June 25, 1940. G. F. FORSTHOEFEL 2,205,779

REFRIGERATOR CABINET CONSTRUCTION

Original Filed Jan. 19, 1933 2 Sheets-Sheet 1

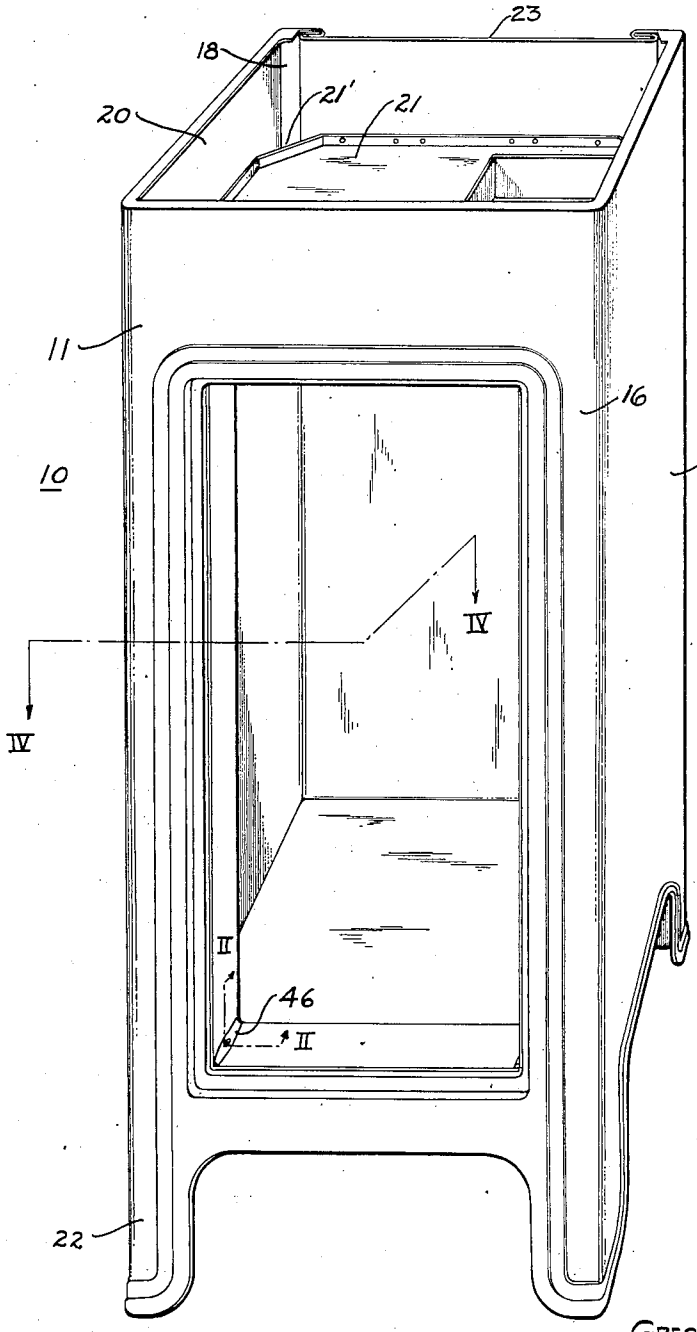


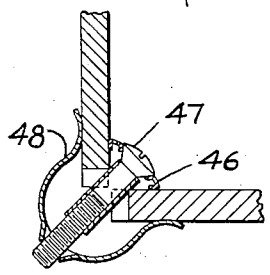
FIG. 1.



FIG. 3.



FIG. 2.



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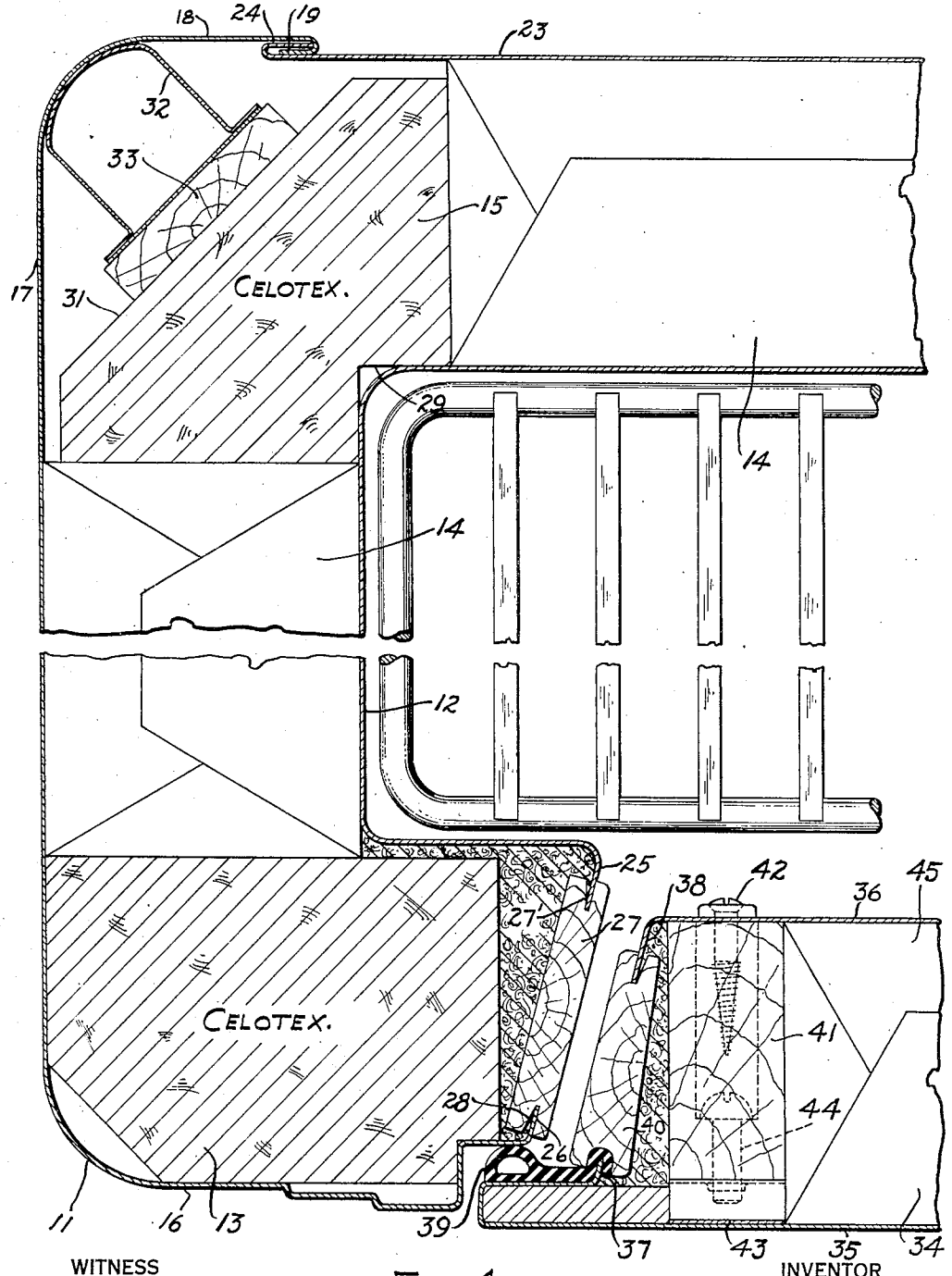


FIG. 4.

WITNESS
E. Lutz.

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REFRIGERATOR CABINET CONSTRUCTION

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Application January 19, 1933, Serial No. 652,563
Renewed August 23, 1935

16 Claims. (Cl. 220—9)

My invention relates to cabinets for refrigerators and the like, more particularly to a double-wall heat-insulated cabinet, and it has for an object to provide an improved cabinet construction.

A further object is to provide an improved means for mounting the breaker strips which extend between the edges of the inner and outer wall members at the door opening to close the space between said wall members.

Another object is to provide a breaker strip construction in which the stresses imposed on the breaker strips by the closing of the cabinet door are distributed by the breaker strips along the adjacent edges of the liner, rather than localized at spaced points of connection between the breaker strips and the liner, as in previous construction, thereby reducing the liability of cracking the porcelain enamel on the liner.

A particular object is to provide means for mounting the breaker strips more quickly, in order to reduce the cost thereof.

A further object is to provide improved means for retaining the liner in position.

A further object is to provide a cabinet which may be quickly and inexpensively assembled.

In accordance with my invention, I provide a cabinet comprising inner and outer casings disposed with their walls in spaced relation. The outer casing comprises a single sheet member forming the front and side walls and another sheet member forming the rear wall. The inner and outer casings have adjacent edge portions, as at the door opening, extending toward each other. Substantially rigid breaker strips are provided having grooves at their edges in which said edge portions engage to position the breaker strips.

For positioning the inner casing or liner in the outer casing and for clamping the breaker strips between said edge portions, I provide wedge means acting between the rear walls of the casings. The wedge means preferably comprises an insulating spacer having a concave portion engaging a rear corner of the liner, and a wedge member between the corner of the outer casing and said spacer. A second spacer may be inserted between the corner of the outer casing and the wedge member.

In assembling the cabinet, the breaker strips are first engaged with said edge portions of the outer casing. The liner is inserted from the back and its edge portions engaged with the breaker strips. The insulation for the side, top and bottom walls is inserted in the outer casing, either before or after inserting the liner, depending on the type of insulation used. The spacers and the rear wall insulation are inserted and the rear wall attached to the outer casing. The wedge members are then positioned from the top through apertures formed by the top wall of the outer casing.

The above and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a perspective view of the cabinet as it appears before the door and top cover are assembled thereon;

Fig. 2 is a sectional view of a corner of the door opening mounting or breaker strip construction;

Fig. 3 is an elevational view of a wedge member, looking at the edge or narrow side thereof; and

Fig. 4 is a horizontal sectional view of the left-hand portion of the cabinet, taken along the line IV—IV of Fig. 1, the right hand portion being symmetrically similar.

Referring to the drawings in detail, the cabinet 10 comprises an outer casing 11 and an inner casing or liner 12 disposed with their respective walls in spaced relation. Suitable heat-insulating material is provided in the intervening space, for example, rigid insulation 13, which may be "Celotex" or cork board, package insulation 14 and other substantially rigid insulation 15 which also forms the spacer of the wedge means hereinafter described.

The outer casing 11 comprises a single sheet member 20, preferably sheet steel, which forms the front wall 16 and side walls 17. The side walls 17 are continued to form marginal portions 18 on the rear side of the cabinet and reversely bent edge portions 19. A top wall 21 is secured to the sheet member 20 in any suitable manner, as by spot welding. It is cut back at the rear corners to provide apertures 21' for the insertion of the wedge members. A suitable bottom wall (not shown) is similarly secured at the bottom of the cabinet. The sheet member 20 is continued downwardly at the corners to form integral legs 22. The outer casing further includes a rear wall 23 which has reversely bent edge portions 24 adapted to engage the reversely bent edge portions 19.

The inner casing or liner 12 is preferably of one-piece construction comprising top, bottom, side and rear walls and having a door opening in its front side registering with the door opening in the outer casing. The inner and outer cas-

ings, at the door openings, have flanges or edge portions 25 and 26, respectively, extending toward each other. To close the space therebetween, breaker strips 27 are provided. In accordance with the present invention, the breaker-strips are substantially rigid, being made of any substantially rigid insulating material such as wood, resinous condensation products, etc. The breaker strips are grooved at their lateral edges, as shown in Fig. 4, the flanges 25 and 26 extending into the grooves 27' and 28 to position the breaker strips. Finishing corner pieces 46 are secured at the corners where adjacent breaker strips meet. They are secured by screws 47 engaging retaining members 48, as shown in Fig. 2, and serve to unite the breaker strips into a door jamb or frame.

In order to clamp the breaker strips between the flanges 25 and 26 and to position the liner 12 within the outer casing, I provide wedge means between the rear walls of the casings to force the liner forwardly with respect to the outer casing. The wedging means includes the insulating spacer 15, above referred to, which has a portion 29 engaging the rear vertical corner of the liner and a diagonal surface 31 opposite the portion 29. A metal spacer 32 is preferably inserted adjacent the corner of the outer casing. A wedge member 33 of any suitable material, such as wood, having a tapered end as shown in Fig. 3, is driven in between the spacers 32 and 15. The spacers 32 and 15, the wedge member 33, the liner 12, and the breaker strips 27 are thereby firmly wedged within the outer casing 11 and securely fixed in position. The body of the cabinet is assembled as follows: The outer casing 11 is laid on its front side and the breaker strips 27 assembled in the form of a frame by the corner connections, are positioned, the grooves 28 engaging the edge portions 26. The heat insulating material for the front, side, top, and bottom walls, where it is substantially rigid or self-sustaining as in the present embodiment, is next inserted, and the liner 12 is then inserted through the back of the outer casing. If loose fibrous insulation is used, it is inserted after the liner 12 is positioned. Next, the spacers 32 and 15 are inserted, and then the insulating material for the rear wall. The rear wall 23 of the outer casing is mounted by sliding it from the top to the bottom end of the cabinet. The wedge members 33 are then driven from the top end of the cabinet through the apertures 21' provided by the top wall 21. The aperture 21' is then preferably closed in any suitable manner to prevent entrance of moisture into the insulating space between the walls of the casing.

The cabinet is provided with a door 34, shown in Fig. 4, comprising an outer wall 35 and an inner wall 36. The edges of the walls 35 and 36 are bent toward each other to form flanges 37 and 38, respectively. Breaker strips 40 grooved at their lateral edges similarly to the breaker strips 27, are engaged with the flanges 37 and 38, one edge of a gasket 39 being preferably interposed between the flange 37 and adjacent groove of the breaker strip. The walls 35 and 36 are connected to each other by wooden strips 41, which are secured to the inner wall 36 by screws 42 and to the outer wall 35 by means of sheet metal strips 43 and screws 44, thereby retaining the breaker strips 40 in position. Suitable heat-insulating material 45 is provided between the walls 35 and 36.

From the above description, it will be seen that I have provided a breaker strip construction which may be very quickly assembled. The breaker strips and the adjacent edges of the casings contact throughout their full lengths, so that the stresses are evenly distributed along the edges of the liner 12. The liner 12 is usually provided with a porcelain finish of enamel and the distribution of the stresses throughout the lengths of the edges clearly reduces the liability of cracking the porcelain enamel. The stresses are then transmitted by the liner 12 through the wedging means at the rear corners to the outer casing.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

I claim:

1. In a cabinet for refrigerators and the like, inner and outer casings, each casing having a rear wall and an opening in the front side to provide a door opening for the cabinet, breaker strips around the door opening held by abutment between the inner and outer casings, and wedge means between the rear walls of said casings to retain the casings and breaker strip in fixed position relative to each other with the breaker strip clamped between said casings.

2. In a cabinet for refrigerators and the like, inner and outer casings disposed with their respective walls in opposed spaced relation, each casing having a rear wall, side walls and an opening in the front side, breaker strips held between the edge portions of the respective casings around the door opening, and a spacer member of heat insulating material and a wedge member wedged between said rear walls to bias the inner casing forwardly, whereby said casings and breaker strips are held in fixed position relative to each other to form a substantially rigid structure.

3. In a cabinet for refrigerators and the like, inner and outer casings disposed with their respective walls in opposed spaced relation, each casing having a rear wall, side walls and an opening for a door in the front side, a breaker strip held between the edge portions of the respective casings around the door opening, substantially rigid heat-insulating spacer members having portions engaging the rear corners of the inner casing, and wedge members between the rear corners of the outer casing and the spacer members for imposing a forward thrust on the inner casing and the breaker strips against said edge portions of the outer casing to take the door thrust and to retain the inner casing and breaker strip in fixed position in the outer casing, thereby providing a substantially rigid structure.

4. The method of manufacturing a refrigerator cabinet which comprises forming an outer casing with an access opening in a wall thereof, forming an inner casing with a second access opening in a wall thereof, inserting the inner casing within the outer casing with the access openings registering with each other, disposing a breaker strip between the casings peripherally of the access opening with the edges of the breaker strip interleaving with the peripheral edges of both the casings about the access opening, placing heat insulation between the casings, and wedging the inner casing forwardly to clamp the breaker strip between the casing.

5. The method of manufacturing a refrigerating cabinet which comprises forming an outer casing with an access opening in a wall thereof, providing a detachable wall forming the wall of the outer casing opposite the access casing, forming an inner casing with a second access opening in a wall thereof, providing a grooved breaker strip on the edges of the access opening of the outer casing, inserting the inner casing through the open back wall of the outer casing and moving it forwardly until the edges of the second access opening engage with the grooved breaker strip, placing heat insulation between the inner and outer casing and on the rear wall of the inner casing, fastening the detachable rear wall to the outer casing, and wedging the inner casing forwardly to clamp the breaker strip between the casings.

6. A cabinet for refrigerators and the like comprising inner and outer casings arranged in spaced relation and having edge portions extending toward each other, a substantially rigid breaker strip disposed between the edge portions and interleaving therewith, and wedge means acting on said casings to clamp the breaker strip between said edge portions.

7. A cabinet for refrigerators and the like comprising inner and outer casings arranged in spaced relation and having edge portions extending toward each other, a substantially rigid breaker strip having grooves at its lateral edges engaging said edge portions, and wedge means acting on said casings to clamp said breaker strip between said edge portions.

8. The method of manufacturing a refrigerator cabinet which comprises forming an outer casing with an access opening in a wall thereof, providing an attachable panel forming the rear wall of the outer casing opposite the access opening, forming an inner casing with a second access opening, providing a breaker strip for connecting edge portions of the casings at said access openings, inserting said inner casing through the rear wall of the outer casing and moving it forwardly until the breaker strip is held by abutment between the edge portions of the casings at said access openings, placing heat insulation between the inner and outer casings and on the rear wall of the inner casing and fastening the detachable panel to the outer casing and forcing the inner casing forwardly to clamp the breaker strip between said casings.

9. The method of manufacturing a refrigerator cabinet which comprises forming an outer casing with an access opening in a wall thereof, providing an attachable panel forming the rear wall of the outer casing opposite the access opening, forming an inner casing with a second access opening, providing a breaker strip having recesses therein for engaging edge portions of said casings at the access openings, and inserting the inner casing through the open back wall of the outer casing and moving it forwardly until the edge portions of said casing are disposed within the recesses of the breaker strip, placing heat insulation between the inner and outer casing and on the rear wall of the inner casing and fastening the detachable rear panel to the outer casing and forcing the inner casing forwardly to clamp the breaker strip between said casings.

10. A cabinet for refrigerators and the like comprising an inner casing having a boundary portion defining an access opening, an outer casing having a boundary portion defining an access opening, said inner and outer casings being arranged in spaced relation and having said access openings registering, said respective boundary portions of the casings extending toward each other, said boundary portions each embodying an edge portion which is defined by the thickness of the material at the boundary portion of the casing and two oppositely disposed faces extending from said edge portion, a breaker strip disposed between said boundary portions of the respective casings and having portions overlapping one of said oppositely disposed faces of each of said boundary portions and having other portions abutting both of said edge portions, said breaker strip contacting only the boundary portions of said casings and means for forcing the casings together to retain the breaker strip in place.

11. A cabinet for refrigerators and the like comprising an inner casing having a boundary portion defining a first access opening and a first wall portion in the plane of said first access opening, an outer casing having a boundary portion defining a second access opening and a second wall portion in the plane of said second access opening, said inner and outer casings being arranged in spaced relation with said access openings registering, said respective boundary portions of the casings extending toward each other, said boundary portions each embodying an edge portion which is defined by the thickness of the material at the boundary portion of the casing, and two oppositely disposed faces extending from said edge portion, a breaker strip disposed between said boundary portions of the respective casings and spaced from said first and second wall portions, said breaker strip having portions overlapping one of said oppositely disposed faces of each of said boundary portions and having other portions abutting both of said edge portions, and means for forcing the casings together to retain the breaker strip in place.

12. The method of manufacturing a refrigerator cabinet which comprises forming an outer casing embodying front and side walls and having a door opening in the front wall, said casing having another opening therein, inserting an inner casing composed of side, top, bottom, and rear walls through the latter opening of the outer casing, disposing a breaker strip between the edge portions of the openings of the inner and outer casings adjacent said door opening, disposing relatively rigid heat insulation adjacent the rear wall of the inner casing and forcing the inner casing toward the front of the outer casing to clamp the breaker strip between the inner and outer casings through the wedging action of said heat insulation.

13. A refrigerator cabinet having a door and comprising relatively separable spaced inner and outer sheet metal walls and a substantially rigid breaker strip joining said spaced metal walls and closing the space between said metal walls around the door, said breaker strip comprising a separately formed thin and relatively flat strip of thermal insulating material having a lengthwise groove in each side edge, the edges of both said inner and outer sheet metal walls being flanged substantially into the plane of said breaker strip and removably inserted in said grooves so as to be concealed, and means independent of said breaker strip binding said metal walls toward each other against the breaker strip, the breaker strip being of a material to resist compressive stress between the walls to maintain them in proper spaced relation.

14. A refrigerator cabinet including a door and

comprising wall structure of relatively thin flexible sheet metal plates spaced apart and having corresponding opposed edge portions provided with stiffening flanges extending toward each other, a relatively thin breaker strip disposed edgewise and closing the space between said plates, said stiffening flanges and breaker strip forming a transverse wall, said strip having grooves in its edges in which said stiffening flanges are removably concealed, the construction and arrangement of the joint between the stiffening flange and breaker strip being such that the stiffening flange and breaker strip reenforce each other against flexure, and means independent of said breaker strip and relatively adjacent thereto clamping said plates to said breaker strip in said spaced relation, said breaker strip being of sufficient rigidity both to maintain the plates in spaced relation and to withstand the application of force by said independent fastening means.

15. A refrigerator cabinet including a door and comprising wall structure of relatively thin flexible sheet metal plates spaced apart and having corresponding opposed edge portions provided with stiffening flanges extending toward each other, a relatively thin breaker strip disposed edgewise between said plates and closing the space between the same, said stiffening flanges lying behind at least a portion of the breaker strip so as to be concealed thereby, said stiffening flanges and breaker strip forming a transverse wall, and means adjacent said breaker strip independent thereof clamping said plates to said breaker strip in said spaced relation, the construction and arrangement of the joint between the stiffening flange and the breaker strip being such that the stiffening flange and breaker strip reenforce each other against flexure, said breaker strip being of sufficient rigidity both to maintain the plates in spaced relation and to withstand the compression of said independent fastening means.

16. A refrigerator cabinet having a door and comprising wall structure of relatively separable thin spaced sheet metal plates and a breaker strip joining said spaced plates enclosing the space between them around the door, said breaker strip comprising a separately formed thin relatively flat strip of insulating material and of sufficient rigidity to maintain the plates in proper spaced relation, the edge portions of said spaced plates lying behind at least a portion of the breaker strip so as to be concealed thereby, means adjacent said breaker strip independent thereof clamping said plates against the opposite edges of the breaker strip with the latter under compression, the construction and arrangement of the joints between the metal plates and the breaker strip serving to reenforce the plates and strip against flexure.

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