has a smoothly rounded contour 120. The lip or flange 94 also has a smoothly rounded outer contour 122.

The outer frame or casing 14 is generally rectangular and preferably comprises a plurality of rectangularly related border members 124. A plurality of vertical mullions 126 are connected between the upper and lower border members to provide for the mounting of a plurality of doors on the outer frame 14. The mullions 126 are mounted at regular intervals, corresponding to the width of the doors.

As shown to best advantage in FIGS. 2 and 5, the border members 124 are preferably in the form of extrusions made of aluminum or some other suitable material. The illustrated border members or extrusions 124 are generally Z-shaped in cross section. Thus, each extrusion 124 comprises a front or outer flange 128, a rear or inner flange 130, and a web or body 132 extending therebetween. The front and rear flanges 128 and 130 project in opposite directions, generally at right angles to the web 132.

When the doors 12 are closed, they are recessed into the frame 14 so as to be generally flush with the front flanges 128 of the border members 124. The rear flanges 130 serve as stops for the doors 12, as do the mullions 126.

The rear flange 130 of each border member 124 is preferably hollow in construction and thus has a hollow core. As illustrated, the rear flange 130 is formed with two channels or grooves 134 and 136 which are adapted to receive one or more electrical heating cables 138. In the illustrated construction, there are two of the heating cables 138 in the channel 134. The heating cables 138 are employed to warm the border members 124 to such an extent as to avoid any condensation of moisture on the border members.

Each rear flange 130 is provided with a cover plate 140 to close the channels 134 and 136. The plate 140 is screwed or otherwise removably secured to the rear flange 130. Thus, the illustrated plate 140 is secured to the flange 130 by means of a plurality of self-tapping screws 142 which are tapped into suitable channels 143 in the flange 130. It will be seen that the flange 130 has a mid portion 144, between the channels 134 and 136. The screws 142 extend through holes in the mid portion of the plate 140 and are tapped into the channels 143 which are formed in the mid portion 144 of the flange 130.

The covering plate 140 spans the open front sides of both of the channels 134 and 136. A recess 146 is preferably formed in the front side of the flange 130, to receive the cover plate 140, so that the cover plate will be flush with the front side of the flange.

Occasionally, it may be necessary to replace the heating cables 138, which may burn out after extended service. The heating cables may easily be removed and replaced by removing the cover plates 140. This may be done simply by removing the screws 142.

The cover plates 140 also preferably serve as magnetic members to attract the magnets 134 of the magnetic gaskets 132. Thus, the cover plates 140 are preferably made of magnetic stainless steel, or other suitable magnetic material. It will be seen from FIG. 5 that the gaskets 132 are adapted to engage the cover plates 140. The magnets 134 provide firm pressure between the gaskets 132 and the cover plates 140.

As already indicated, the outer frame 14 is normally mounted within an opening 16 in the front wall 18 of the refrigerator case or cabinet. A sealing strip 148 is preferably provided between the outer frame 14 and the wall 18. The sealing strip 148 is normally made of plastic, rubber or other soft material. As shown, the sealing strip 148 is generally Z-shaped, to cover virtually the entire rear surface of the Z-shaped border extrusion 124. Thus, the sealing strip 148 has a front flange 150, a rear flange 152, and a web or body 154, extending therebetween. The front flange 150 is adapted to be interposed between the wall 18 and the

front flange 128 of the border extrusion 124. The rear side of the front flange 150 is preferably formed with a plurality of sealing lips or flaps 156, adapted to engage the wall 18.

The rear flange 152 covers the rear side of the rear flange 130 on the extrusion 124. Similarly, the web 154 covers the outside of the web 132 and is adapted to be interposed between the web 132 and the wall 18.

To retain the sealing strip 148, an L-shaped lip or flange 158 is preferably formed on the rear inner corner of the rear flange 130. The lip 158 forms a channel 160 adapted to receive a reduced edge portion 162 on the rear flange 152 of the sealing strip 148. After the reduced portion 162 of the sealing strip 148 has been inserted into the channel 160, the lip 158 is preferably struck inwardly at intervals to form spaced points 164 which dig into the sealing strip and prevent it from becoming detached from the flange 130.

A key or tongue 166 is preferably formed on the inner side of the web 154 of the sealing strip 148, for reception in a groove or channel 168, formed in the outer side of the flange 130, near the rear corner thereof. The key 166 interlocks with the groove 168 to assist in retaining the sealing strip 148 on the extrusion 124. It will be seen that the key 166 and the groove 168 are of dovetail shape, to provide secure interlocking therebetween.

Initially, the sealing strip 148 is preferably formed with an additional flange 170 which is attached to the front flange 150 and is adapted to be wrapped around the front of the front flange 128 on the extrusion 124, as shown in FIG. 3. It will be seen that the flange 170 is generally J-shaped in cross section. The wrap-around flange 170 protects the outer edge and front surface of the extrusion 124 during the shipment and handling of the outer frame 14. When the outer frame 14 is ready to be installed, the wrap-around flange 170 is torn or ripped off the front flange 150, as shown in FIG. 4. To facilitate the removal of the flange 170, a deep groove 172 is formed between the flange 170 of the outer edge of the front flange 150. It will be understood that the flange 170 is torn off along the groove 172. The provision of the groove 172 leaves only a thin web 174 which offers little resistance to the removal of the flange 170.

To assist in retaining the sealing strip 148 on the extrusion 124 during shipment and handling, the web or body portion 154 of the sealing strip is preferably formed with a dog-leg portion 176 which acts as a spring. The dog-leg portion 176 is initially L-shaped in cross section, as shown in FIG. 3. It will be understood that the dog-leg portion 176 can be straightened to facilitate the mounting of the flange 170 around the front flange 128 of the extrusion 124. The spring action of the dog-leg portion 176 then retains the flange 170 on the extrusion flange 128.

When the outer frame 14 is installed, the flange 170 is torn off, whereupon the sealing strip 154 assumes the position shown in FIG. 4, with the dog-leg portion 176 in its initial or L-shaped position. The frame 14 is inserted into the opening 16 and is pushed rearwardly so that the front flange 150 of the sealing strip 148 is compressed between the wall 18 and the front flange 128 of the extrusion 124. As a result, the dog-leg 176 is straightened out, as shown to best advantage in FIG. 5. The front flange 128 is formed with ridges 177 for engaging the sealing strip 148.

Each of the illustrated mullions 126 is generally channel-shaped and thus comprises a front wall 180 and a pair of rearwardly projecting flanges or side walls 182. The front wall 180 is preferably formed with one or more grooves or channels 184 to receive electrical heating cables 186. Two such cables 186 are illustrated. It will be understood that the cables 186 heat the mullions 126 to a sufficient extent to prevent condensation of moisture on the mullions.

The channels 184 for the heating cables are closed by a removable cover plate 188 which is screwed or otherwise secured to the front wall 180 of the mullion 126. In this case, a plurality of self-tapping screws 190 extend through holes in the plate 188 and are tapped into channels 191 in the mullion 126.

The cover plates 188 on the mullions 126 also preferably serve as magnetic armatures for the magnetic gaskets 132. Thus, the cover plates 188 are preferably made of a stainless steel having magnetic characteristics or some other suitable magnetic material.

To provide heat insulation, the side flanges 183 and portions of the front wall 180 of each mullion 126 are preferably covered with cover strips 192, made of plastic, rubber or other suitable material. As shown in FIG. 5, each mullion 126 is preferably equipped with two of the strips 192, each of which covers one side flange 182 and the adjacent portion of the front wall 180.

Thus, each of the illustrated cover strips 192 is generally L-shaped in cross section and is provided with a front leg 194 and a side leg 196. Means are preferably provided for securely fastening the cover strips 192 to the mullion 126. As shown, a generally L-shaped lip or flange 198 is formed on each of the rearwardly projecting flanges 186 of the mullion 126. Each lip 198 forms a channel or groove 200, adapted to receive a reduced edge portion or flange 202 on the corresponding cover strip 192. After the flange 202 has been inserted into the channel 200, the lip 198 may be bent inwardly against the flange 202 at intervals along the length of the mullion, so that the flange 202 will be securely clamped in place.

Similarly, the illustrated mullion 126 is formed with L-shaped flanges or lips 204 to retain reduced edge portions or flanges 206 on the front legs 194 of the cover strips 192. Each lip 204 forms a channel or groove 208 adapted to receive the reduced edge portion 206. The lip 204 may be bent rearwardly at intervals so as to clamp the reduced edge portion 206 in place.

As shown in FIG. 5, the cover strips 192 are formed with recesses 210 to receive the magnetic cover plate 188. The front legs 194 of the cover strips 192 are clamped against the mullion 126 by the cover plate 188.

Each mullion 126 is hollow, in that a channel-shaped opening 212 is formed therein. Thus, the mullions may be employed very advantageously as raceways or conduits for electrical wiring. The rear side of each mullion 126 is preferably closed by a removable plate 214 which conceals the electrical wiring and also acts as a mounting plate for one or more electrical lighting fixtures 216. Electrical wiring may be installed in the mullions to supply electricity to the electric lighting fixtures 216 and also to the heating cables 186.

As shown in FIGS. 2 and 7, a channel-shaped raceway 218 is preferably mounted on the rear side of the upper horizontal frame member or extrusion 124. Suitable bolts or screws 220 may be employed to secure the raceway 218 to the rear flange 130 of the outer frame extrusion 124. Interconnecting openings may be provided between the raceway 218 and the upper ends of the channels 212 in the mullions 126. Thus, wiring may be brought into the mullions through the raceway 218.

As shown in FIGS. 2 and 7, flexible electrical cords 222 are preferably employed to supply electrical energy to the doors 12, to energize the heating cables 56 therein. The cords 222 extend into the upper horizontal extrusions 36 of the doors 12 and are connected to the heating cables 56 therein. The other end of each cord 222 is preferably provided with a plug 224 adapted to be inserted into a suitable receptacle 226 on the upper horizontal raceway 218. Suitable wiring may be provided in the raceway 218 to supply electrical energy to the various receptacles 226. It will be understood that the cords 222 are long enough to provide for free opening of the doors 12.

SUMMARY OF OPERATION

While the installation and operations of the refrigerator door assembly 10 have been described, it may be helpful to offer a brief summary. For shipment and handling, the protective flanges 170 are provided on the insulating and sealing strip 148, as shown in FIG. 3. The dog-leg portion 176 provides a spring action which retains the protective flange 170 on the front flange 128 of the outer frame extrusion 124.

The outer frame 14 is inserted loosely into the opening 16, and then the protective flange 170 is torn off along the groove 172, as shown in FIG. 4. The outer frame 14 is then securely pressed against the wall 18, as shown in FIG. 5, so as to straighten out the dog-leg portion 176.

During the normal use of the doors 12, the magnetic cover plates 140 and 188 on the outer frame members 124 and the mullions 126, respectively, form magnetic armatures for the magnets 34 in the magnetic gaskets 32. The gaskets 32 are securely retained on the doors by the lips 94 on the glass molding strips 58, and also by the flanges 100 on the outer molding strips 98.

Occasionally, the heating cables 138 in the outer frame 14 may burn out, in which case it is necessary to change the heating cables. This may be done very easily by removing the cover plates 140 from the rear flanges 130 of the outer frame extrusions 124. It is a simple matter to remove the cover plates 140, by unscrewing the screws 142.

Similarly, the heating cables 186 in the mullions 126 may be changed very easily by unscrewing the screws 190 and removing the cover plates 188. It will be evident that full access to the heating cables 138 and 186 is available from the front of the outer frame 14. It is never necessary to remove the outer frame 14 from the wall opening 16 to change the heating cables. It is only necessary to remove the magnetic stainless steel cover plates 140 and 188, which is an easy operation.

Occasionally, it may also become necessary to change the heating cables 56 in the doors 12. This may be done quite easily by removing the molding strips 98 and 58. The outer molding strips 98 may be removed by unscrewing the screws 108. The gasket 32 is then removed, so that the screws 68 may be unscrewed to remove the glass molding strips 58. FUll access may then be had to the heating cables 56 within the hollow cores 38 of the door extrusions 36.

It will be recognized that the refrigerator door assembly 10 is easy to install and also easy to service in the field. The door assembly is ruggedly built so that it will withstand hard service and give a long trouble-free life.

Various other modifications, alternative constructions, and quivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claims.

We claim:

1. In a refrigerator door mounting frame,
the combination comprising a generally channel-shaped mullion having a front wall and a pair of side walls projecting rearwardly from said front wall,
a pair of generally angle-shaped insulating cover strips mounted on said mullion,
each cover strip having a side leg covering one of said side walls and a front leg covering an adjacent portion of said front wall,
a lip on each of said side walls for retaining the corresponding side leg,
and a pair of lips on said front wall for retaining said front legs.

2. A combination according to claim 1,
comprising a magnetic cover plate covering said front legs of said strips,
and removable fasteners for securing said cover plates to said front wall of said mullion.

3. A combination according to claim 1,
in which said front wall of said mullion is formed with at least one forwardly opening channel,
an electrical heating cable mounted in said channel,
a magnetic cover plate closing said channel and mounted against said front wall of said mullion and said front legs of said strips,
and removable fasteners for securing said cover plate to said front wall of said mullion.

4. In a refrigerator door mounting frame,
the combination comprising a generally channel-shaped mullion having a front wall and a pair of side walls projecting rearwardly from said front wall,
a pair of generally angle-shaped insulating cover strips mounted on said mullion,
each cover strip having a side leg covering one of said side walls and a front leg covering an adjacent portion of said front wall, said front legs having free edges on said front wall spaced from each other,
and means for retaining said cover strips on said mullion.

5. In a refrigerator door mounting frame,
the combination comprising a mullion having a front wall
with a forwardly opening channel in said front wall,
an electric heating cable in said channel,
a magnetic cover engaging said front wall to close said channel,

and means for removably securing said cover plate to said mullion.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,697,723 Dated October 10, 1972

Inventor(s) Robert J. Winsler, Fred A. Richter

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 8, line 22, "183" should be --182--.
Column 8, line 37, "186" should be --182--.
Column 9, line 40, after "tion 176" add --The flaps or lips 156 form a tight seal against the wall 18.--.
Column 10, line 4, "FULl" should be --Full--.
Column 10, line 37, "plates" should be --plate--.

Signed and sealed this 24th day of April 1973.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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