Jan. 20, 1931. W. F. SWEZEY 1,789,913

REFRIGERATING APPARATUS

Filed Feb. 6, 1929

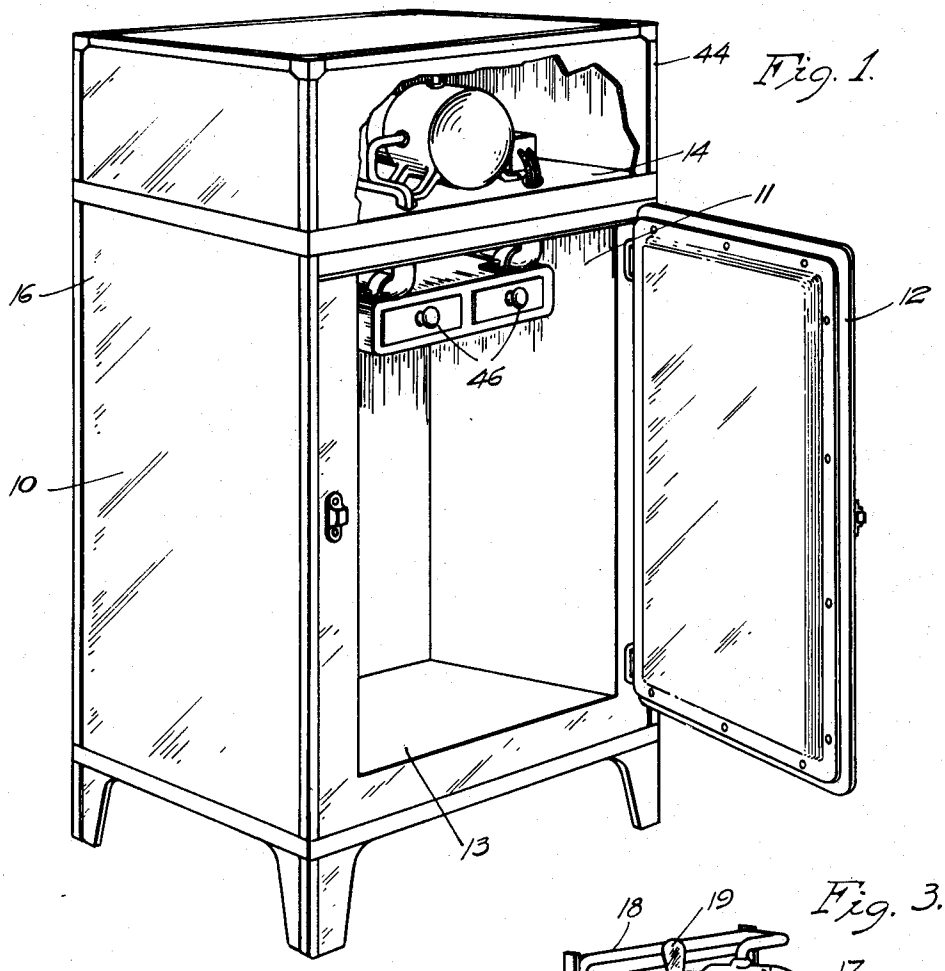


Fig. 1.

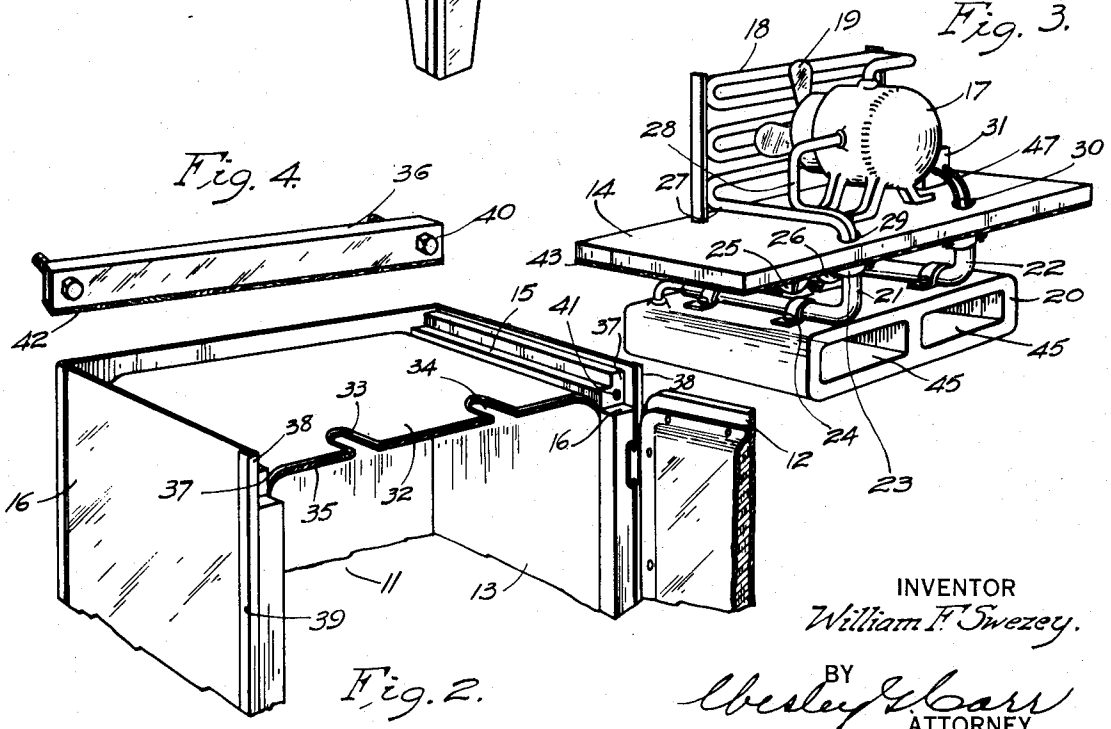


Fig. 3.

Fig. 4.

Fig. 2.

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UNITED STATES PATENT OFFICE

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REFRIGERATING APPARATUS

Application filed February 6, 1929. Serial No. 337,876.

My invention relates to refrigerating apparatus and more particularly to refrigerating apparatus adapted for household use.

It is an object of the invention to provide a refrigerating unit which may be applied to and removed from the refrigerator cabinet as a unit, without the necessity of disconnecting any of the conduits connecting the various portions of the apparatus.

More specifically, it is an object of the invention to provide a refrigerating apparatus which may be applied to the cabinet in such a manner as to leave the cabinet lining intact.

A further object is to provide a refrigerator cabinet having a fixed permanent lining and a removable insulating wall adjacent said lining, which wall carries a unitary refrigerating apparatus adapted to be inserted in and removed from the cabinet, while the lining is left in its original fixed position.

Other objects and advantages of the invention will be apparent from the following description and accompanying drawings, wherein:

Figure 1 is a perspective view of a mechanically cooled refrigerator cabinet embodying my invention,

Fig. 2 is a fragmentary perspective view of the upper portion of the cabinet with the refrigerating unit removed,

Fig. 3 is a perspective view of a refrigerating unit and wall structure adapted to be applied to the cabinet shown in Fig. 2, and

Fig. 4 is a perspective view of the sealing strip to be applied to the cabinet after the unit has been inserted therein.

Broadly, my invention comprises having the top insulating wall of the cabinet horizontally removable. This wall carries the heat dissipating unit, which generally comprises a motor-driven compressor, and a condenser, while the heat absorbing unit, or evaporator, is suspended from the wall and is adapted to be inserted inside the refrigerator cabinet. The suspending means comprises at least one L-shaped pipe having one arm substantially vertical to the wall and fastened to the under side thereof, while the other arm is spaced from, and extends parallel to the wall. The evaporator is rigidly fastened to this second arm.

The upper portion of the box lining is provided with a slot or recess at its front edge to receive the vertical arm of the L-shaped pipe when the wall and assembled unit are applied to the cabinet. A sealing strip is then fastened to the cabinet to hold the unit in place and to give the box a finished appearance.

In the specific embodiment of my invention shown in the accompanying drawings, 10 designates a refrigerator cabinet provided with a storage compartment 11 adapted to be closed by a door 12. The storage compartment is provided interiorly thereof with an intergral welded one-piece lining 13.

The top insulating wall 14 of the cabinet may be detached from the remainder of the cabinet, and is adapted to slide in parallel guideways 15, which are formed above the side-walls 16 of the cabinet.

The top wall 14 also serves as a base for a unitary refrigerating apparatus comprising a motor-compressor unit 17, a condenser 18, and a fan 19 for cooling the condenser. The evaporator 20 is suspended beneath the base by means of two L-shaped pipes 21 and 22. Flanges 23 are provided on the short arms of the L-shaped pipes for fastening the pipes to the base. The evaporator is fastened to the long arms of the pipes by means of straps 24. Openings 45 may be provided in the evaporator for receiving ice trays 46.

An expansion valve 25 and a thermostat 26 are carried by the evaporator. A conduit 27 carries condensed refrigerant from the condenser to the expansion valve and evaporator, while a conduit 28 carries expanded refrigerant from the evaporator to the compressor.

An opening 29 is provided in the base for the passage of these conduits and the pipe 21 is preferably made hollow so that the conduits may pass therethrough.

Likewise the pipe 22 is hollow and coincides with an opening 30 provided in the base for the passage of conductor 47 from the thermostat 26 to the motor control switchbox 31 which is carried on the base.

The upper portion 32 of the cabinet lining,

which is adjacent the removable wall 14, is provided at its front edge with two spaced slots 33 and 34 adapted to receive the vertical arms of the L-shaped pipes 21 and 22, respectively, when the wall and assembled unit carried thereby are in operative position on the cabinet. The exposed edge of the lining may be faced with a gasket 35 of rubber or other suitable material. This gasket serves to seal the space between the slots and pipes and also to prevent chattering between these parts when the compressor is operating.

A removable strip 36 (Fig. 4) extends across the top front edge of the cabinet and rests in the slot provided between the outer edge 37 of the guideways 15 and the flange 38 provided on each of the metal binding strips 39 which extend along the vertical edges of the cabinet. The sealing strip is firmly secured in place by means of bolts 40 which extend into openings 41 provided in the outer end of the guideways 15. This strip may carry, at its lower edge, a sealing gasket 42.

A gasket 43, preferably of sponge rubber, may also be provided on the under side of the removable wall 14 to seal the space between the wall and the adjacent lining portion, and also to prevent chattering between these parts during the operation of the compressor.

A removable cover 44 may be provided for enclosing the compressing and condensing mechanism carried above the removable wall 14.

In applying the refrigerating unit to the cabinet, the wall 14, carrying the operatively assembled apparatus, is slid along the guideways 15 until the short arms of pipes 21 and 22 are received in the slots 33 and 34, respectively. The sealing strip 36 is next inserted in the space provided therefor and bolted to the ends of guideways 15. The cover 44 is then placed over the exposed mechanism. When the unit is in place, the evaporator is located within the cabinet to be cooled, and below the cabinet lining, while the heat-dissipating unit is located outside the cabinet, above the insulated wall and the adjacent lining portion. At the same time, the unit is operatively interconnected and may be removed from the box without disturbing the box lining.

It will be apparent that I have provided a unitary and operatively connected refrigerating apparatus which may be applied to and removed from a refrigerator cabinet without breaking any of the connections between the heat absorbing and heat-dissipating units, and which, in being inserted or removed, leaves the cabinet lining intact, so that it is unnecessary to carry any portion of the lining through the assembly line, as has heretofore been necessary in the production of unit machines.

While I have illustrated and described a specific form of my invention, it will be apparent that other forms might be adopted, all coming within the scope of the appended claims.

I claim as my invention:

1. In combination, a refrigerator cabinet provided with insulating walls, a unitary and operatively interconnected refrigerating apparatus carried by one of said walls, said cabinet being provided with a lining adjacent the latter wall, and means permitting the removal of the insulating wall carrying the interconnected apparatus from the cabinet, while leaving the lining in its fixed position.

2. In a refrigerating apparatus, an insulated cabinet, a fixed and immovable lining interiorly of the walls of the cabinet, a horizontally removable top wall for said cabinet, a heat dissipating unit carried by the wall above the lining and a heat absorbing unit suspended from the wall below the lining and within the cabinet, operative interconnections between said units, and means permitting the removal of the wall and interconnected units from the cabinet while leaving the lining in its fixed position.

3. In a refrigerating apparatus, an insulated cabinet, a fixed and immovable lining interiorly of the walls of the cabinet, a horizontally removable top wall for said cabinet, a heat dissipating unit carried by the wall above the lining, and a heat absorbing unit suspended from the wall below the lining and within the cabinet, operative interconnections between said units, and means permitting the removal of the wall and interconnected units horizontally from the cabinet while leaving the lining in its fixed position.

4. In combination, a refrigerator cabinet having insulated walls, and a fixed permanent lining interiorly of said walls, a top wall removable from the cabinet, a heat dissipating unit mounted on the top wall outside the cabinet, a heat absorbing unit within the cabinet, operative connections between said units, means for suspending said heat absorbing unit from the top wall, said means comprising a tubular member, said lining adjacent the top wall being recessed for receiving said member.

5. A unitary refrigerating apparatus comprising a base, a heat dissipating unit mounted on the base, a heat absorbing unit beneath the base, operative interconnections between said units, means for suspending the heat absorbing unit beneath the base, said means comprising at least one hollow L-shaped member fastened to the base on the under side thereof, and an opening provided in the base adjacent said member for the passage of the interconnections between the units.

6. In combination, a refrigerator cabinet provided with insulated walls and having a removable top wall, a fixed lining interiorly of said walls and having a portion adjacent

the removable wall, sealing means between said top wall and the adjacent lining portion, a motor, compressor, and condenser unit mounted on said wall, an evaporator unit suspended from said wall interiorly of the cabinet, and beneath said adjacent lining portion, operative connections between said units, sealing means carried by the front edge of said lining portion, a removable strip adjacent the second-named sealing means, and means for fastening said strip to the cabinet.

In testimony whereof, I have hereunto subscribed my name this 31st day of January, 1929.

WILLIAM F. SWEZEY.