

Filed May 27, 1955

7 Sheets-Sheet 1

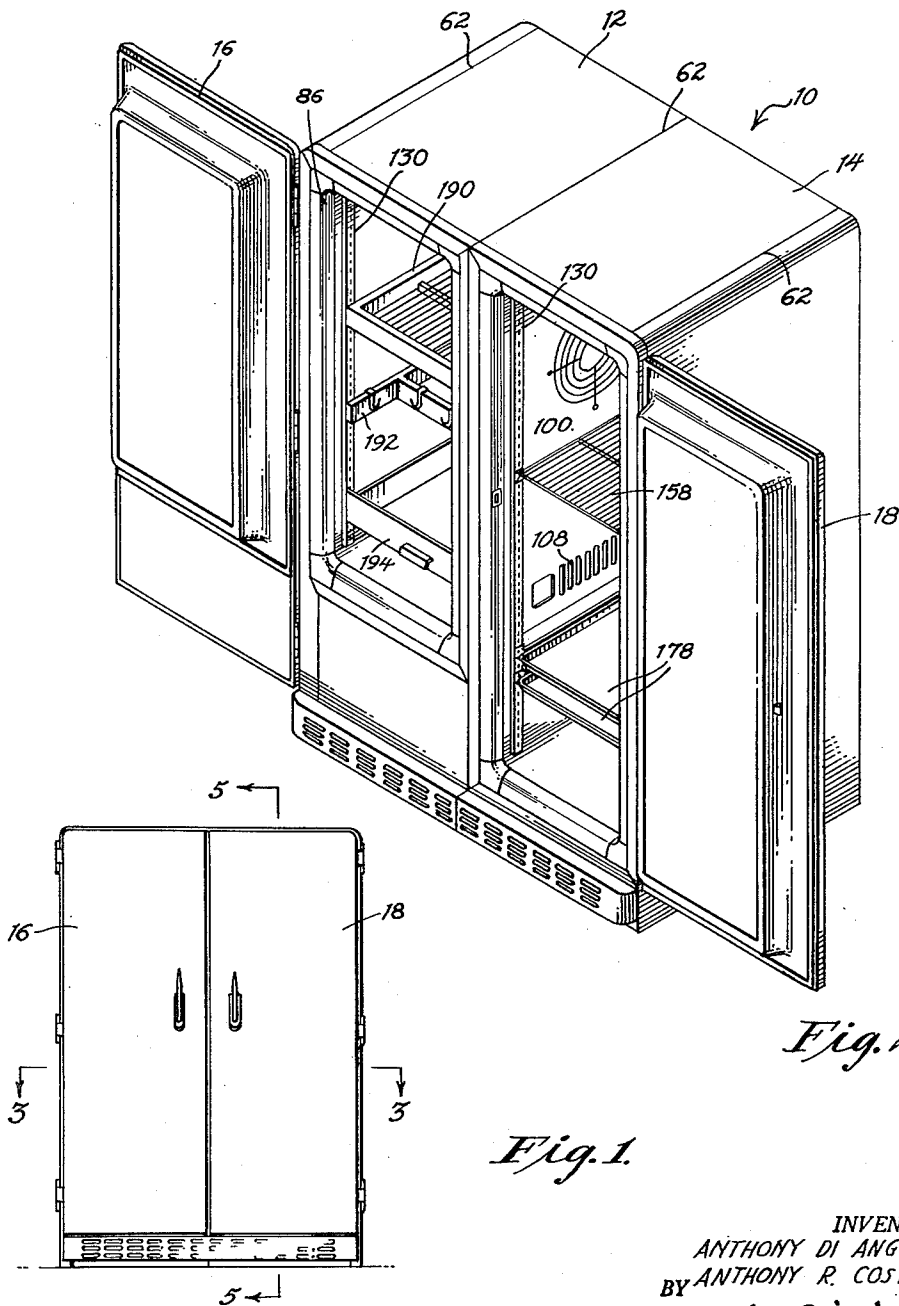


Fig. 2.

Fig. 1.

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Dec. 10, 1957

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2,815,649

REFRIGERATOR

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7 Sheets-Sheet 2

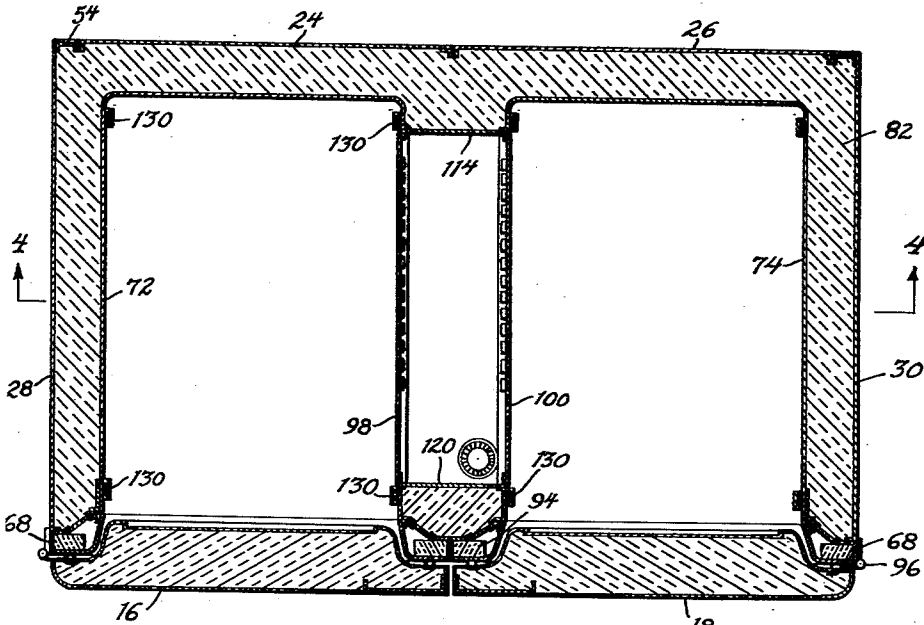


Fig. 3.

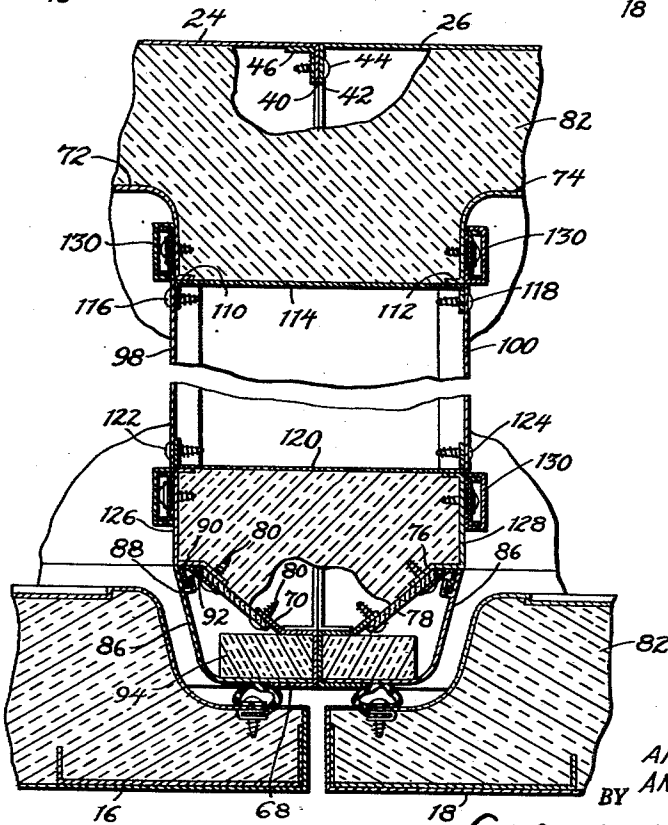


Fig. 6.

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7 Sheets-Sheet 4

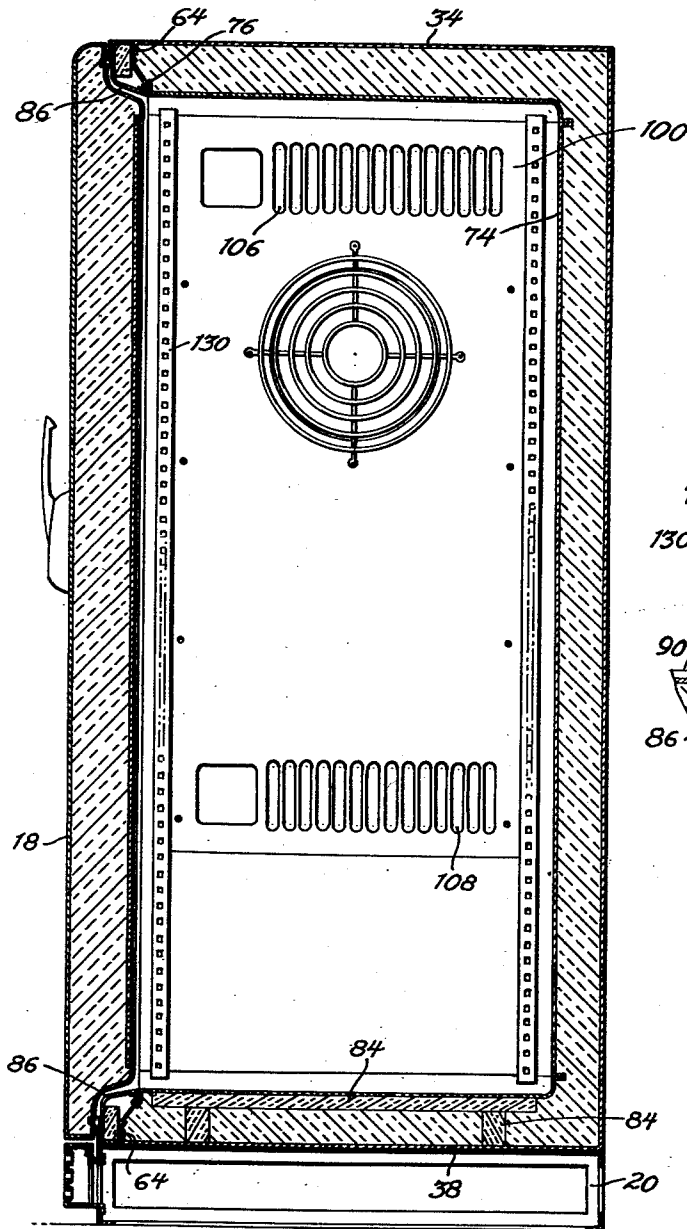


Fig. 5.

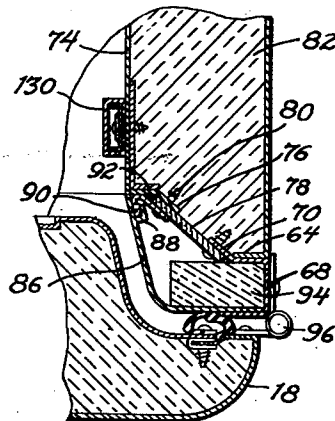


Fig. 7.

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7 Sheets-Sheet 5

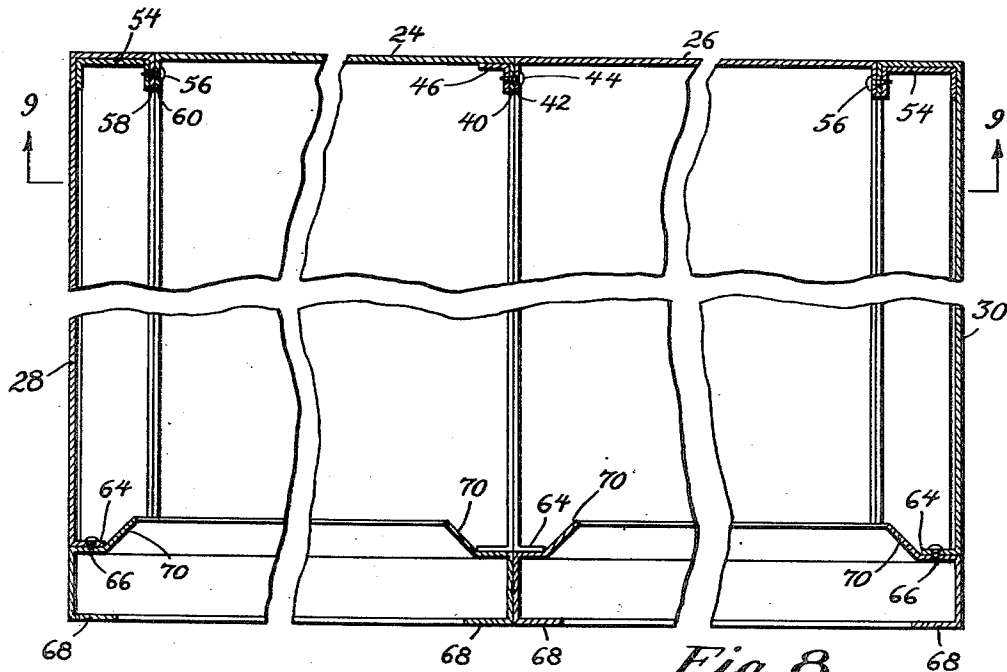


Fig. 8.

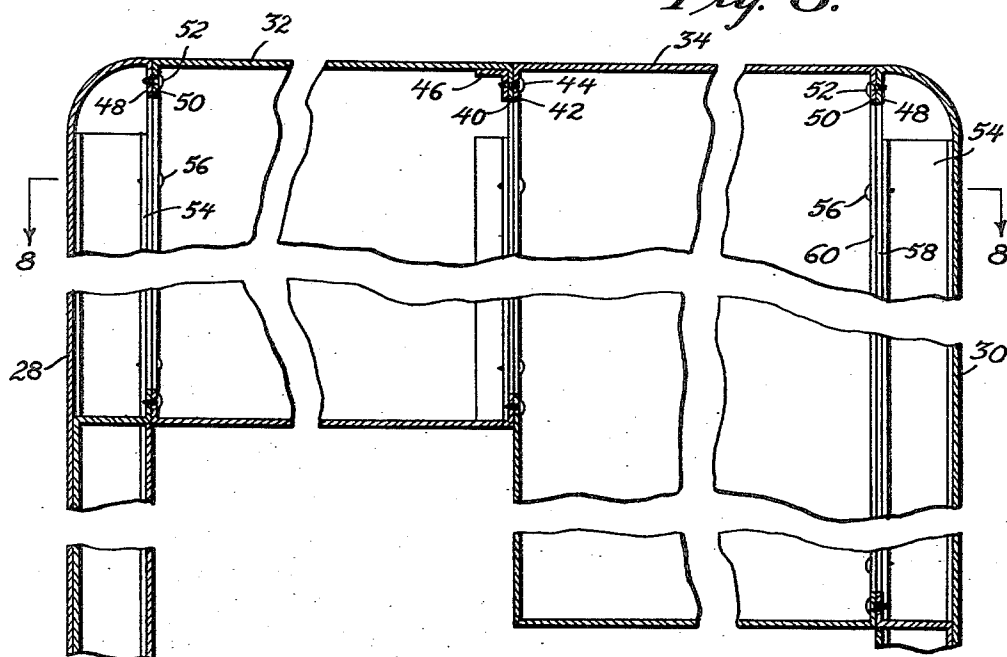


Fig. 9.

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7 Sheets-Sheet 6

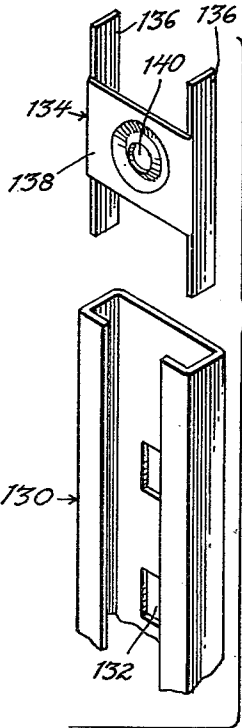


Fig. 10.

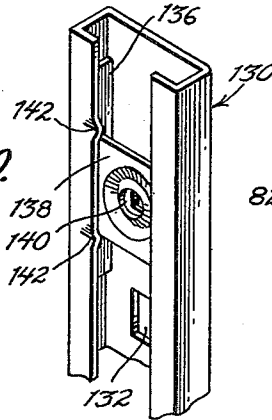


Fig. 11.

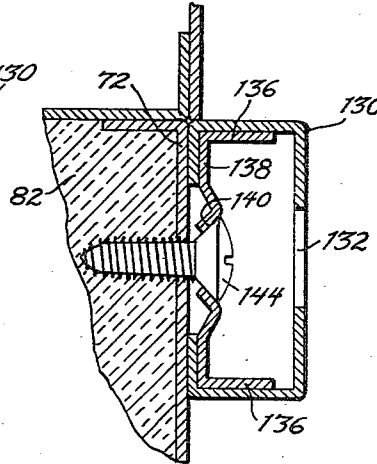


Fig. 12.

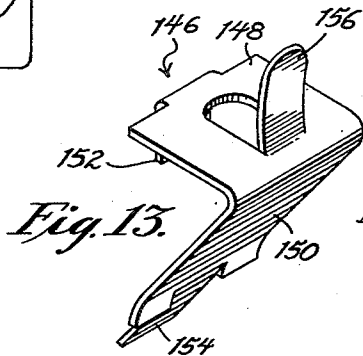


Fig. 13.

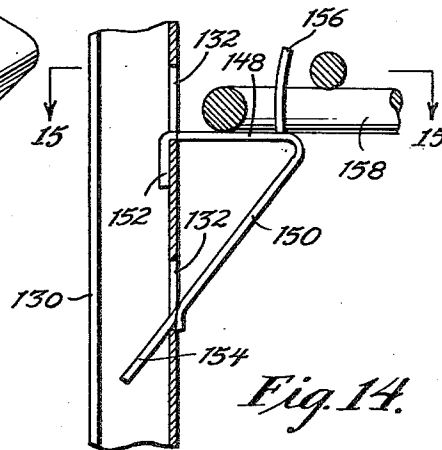


Fig. 14.

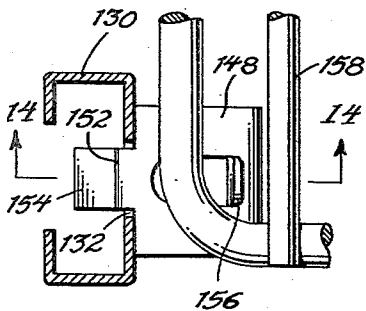


Fig. 15.

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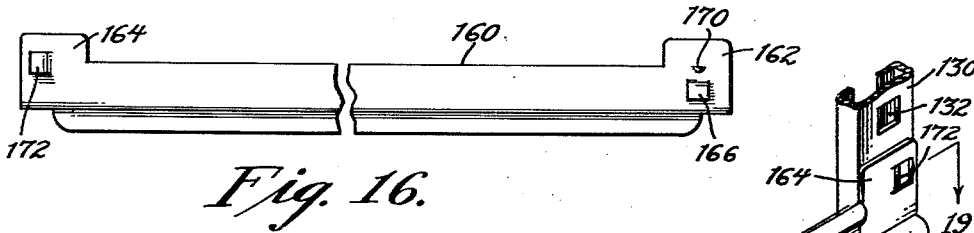


Fig. 17.

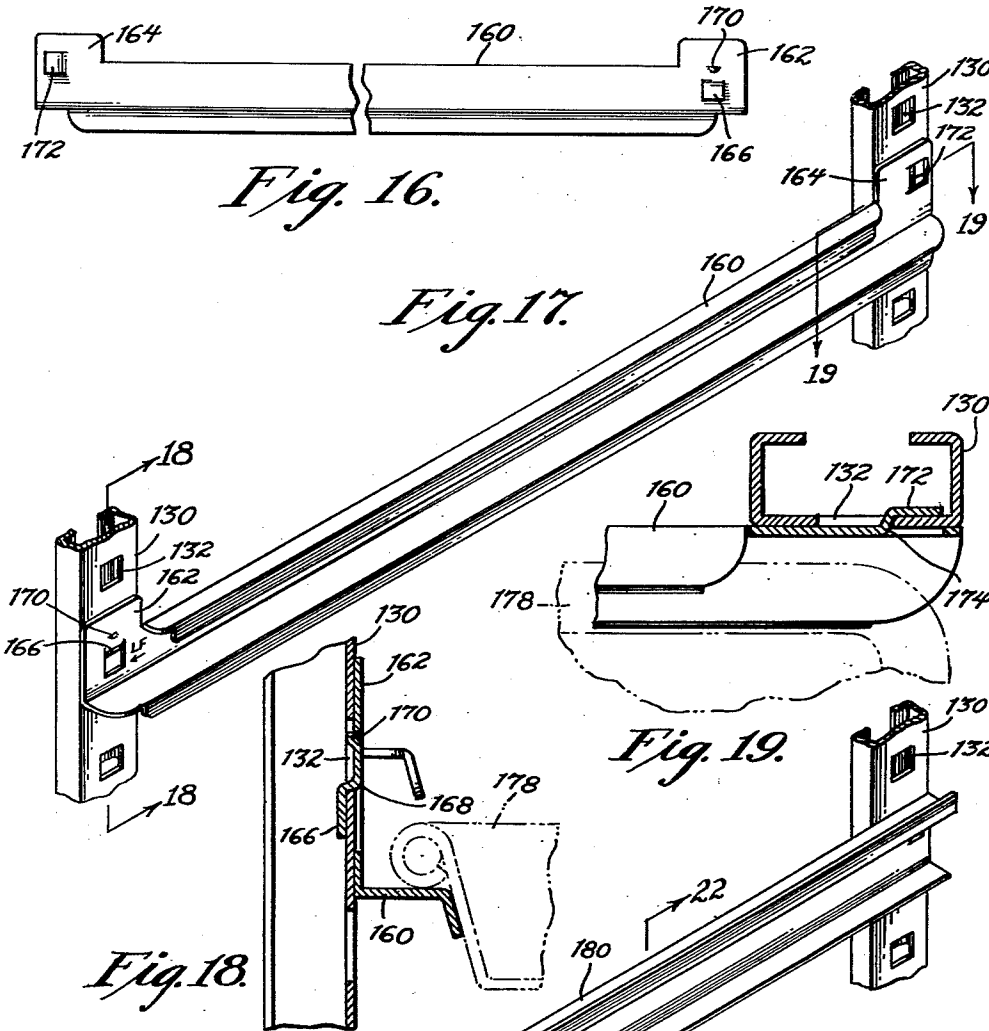
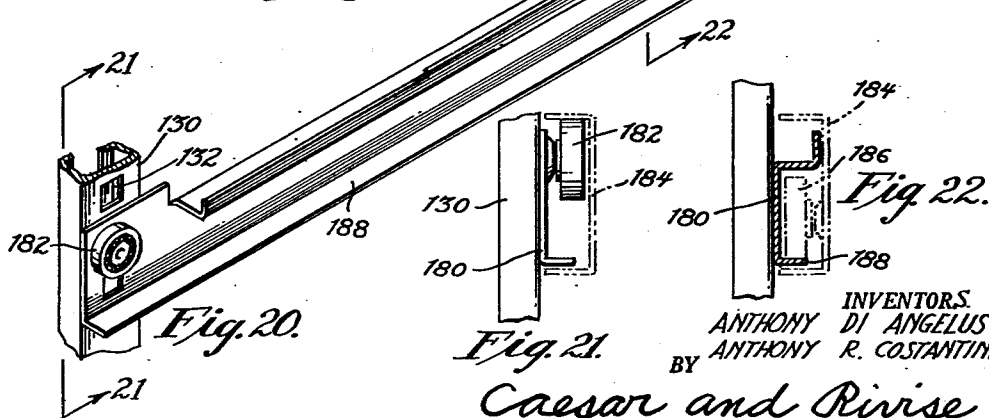


Fig. 19.

Fig. 20.



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REFRIGERATOR

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Application May 27, 1955, Serial No. 511,504

9 Claims. (Cl. 62—102)

This invention relates to commercial refrigerators, the primary object of which is to provide a refrigerator with adjustable and interchangeable interiors capable of accommodating any combination of bakers' pan slides, stationary or pull-out meat rails, stationary or pull-out shelves and refrigerated drawers. The interchangeable interiors are made possible by a construction including posts having vertically spaced openings secured to the interior walls of the refrigerator and clips or rails which may be readily and removably suspended on the posts and upon which may be supported meat rails, shelves, trays and drawers.

Another object of the invention is to provide a sectional refrigerator comprised of units which can be attached to each other to increase the capacity of the refrigerator. The units are constructed of standardized parts capable of ready and easy attachment to provide sections separated by vented hollow walls in which are mounted conventional evaporators and fans which are, in turn, operatively connected to an enclosed or remote compressor. The construction is such that there are no exterior screws.

And yet another object of the invention is to provide a refrigerator which is not only sturdy, functional, attractive and extensible but is also capable of fabrication and assembly of standard parts rapidly and with a minimum of skill and manipulation.

These and other objects and features of the invention will become more apparent as the following description proceeds in conjunction with the accompanying drawings wherein:

Figure 1 is a front elevation of a two-door refrigerator;

Figure 2 is an enlarged perspective view of the refrigerator with the doors open;

Figure 3 is an enlarged sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on the line 4—4 of Fig. 3;

Figure 5 is an enlarged sectional view taken on the line 5—5 of Figure 1;

Figure 6 is an enlarged sectional view with parts broken away of the central portions of Figure 3 and illustrating the details of attachment of the refrigerator sections;

Figure 7 is an enlarged sectional view of a front corner portion of Figure 3 and illustrating the attachment of the liner to the sides of the refrigerator near the hinge;

Figure 8 is a sectional view taken on the line 8—8 of Figure 9 with liner and insulation removed;

Figure 9 is a sectional view taken on the line 9—9 of Figure 8;

Figure 10 is an exploded perspective view of a post and securing insert as used in the interchangeable interiors of the refrigerator;

Figure 11 is a perspective view of the same parts of Figure 10 assembled;

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Figure 12 is a horizontal sectional view through the parts shown in Figure 11 as attached to the refrigerator;

Figure 13 is a perspective view of a shelf-suspending clip for insertion in the post shown in Figures 10—12;

Figure 14 is a sectional view taken on the line 14—14 of Figure 15;

Figure 15 is a sectional view taken on the line 15—15 of Figure 14;

Figure 16 is an elevational view of a rail used to support a slide bakers' pan;

Figure 17 is a perspective view of the rail of Figure 16 shown attached to the post;

Figure 18 is an enlarged sectional view taken on the line 18—18 of Figure 17;

Figure 19 is an enlarged sectional view taken on the line 19—19 of Figure 17;

Figure 20 is a perspective view similar to Figure 17 of a roll rail to support roll-out racks, etc.

Figure 21 is an elevational view looking from line 21—21 of Figure 20; and

Figure 22 is a sectional view taken on the line 22—22 of Figure 20.

Specific reference is now made to the drawings wherein similar reference characters are used for corresponding elements throughout. It will be understood that any suitable materials may be used to fabricate the various parts.

The refrigerator is generally indicated at 10 and comprises adjacent sections 12 and 14 and doors 16 and 18 preferably designed with handles which may be individually locked. While two sections only are illustrated, it will be understood that additional sections may be added with a minimum of manipulative skill due to the standardization of sizes and shapes of the various parts and the special features of construction, as will appear hereinafter.

The refrigerator includes a base 20 of welded angle bars serving as a support. In the sectional unit shown, one portion of the base is enlarged to receive a preferably roll-out compressor 22. However, if a remote compressor is used the shorter section 12 will be made as long as the section 14.

The sections include an outer wall consisting of adjacent rear walls 24 and 26, opposed side walls 28 and 30, roof walls 32 and 34 and bottom walls 36 and 38, the rear, roof and bottom walls being preferably integral and substantially C-shaped. All around the meeting edges of the C-shaped members there are inwardly extending abutting flanges 40 and 42 which are secured together by appropriate fasteners 44, there being included a reinforcing angle 46. This produces smooth rear vertical, top horizontal and bottom horizontal seams.

The upper ends of the side walls 28 and 30 are preferably rounded and are secured to the roof walls 32 and 34 by inwardly extending abutting flanges 48 and 50 which are secured to each other as at 52. The rear vertical corners of the refrigerator are reinforced with vertical channel pieces 54, the latter being secured as at 56 to abutting flanges 58 and 60 extending inwardly from the side walls 28 and 30 and the rear walls 24 and 26 respectively. Thus the construction is such that a sectional refrigerator results having smooth seams as at 62 having no exterior screws.

All around the front edges of the side walls, the roof walls, and the bottom walls are flanges 64 to which are attached as at 66 a channel member 68 having an inwardly angulated lip 70, the channel member framing the entire front open end of the refrigerator behind the doors.

The sections include inner liners 72 and 74 each in the form of a shell with curved corners extending as a unit

around and spaced from the side, roof and bottom walls. The liners are secured to the channel members 68 at the front end of the refrigerator. All around the front end of each liner is an angulated lip 76 which aligns with the lip 70 of the channel member and is secured thereto by a flat member 78, preferably of "Masonite," abutting the lips 70 and 76. Screws 80 are used to attach the member 78 to the lips. Any desired insulation 82, such as fiberglass, may be interposed between the liners and the outer walls. The bottoms of the liners are additionally supported by substantially rigid heat-insulating strips 84, such as "Celotex" strips.

Secured in the channel members 68 all around the front of the refrigerator sections is a curved metal or plastic finishing piece 86 serving as a door frame. Adjacent one end of the piece 86 is a substantially L-shaped channel lip 88 into which is press fit the angulated crimped lip 90 of a bracket 92, the latter being secured by one of the screws 80 to the flat bar 78. The bracket 92 serves to lend rigidity to the finishing piece 86 and also to keep the latter properly spaced from the bar 78. Received in the channel members 68 and in the finishing piece 86 are relatively rigid strips 94 of heat insulating material, such as "Styrofoam," a perforated polystyrene plastic.

The doors 16 and 18 are hinged as at 96 to the side walls 28 and 30 at their front ends and consist of conventional face plates and inner shells filled with insulating material.

The partition between adjacent sections is spaced walls 98 and 100 between which are mounted a conventional fan 102 and an evaporator 104 operatively connected to the compressor 22, there being intake and return vents 106 and 108 in each partition wall.

At their rear vertical edges the liners 72 and 74 include flanges 110 and 112, see Figure 6, which abut against a vertical channel member 114, the partition walls 98 and 100 being secured as at 116 and 118 to the legs of the channel member. At the front of the refrigerator another vertical channel member 120 is provided and the front ends of the partition walls 98 and 100 are secured to this channel as at 122 and 124.

Additional liner sections 126 and 128 are provided which abut against the channel member 120, these liner sections being of the same construction as the liners 72 and 74 previously described and being secured to the flat bars 78, the channel members 68 and the finishing pieces 86 also in the manner as previously described.

An important feature of the present invention is the means by which the interiors may be made adjustably interchangeable. This is accomplished by providing pairs of vertical posts 130 which are secured interiorly of the refrigerator to the side portions of the inner liners and to the partition walls. The posts include vertically spaced, preferably square, openings 132, the posts being positioned so that the openings are in horizontal alignment.

The post is C-shaped and there is provided a number of insert brackets 134 slidable in the post, each bracket including legs 136 bearing against the legs of the post and a central plate 138 having a tapered recessed opening 140. After insertion of each bracket in the post, the flanges of the post are crimped as at 142 about the plate 138 to retain the opening 140 in fixed alignment with one of the openings 132 in the post. A screw 144 is inserted through the opening 132 and then through the opening 140 of the bracket 134, the screw extending through the liner or partition wall, as the case may be. The head of the screw is disposed inwardly of the post to permit exposure of the openings 132.

Various members may be removably suspended in selected post openings 132 to support a variety of stationary, slide or roll-out food-retaining members. One such member is shown in Figures 13-15 and comprises a substantially V-shaped clip 146 having a substantially horizontal leg 148 and a vertically extending inclined leg 150. The leg 148 has a depending finger 152 adapted to engage in

one opening 132 and the leg 150 has a finger 154 which engages in an opening 132 just beneath the aforementioned opening as shown in Figure 14. The leg 148 has an upstruck finger 156 serving to suspend a wire shelf 158.

In Figures 16-19 is shown another suspending member, the same comprising a channel rail 160 having front and rear terminal portions 162 and 164. The front portion has a downwardly opening outstruck finger 166 which is inserted in a selected opening 132, the finger having a shoulder 168 bearing on the lower edge of the opening. Above the finger is a stop 170 which also enters the opening 132 and serves to limit upward movement of the front end of the rail. The rear portion 164 of the rail includes an outstruck finger 172 opening towards the rear of the refrigerator and engaging in an aligned opening 132 in a rearwardly opposed post 130 as shown in Figure 17. The finger 172 has a shoulder 174 which bears against the rear vertical edge of the opening 132.

Thus the rails may be quickly and securely mounted in adjusted position on the posts in the interior of the refrigerator. A pair of such rails can serve to slidably support a baker's tray, such as 178.

The channel rail 180 shown in Figures 20-22 is essentially the same as the slide rail shown in Figures 16-19 except that it is provided at its forward end with a roller 182. This roller engages the top of a channel side member 184, the latter including adjacent its rear a roller 186 engaging the lower flange 188 of the rail 180. Thus a pair of rails 180 can be quickly and adjustably installed in the interior of the refrigerator and upon these rails can be supported roll-out shelves 190, roll-out meat-suspending racks 192 and roll-out refrigerated drawers 194, all of which are conventionally provided with rear rollers 186 and stops to limit the movement of these members.

Thus a refrigerator construction is provided which can be readily extended to include additional sections and which is provided with means to adjustably retain in any combination fixed, slide or roll-out racks, shelves, drawers and like food-retaining members.

We claim:

1. In a refrigerator having inner liners, at least two pairs of vertical posts provided with vertically spaced openings, means securing said posts in the interior of the refrigerator to the liners so that the openings are in horizontal alignment, suspending members removably engaged in selected pairs of openings and adapted to support a food-retaining member, each post being C-shaped and said first-named means including insert brackets slidable in said posts, means fixing said brackets at desired locations to said posts and screws extending through selected openings in said posts, through openings provided in said brackets and through said liners.

2. The combination of claim 1 wherein said means fixing said insert brackets to said posts includes crimps in said posts abutting portions of said insert brackets and the heads of said screws being disposed inwardly of said posts.

3. The combination of claim 1 wherein said suspending members are clips, each clip being substantially V-shaped and including an upper substantially horizontal leg and a depending inclined leg, the ends of said legs including fingers removably engaged in two selected openings one above the other in each post and a finger upstanding from said horizontal leg and adapted to engage each corner of a wire shelf.

4. The combination of claim 1 wherein said suspending members include channel rails, one end of said rail including a downwardly opening finger engaged in a selected opening in one post and the other end of said rail including a rearwardly opening finger engaged in a selected opening in a rearwardly opposed post, said rails being adapted to slidably support a food-retaining member.

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5. The combination of claim 4 and a stop above the downwardly opening finger also engaged in said selected opening in said one post to limit upward movement of said one end of said rail.

6. The combination of claim 4 wherein said rails include rollers adapted to engage the sides of roll-out drawers, shelves and the like.

7. A refrigerator comprising at least two box-like sections, each section including an outer member comprising a rear wall, a roof, a side wall, a bottom wall and a flange extending inwardly from the edges of the rear wall, roof and bottom wall opposite the side wall, said flanges of each section being secured to each other in abutting relation to form smooth rear vertical, top horizontal and bottom horizontal seams, liners in the form of shells secured in the interior of the refrigerator and being spaced from said outer members with insulating material therebetween, spaced vented partition walls secured to said liners centrally of the refrigerator opposite said side walls, said partition walls being adapted to mount a fan and evaporator therebetween for operative connection to a compressor, a door hinged to each section and adapted to close off the front end, a channel member, means securing said channel member all around the front end of the liner of each section, a curved finishing piece constituting a door frame, a bracket attaching said finishing piece to said channel member, insulation between said finishing piece and said channel member,

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vertical posts having vertically spaced openings secured to said liners and to said partition walls so that the openings are in horizontal alignment and suspending members removably engaged in selected pairs of openings and adapted to support a food-retaining member.

8. The combination of claim 7 wherein said front end of said liner includes an angulated lip and one end of said channel member also includes an angulated lip in alignment with said liner lip, and said means securing said liner to said channel member includes a flat bar abutting and spanning said lips and means means securing said flat bar to said lips.

9. The combination of claim 8 wherein said finishing piece includes a channel lip adjacent one of its ends and said bracket includes a bar having an angulated lip press fit into said channel lip, said bracket bar being secured to said flat bar.

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