Sept. 12, 1933. C. F. KUHLS 1,926,810

REFRIGERATING APPARATUS

Filed Jan. 30, 1929 5 Sheets-Sheet 1

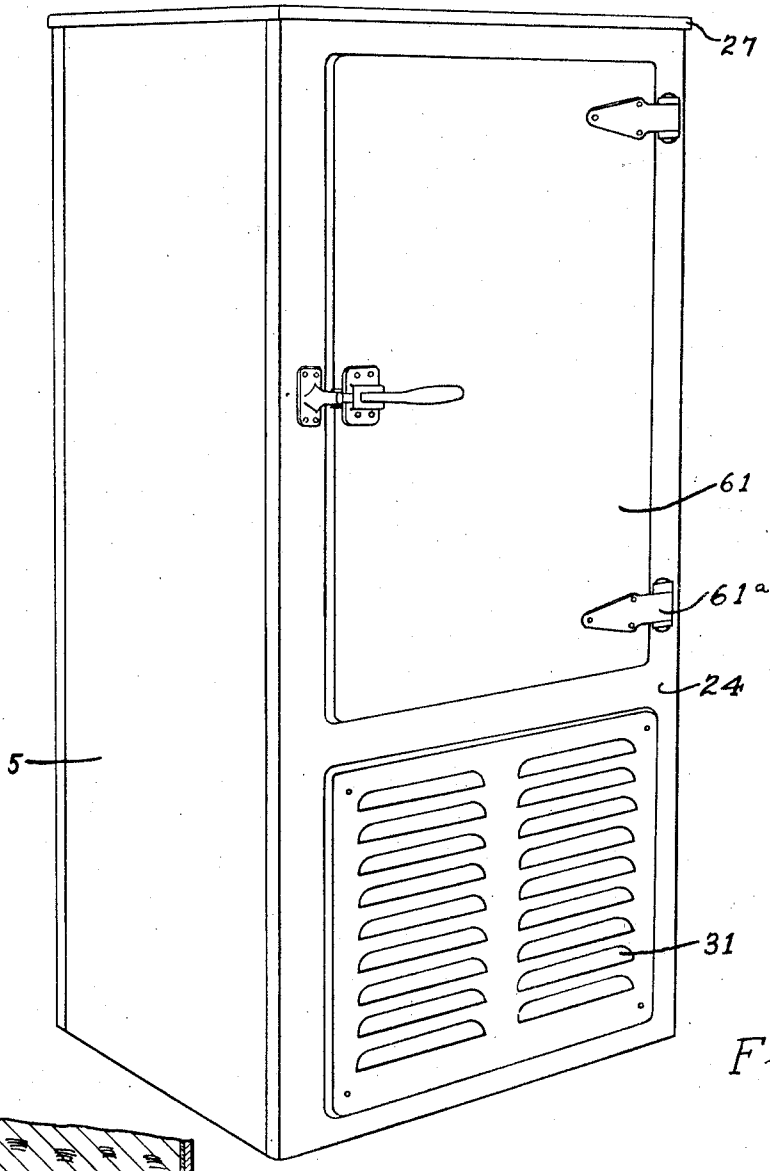


Fig. 1.

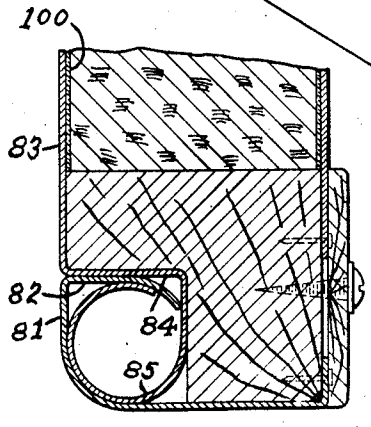


Fig. 12.

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REFRIGERATING APPARATUS

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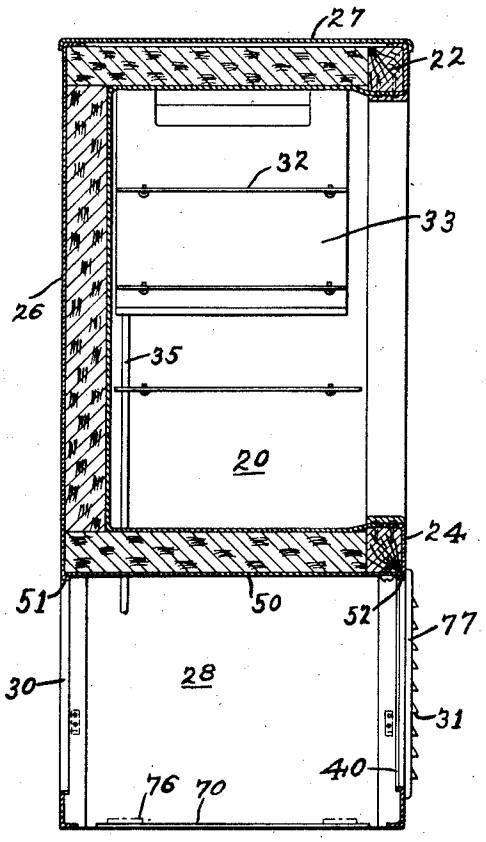


Fig. 3.

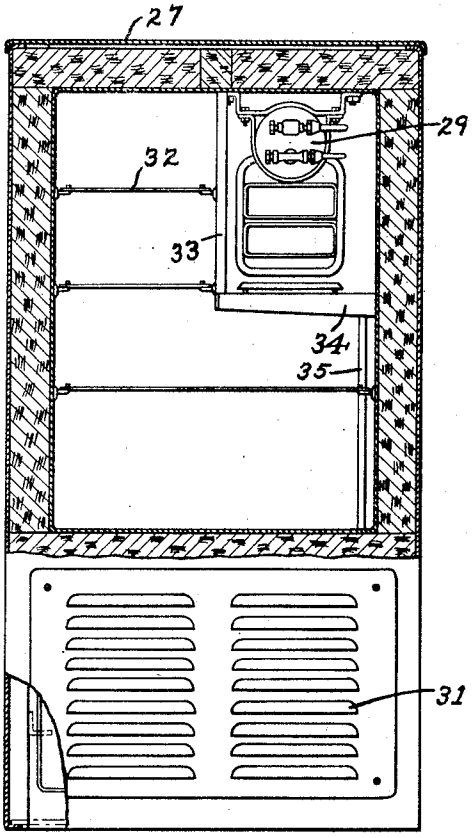


Fig. 2.

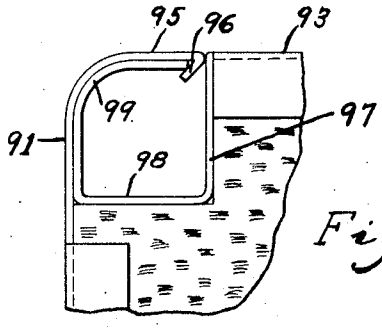


Fig. 13.

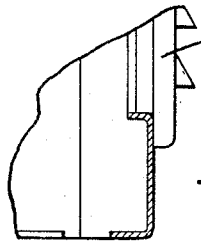


Fig. 14.

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REFRIGERATING APPARATUS

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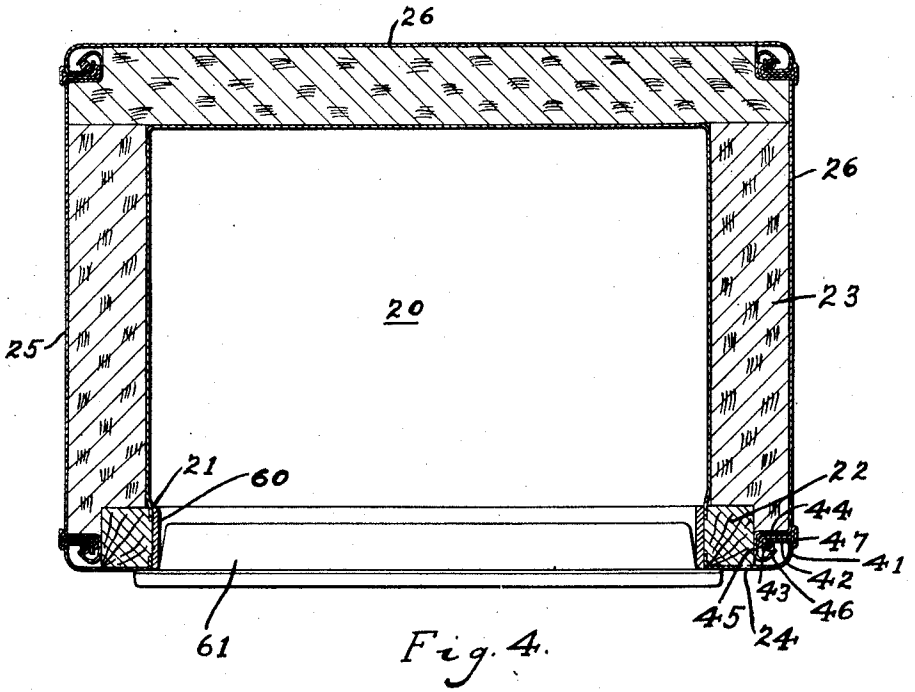


Fig. 4.

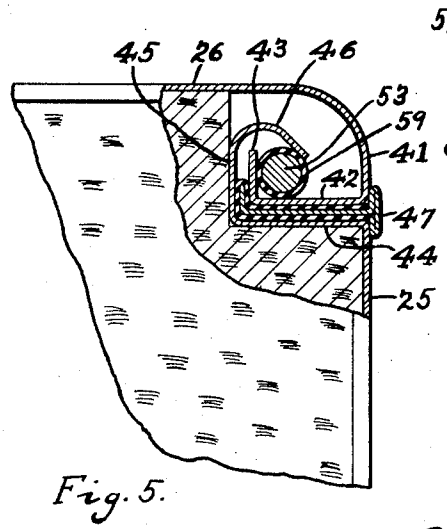


Fig. 5.

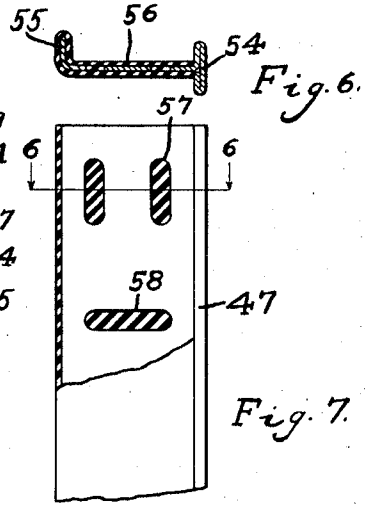


Fig. 6.

Fig. 7.

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REFRIGERATING APPARATUS

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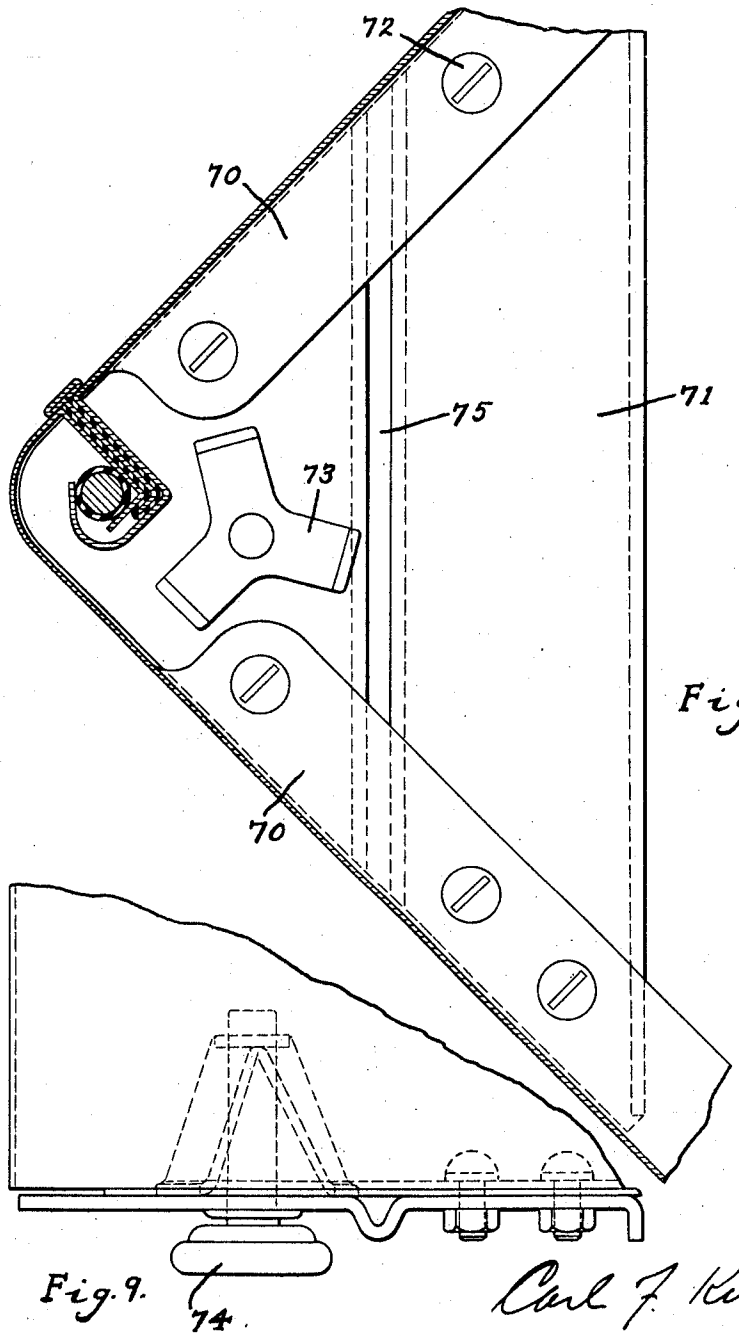


Fig. 8.

Fig. 9.

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REFRIGERATING APPARATUS

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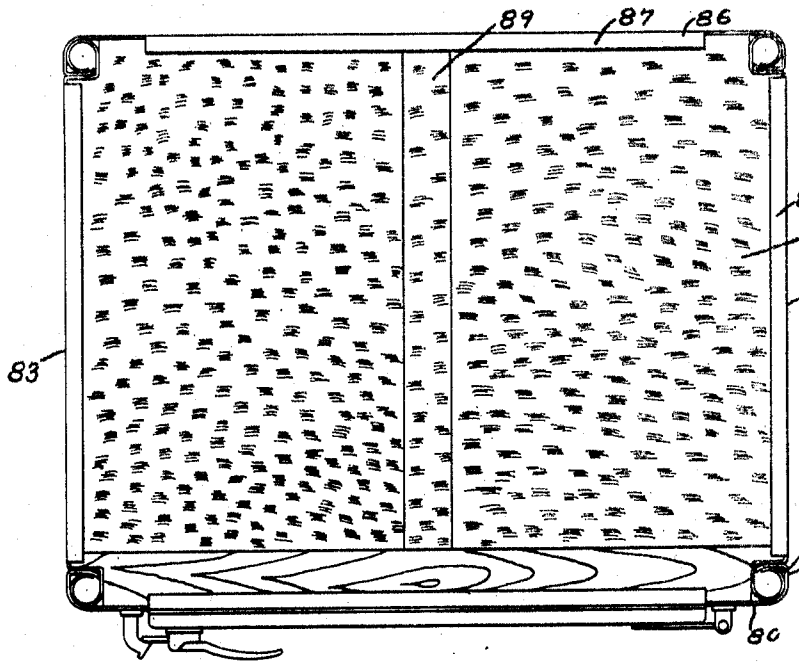


Fig. 10.

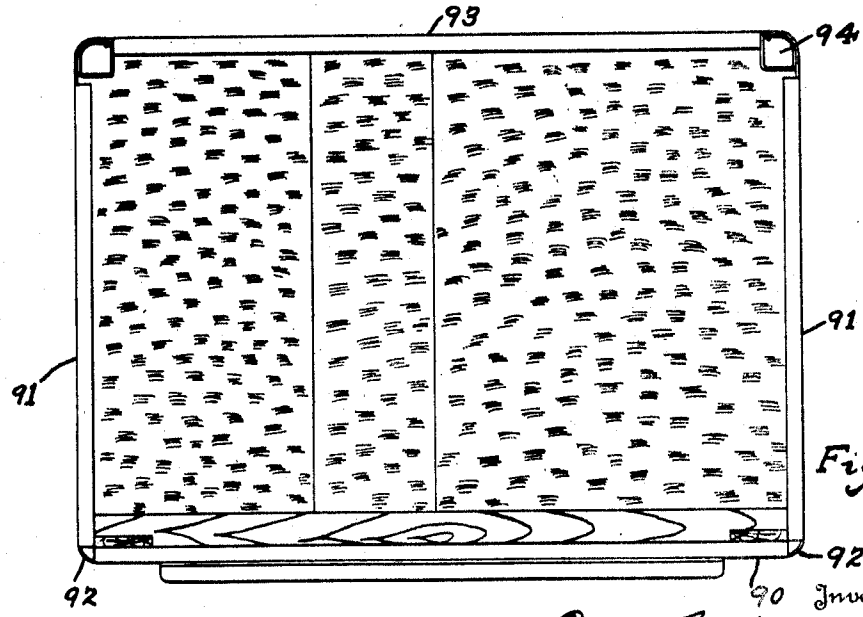


Fig. 11.

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UNITED STATES PATENT OFFICE

1,926,810

REFRIGERATING APPARATUS

Carl F. Kuhls, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a corporation of Delaware

Application January 30, 1929. Serial No. 336,263

6 Claims. (Cl. 220—9)

This invention relates to refrigerating apparatus and more particularly to a cabinet adapted to receive a mechanical refrigerating system or a part thereof, and also to the method of manufacturing the cabinet.

An object of this invention is to provide a cabinet which may be manufactured by a relatively simple method of manufacture, which is relatively rigid, and which is made of relatively few parts.

Another object of this invention is to provide a method of manufacturing a refrigerator cabinet, which method includes relatively simple operations, and which are adapted to quantity production.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a view in perspective of a cabinet embodying features of this invention;

Fig. 2 is a vertical cross sectional view, partly in elevation, of the cabinet shown in Fig. 1;

Fig. 3 is a vertical cross sectional view taken transversely to Fig. 2;

Fig. 4 is a horizontal cross sectional view of a cabinet embodying features of this invention;

Fig. 5 is a horizontal view, on an enlarged scale, of a portion of Fig. 4;

Fig. 6 is a cross sectional view of an element used in the construction of the cabinet, taken along the line 6—6 of Fig. 7;

Fig. 7 is a view partly in section and partly in elevation of the device shown in Fig. 6;

Fig. 8 is a horizontal cross sectional view, on an enlarged scale, of a corner of the cabinet shown in Fig. 4 and taken on a plane near the bottom thereof;

Fig. 9 is a side elevation of Fig. 8;

Fig. 10 is a top plan view of a slightly modified cabinet with the top removed;

Fig. 11 is a view similar to Fig. 10 of a slightly modified form;

Fig. 12 is an enlarged cross sectional view of a corner of the cabinet shown in Fig. 10.

Fig. 13 is an enlarged corner view of the cabinet shown in Fig. 11, and

Fig. 14 is an enlarged cross sectional view of a portion of Fig. 3.

A cabinet embodying features of this invention may comprise, in general, a food compartment 20 having a door opening 21, a door jamb 22, insulation 23, front paneling 24, side panels 25, a back panel 26, and a top 27. If desired, the cabinet may be provided with a machine compartment 28 formed, if desired, below the food compartment 20. The cabinet may contain the cooling element 29 of a refrigerating system, and in this particular embodiment it may comprise an evaporator of a system made in accordance with the disclosure in the patent to R. G. Osborn, No. 1,556,708, patented October 13, 1925, or in the French patent to Security Trust Company, 547,971, published December 29, 1922. If desired, the machinery of the refrigerating system may be placed in the cabinet 28, and if the cooling of the parts is to be accomplished by the circulation of air, suitable openings, such as an opening in the back 30, and if necessary, louvers 31, for instance in the front, may be provided. Inside of the compartment 20 suitable shelves 32 may be provided. If desired, a cooling unit shield 33 provided with a drip shelf 34 and a drain pipe 35 may also be provided.

In the manufacture of this cabinet, the food compartment 20 may be a sheet metal box-like compartment having at least its inner surface properly coated, such as by porcelain enamel. The insulation 23 may be secured to the outer surface of the lining 20, and, in the preferred embodiment, the insulation may be attached by coating either the outer surface of the lining 20 or the inner surface of the insulation with a bituminous cement such as hydrolene and by applying the insulation to the lining while the cement is still in a molten condition. If desired, both the lining and insulation, which may be corkboard or rock cork may be covered with the bituminous cement. In addition, the door jamb 22, which may be of any suitable non-conducting substance such as wood, may be secured to the door opening 21, preferably on the outside of the door opening.

The outer surface of the insulation 23 may be made air tight. For instance, it may have a coat applied to it of the bituminous cement heretofore described, in such a manner that the outer surface of the insulation is rendered substantially air tight. The front paneling 24, which in this particular embodiment may be a single panel having a suitable door opening corresponding to the opening 21 and an additional opening 40 for the machinery compartment 28, may be secured to the door jamb 22. The side edges of the front paneling 24 may be provided with means for locking the edges to the edges of the side panels 25. The other edges of the side panels 25 may be provided with means for locking with the

edges of the rear panel 26. As shown in Figs. 4 to 9 inclusive, the locking engagement of the various panels may be obtained as follows: The rear panel 26 may have its edge forwardly bent as at 41, then inwardly bent as at 42 with the final backwardly directed flange 43. The side panel 25 may be inwardly bent as at 44, then backwardly bent as at 45 and finally provided with a curl 46 adapted to fit around the flange 43. A spacer 47 may be provided in order to prevent damage to the finishing surface of the panels caused by relative movement of the panels. The locking means at the front of the cabinet may be similar to the locking means at the rear of the cabinet. By the construction shown it is possible after the front paneling 24 has been secured to the door jamb 22 to place the rear panel 26 approximately in place and to secure the panel 50 (Fig. 3) underneath the food compartment by placing it under the flange 51 and the flange 52. The construction of the locking means is such that the side panels 25 may be forced past the locking flanges of the paneling 24 and the paneling 26 by movement of the side panels 25 of the cabinet towards the center. Afterwards the spacing means 47 may be slid in place either from the top or from the bottom of the cabinet, or it may be forced laterally inwardly in the same manner as the panels 25. When all of these members are in position, the rods 53 may be slid either from the top or from the bottom of the cabinet between the flange 43 and the curled portion 46 in such a manner that the paneling is rendered into a rigid structure due to the wedging and locking action of the rod 53.

The spacing member 47 may be provided with a head 54 and a flange 55 in order to prevent the same from disengaging after it has been assembled. This member may be provided with a rubber coating 56 which may be vulcanized on to the member preferably by providing openings 57 and 58 so that the rubber may flow through the member and adhere to the rubber on the opposite sides of the member. The rods 54 may also have a rubber 59 placed around them as by also vulcanizing it thereon. Before the rods 54 are inserted in place, the rubber 59 may be moistened with water so as to insure an easy sliding action of the rods. When the moisture evaporates from the rods, the rods become relatively permanently set in place by the friction of the rubber and there is no tendency for the rods to slide out of the cabinet.

Various other desirable features may be provided for the cabinet. Thus the door opening may be provided with finishing strips 60 and with a door 61 hinged to the cabinet in any suitable manner preferably by hinges 61*a* secured to the doors 61 and to the door jamb 22. The bottom of the panels may be provided with caster-like construction. For this purpose the panels may be provided with substantially horizontal flanges 70 to which a glider receiving plate 71 may be secured as by means of bolts 72. The glider receiving plate may be provided with a suitable 3-legged caster or glider receiving member 73 adapted to receive a glider 74. If necessary, a strengthening groove 75 may be formed in the plate 71.

The flanges 70 may, if desired, be extended substantially throughout the length of the panels so that horizontal bars 76 may be secured to the flanges 70 and on these bars the refrigerating machinery may be mounted. Bolts passing through the flanges 70 and bars 76 may be used to secure the bars 76 in place. A door 77 may be hinged to the opening 40 so that access may be had to the machinery compartment from the front of the cabinet.

In the embodiment shown in Figs. 10 and 12 the front panel 80 may be formed with a backwardly directed portion 81 and an inwardly directed flange 82. The side panels 83 may be provided with an inwardly directed flange 84 and a forwardly directed circular extension 85. The rear corners of the cabinet may be provided with similar construction. In this modification the side panels 83 may be slid either from the top or from the bottom of the cabinet with the locking means 81 to 85 inclusive in engagement. The rear panel 86 may also be slid from the top. If desired, side panels 83 and rear panel 86 may be provided with flanges at the top indicated at 87. In this case the top insulation 88 may be inserted after the panels are in place by forming two large slabs of insulation and one small slab 89 which may be inserted after the large slabs have been forced laterally outward under the flanges of the panels.

In the modification shown in Figs. 11 and 13, the front paneling 90 and the side panels 91 may be formed of a single integral sheet being bent at the corners 92. The rear panel 93 may then be slid either from the top or the bottom of the cabinet, due to the locking construction 94. The locking construction 94 may be formed by bending the edges of the sides 91 inwardly as at 95 and providing a small flange 96. The edges of the back panel 93 may be bent forwardly as at 97, then outwardly as at 98 and thence backwardly and inwardly as at 99. Thus a locking construction is provided for the rear panel and for the edges of the combined front end panel member. In this construction the top insulation may be assembled after the paneling has been placed on the cabinet as described in Figs. 10 and 12 or the insulation may be applied to the food compartment lining in the same manner as disclosed relative to Figs. 4 to 9 inclusive. In this latter case either the top edges or the bottom edges of the panels should not be provided with flanges so that the paneling may be slid either from the top or from the bottom over the insulation. However, the sides 91 may be provided with both top and bottom flanges since this paneling may be placed on the cabinet in a sort of a laterally backward movement and thereafter the rear panel 93 may be slid either from the top or the bottom of the cabinet.

The application of the bituminous cement, such as hydrolene, is substantially the same in all modifications. It has been specifically illustrated in Fig. 12, where the hydrolene or cement is designated as 100. However, it is to be understood that the hydrolene or cement may be applied in all modifications.

While the form of embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A refrigerator cabinet comprising a box-like, sheet metal, food compartment lining having a door opening, insulation on the outside of said lining, a relatively non-conducting door jamb secured around said door opening, front paneling secured to said door jamb, side panels in interlocking relation with said front paneling, a back panel interlocking with said side panels, and

spacing members between said side panels and said back panel.

2. A refrigerator cabinet comprising a box-like, sheet metal, food compartment lining having a door opening, insulation on the outside of said lining, a relatively non-conducting door jamb secured around said door opening, front paneling secured to said door jamb, side panels in interlocking relation with said front paneling, a back panel interlocking with said side panels, spacing members between said front paneling and said side panels and between said side panels and said rear panel.

3. A refrigerator cabinet comprising a box-like sheet metal food compartment lining having a door opening, walls of insulating material surrounding said lining, said walls having notches at the corners, metal panels covering said walls of insulating material, said panels being connected together by inwardly turned interlocking joints at the corners of said cabinet, said interlocking joints being located within said notches behind the corners of said panels.

4. A refrigerator cabinet comprising a box-like sheet metal food compartment lining having a door opening, walls of insulating material surrounding said lining, said walls having notches at the corners, metal panels covering said walls of insulating material, said panels being connected together by inwardly turned interlocking joints at the corners of said cabinet, said interlocking joints being curled inwardly into said notches and engaging the corners of said panels supporting and reinforcing said corners.

5. A refrigerator cabinet comprising a box-like sheet metal food compartment lining, walls of insulating material surrounding said lining, sheet metal panels abutting and forming a covering for said walls of insulating material, said sheet metal panels being connected together by inwardly turned interlocking joints which are curled within the confines of the panels to form integral tubular structures at the corners of the cabinet for forming frame-like members for the cabinet and for reinforcing the edges of the panels and the corners of the cabinet.

6. A refrigerator cabinet comprising a box-like sheet metal food compartment lining, insulating means surrounding the lining, sheet metal panels surrounding and forming a covering for the insulating means, at least some of said sheet metal panels being connected together by inwardly turned interlocking joints which are curled within the confines of the cabinet to form integral tubular structures at least at some of the corners of the cabinet for forming frame-like members for the cabinet and for reinforcing some of the edges of the panels and at least some of the corners of the cabinet.

CARL F. KUHLS.