March 8, 1932. H. D. EICHE 1,848,118

REFRIGERATING APPARATUS

Filed Sept. 29, 1928 2 Sheets-Sheet 1

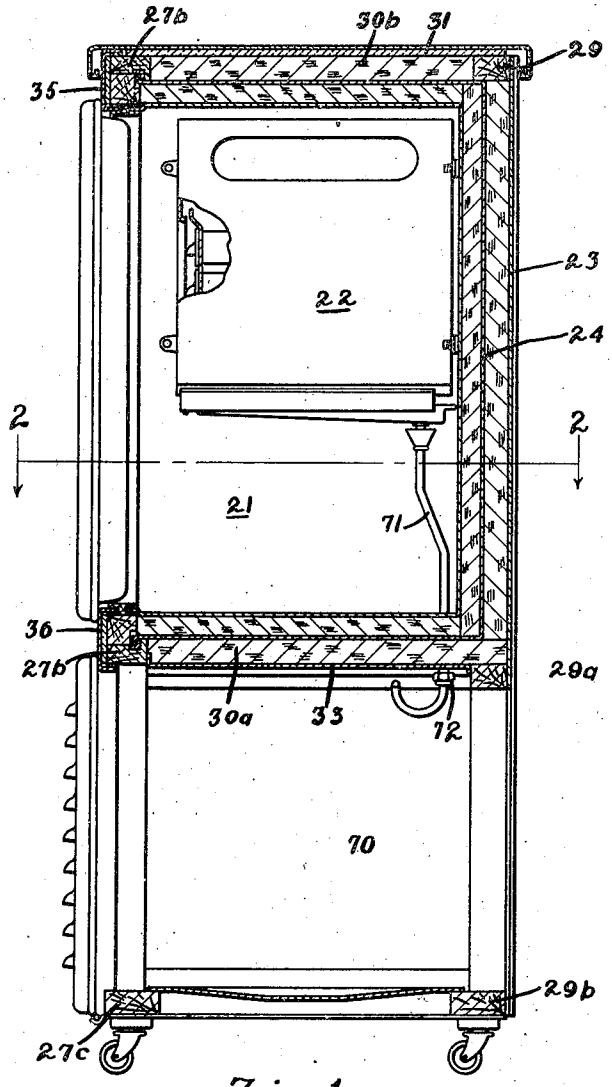


Fig. 1

Inventor
Harold D. Eiche,

By Bruce, Hardman & Fehr
Attorneys

March 8, 1932. H. D. EICHE 1,848,118

REFRIGERATING APPARATUS

Filed Sept. 29, 1928 2 Sheets-Sheet 2

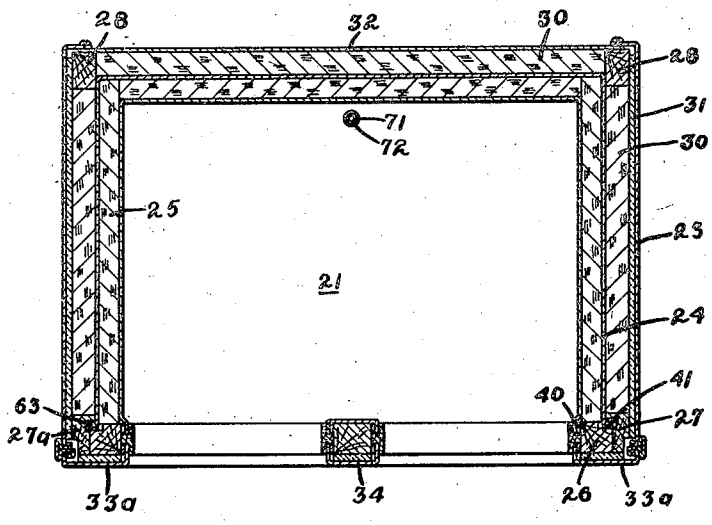


Fig. 2

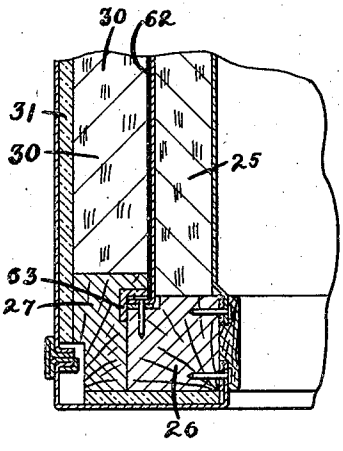


Fig. 4

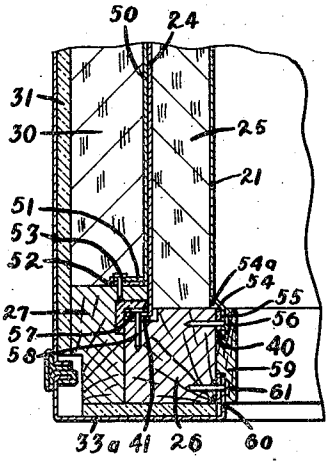


Fig. 3

Inventor

Harold D. Eiche,

By Spencer, Hardman & Fehr

Attorneys

Patented Mar. 8, 1932 1,848,118

UNITED STATES PATENT OFFICE

HAROLD D. EICHE, OF DAYTON, OHIO, ASSIGNOR TO FRIGIDAIRE CORPORATION, OF DAYTON, OHIO, A CORPORATION OF DELAWARE

REFRIGERATING APPARATUS

Application filed September 29, 1928. Serial No. 309,309.

This invention relates to refrigerating apparatus and more particularly to a cabinet for a mechanical refrigerating system.

In the construction of cabinets for the use of mechanical refrigerating systems, it often happens that the inside lining, which is generally porcelain enameled, is damaged, and unless this lining is removable without disturbing the major part of the cabinet, it is a costly operation to repair the damage. Also, because of the extremely low temperatures maintained in the refrigerator cabinet, condensation occurs in the insulation immediately adjacent the lining, with the result that the insulating value of the insulation and its quality are impaired.

It is an object of this invention to overcome these difficulties by providing a lining which may be removed as a unit without disturbing the major part of the cabinet and also to provide a lining which has a certain part of the insulation hermetically connected thereto, so that moist relatively warm air cannot circulate into this insulation to condense its moisture therein.

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 vertical cross sectional view of a cabinet embodying features of this invention;

Fig. 2 is a horizontal cross sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is an enlarged horizontal cross sectional view of a slightly modified form of the cabinet, and

Fig. 4 is a view, similar to Fig. 3 of a further modification.

A refrigerating apparatus embodying features of my invention may comprise a cabinet in which part, or all, of a mechanical refrigerating system is placed. In the particular embodiment herein shown, the apparatus may comprise a cabinet having a lining generally designated as 21 in which part of the refrigerating system is placed. The refrigerating system may include a cooling unit generally designated as 22 supported within the lining 21, which cooling unit is adapted to cool the air in the lining 21. The cooling unit may include a float valve controlled evaporator of the type well known in the art and the refrigerating system may, if desired, be of the type known in the trade as an automatic flooded system.

The cabinet may be provided with an outer casing which may be casing 23 or under certain conditions, casing 24. In this particular embodiment, the lining 21 may be part of a readily removable unit which may be removed from the cabinet as a whole without disturbing the major portion of the cabinet. As a particular way to accomplish this construction, the removable unit may include the lining 21, insulation 25, casing 24 and a door jamb 26. The unit which is thus removable as a whole may be connected to the cabinet by means of an outer door frame 27 to which the door jamb 26 may be secured by any suitable means, not shown such as screws or bolts. The outer door frame may include the cabinet corner uprights 27*a* extending substantially the full length of the cabinet, and horizontal frame members 27*b*, joining the members 27*a*. The cabinet may also include rear corner uprights 28 which together with the outer door frame 27 and the horizontal members 29, 29*a* and 29*b* and side pieces similar to members 29, 29*a* and 29*b* which join members 28 and 27*a*, may form the framework for the cabinet. If desired, a front bottom horizontal frame member 27*c* may also be used. The general construction of the framework and of the casing 23 may resemble somewhat the construction of the cabinet shown in the application of William C. Holbrook and Henry P. Braeutigam, Serial No. 257,989, filed February 29, 1928.

The construction of the cabinet may resemble the cabinet described in the above-mentioned application, but may be modified in some details. For instance insulating members 30 may be attached to the framework or to the outer casing instead of being attached to the lining. A convenient method of doing this is to secure deadening boards

31 to the upright members 28 and 27*a* and thereafter to attach the lining, such as slabs of rock cork or corkboard 30, to the deadening members 31 by means of bituminous cement. The rear portion of the insulation 30 may be attached directly to the rear panel 32 without interposing deadening material 31, since the panel 32 need not be porcelain enameled. The bottom member of insulation 30*a* may be secured to a panel member 33 by similar means as the rear member. The top member 30*b* of insulation may be secured to deadening material 31 in a manner similar to the side pieces. As more fully described in the application heretofore mentioned, the panels comprising the outer casing, which may be porcelain enameled on the exterior, are individually removable from the cabinet without disturbing adjacent panels. Thus the front panels 33, 34, 35 and 36 may be removed from the cabinet without disturbing the side panels. The unit, which in this particular embodiment includes the lining 21, insulation 25, casing 24 and door jamb 26 may be removed from the cabinet merely by first removing the panels 33, 34, 35 and 36 and by releasing the suitable attaching means between the door jamb 26 and the outer door frame 27 after which the unit may be removed in the direction of the door opening without disturbing the major portion of the cabinet.

Another feature of this invention includes the forming of an insulated lining with a metal casing around said lining forming a hermetically sealed space between the lining of the casing in which insulation is placed and which is provided with means for preventing the flow of heat between the lining and the casing. As a specific embodiment the lining 21 may be secured to the door jamb 26 which may be made of insulating material such as wood. The casing 24, which under certain conditions might be the outer casing of the cabinet, may also be secured to the door jamb 26. The lining 22 may be hermetically connected to the door jamb by any suitable means, for instance, by interposing a suitable gasket 40. The outer casing 24 may be hermetically connected to the door jamb 26, for instance, by gasket 41. Both the lining and the casing 24 may be secured by any suitable means to the door jamb 26 such as by nails or the like, care being taken not to destroy the seal. Insulation 25 may be placed around the lining 21 before the casing 24 is placed around the lining. When thus completed, the lining 25 is hermetically sealed within the space formed by the lining 21 and the casing 24 in a manner to prevent condensation of moisture in the insulation 25. If desired, hydrolene may be poured on the joints between the door jam 26 and members 21 and 24 to further insure the formation of a hermetic space. The hydrolene might be applied to the space 54*a*, Fig. 3, before the application of the insulation 25.

When insulation is included in an outer cabinet around the removable unit heretofore described, the thickness of the insulation 25 may be such that the temperature at the casing 24 is not sufficient to condense moisture in the insulation 30. When such is the case, the insulation 30 need not be hermetically sealed. However, should it be desired absolutely to insure against condensation of moisture in the insulation 30, a second metallic casing 50 may be placed inside of the insulation 30 as shown in Fig. 3. The casing 50 may be secured to the outer door frame 27 by providing a flange 51 and a gasket 52 which may be attached to the frame by means of nails 53. The insulation 30 may be secured to the casing 50 by means of asphaltic cement and the outer surface of the insulation 30 may be covered by asphaltic cement, not shown, after which the deadening material 31 may be secured to the cabinet frame on which the porcelain enameled panels may rest. The other details shown in Fig. 3 are similar to those shown in Figs. 1 and 2 but shown on an enlarged scale. Thus, for instance the lining 21 may be provided with a slight inward offset 54 terminating in the offset edge 55. The gasket 40 may be interposed between the edge 55 and the door jamb and attaching means such as nails 56 may be used for securing the lining to the door jamb. The casing 24 may be provided with a flange 57 between which flange and the door jamb 26 may be interposed the gasket 41. Attaching means such as nails or screws 58 may be used to secure the casing 24 to the door jamb 26. Finishing strips 59 may be placed around the interior of the door jamb 26 and secured thereto, thus covering the joints formed by this construction. The panel 33 may be provided with a flange 60 adapted to fit over a corner of the door jamb 26 and this flange may be secured by means of nails 61. In Fig. 4 the insulation 30 is shown as being hermetically sealed on the interior by means of hydrolene or other asphaltic cement 62 which performs the same functions as the casing 50. In all of the modifications, a gasket 63 may be interposed between the door jamb 26 and the outer frame 27. The compartment 70 may be used, if desired, for the refrigerant liquefying unit in the manner described in the application hereinbefore referred to.

If a drain pipe is to be used, it may be formed by the pipe 71. This pipe is adapted to fit in a readily detachable pipe fitting 72 passing through the lining 21 and casings 24 and 33. This fitting may be of the telescoping threaded variety for hermetically clamping its flanges to the lining 21 and casing 33. A loop may be provided for trapping water to prevent warm air from flow-

ing into the food compartment through the fitting 72. When it is desired to remove the removable unit, the fitting 72 may be disconnected before or during the other removal operations.

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 including an outer casing, provided with an opening, a closure for said opening, insulation within said casing forming a pocket, a unit removable as a whole from said pocket, said unit comprising an inner lining, a metal casing around said lining forming a hermetically sealed space between said lining and said casing, insulation in said space, and a door jamb of insulating material secured to said unit separating said lining and casing.

2. A refrigerator cabinet including an outer casing, insulation within said casing forming a pocket, a unit removable as a whole from said pocket, said unit comprising an inner lining, a metal casing around said lining forming a hermetically sealed space between said lining and said casing, and insulation in said space.

3. A refrigerator cabinet comprising an outer wall structure provided with an opening, a closure for said opening, a lining unit within said wall structure, said unit including an inner metal liner, a metal casing around and spaced from said lining, means hermetically sealing the space between said metal casing and said liner, insulating material within said space, said lining unit being removable as a unit from the opening in said wall structures.

In testimony whereof I hereto affix my signature.

HAROLD D. EICHE.