March 23, 1948. J. H. DENNEDY 2,438,114

REFRIGERATOR CONSTRUCTION

Filed Feb. 28, 1946 4 Sheets-Sheet 1

Fig. 1

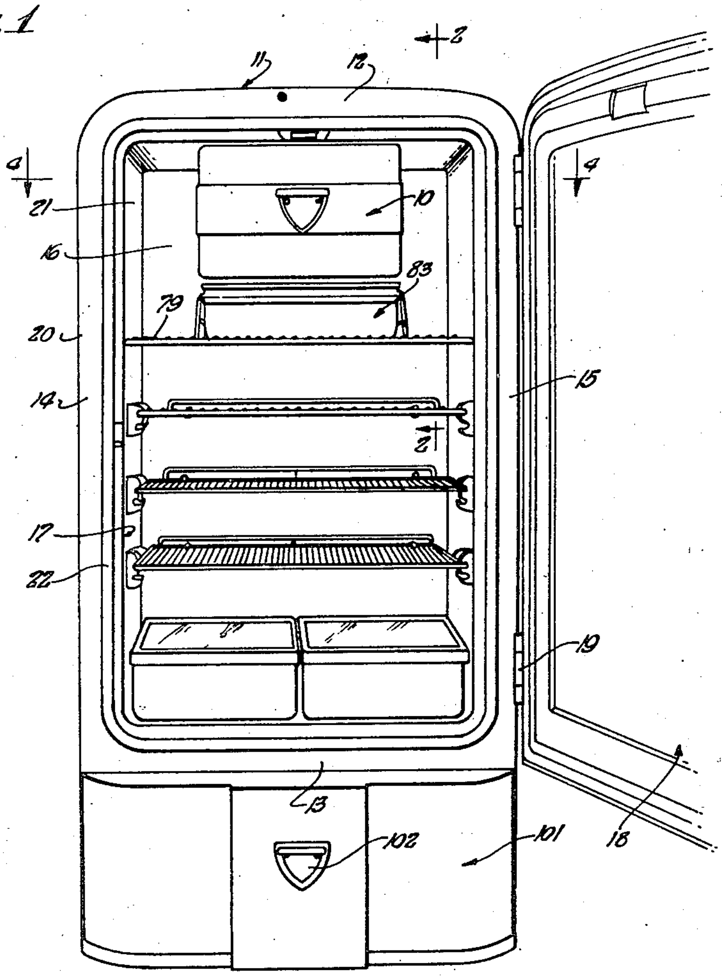
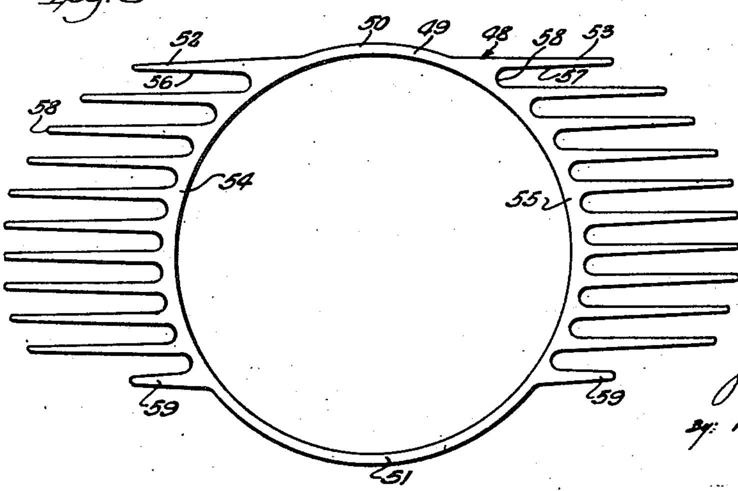


Fig. 5



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REFRIGERATOR CONSTRUCTION

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Fig. 2

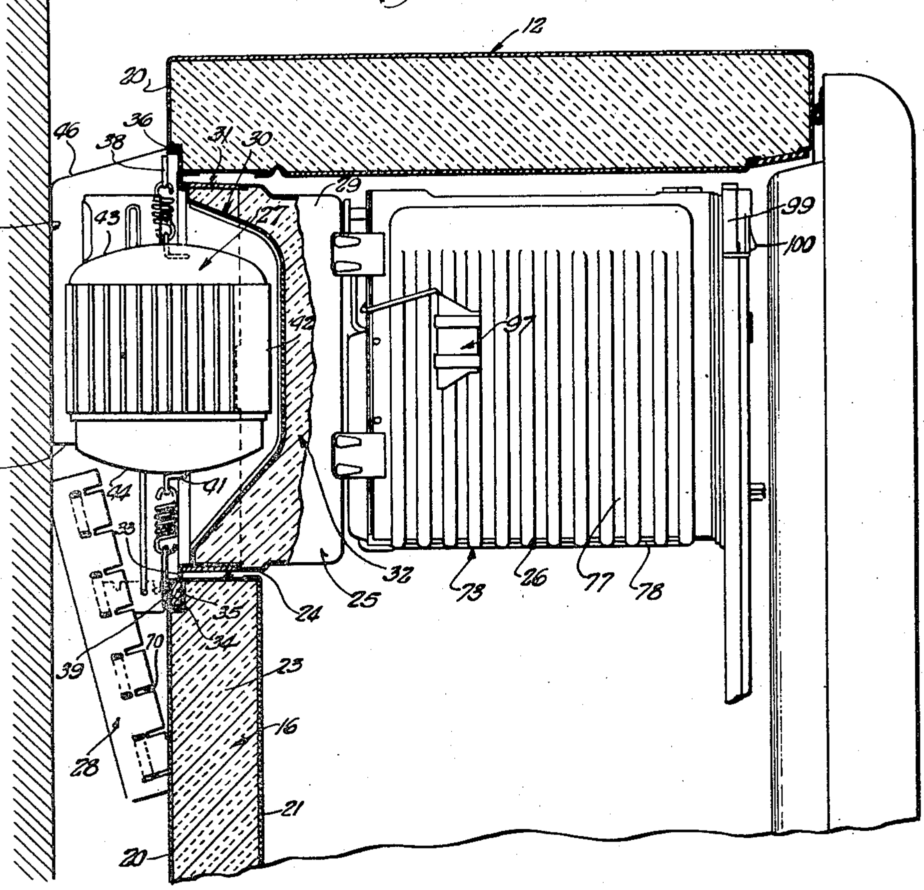

Fig. 6

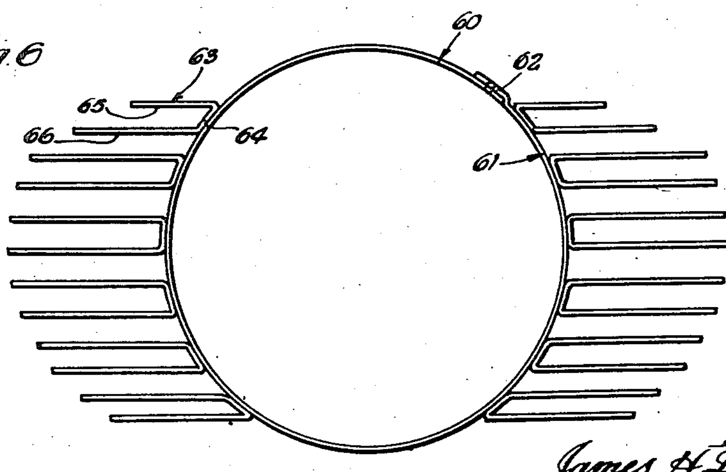

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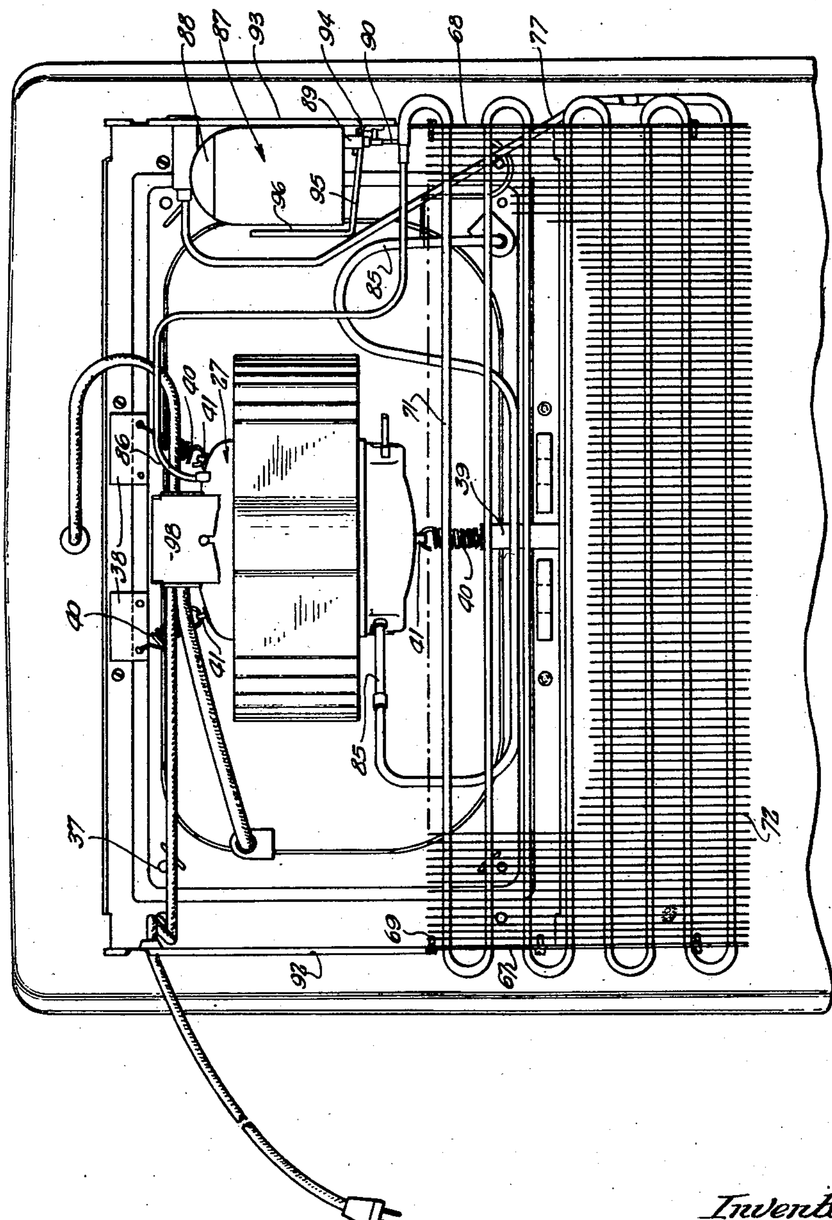
Fig. 3



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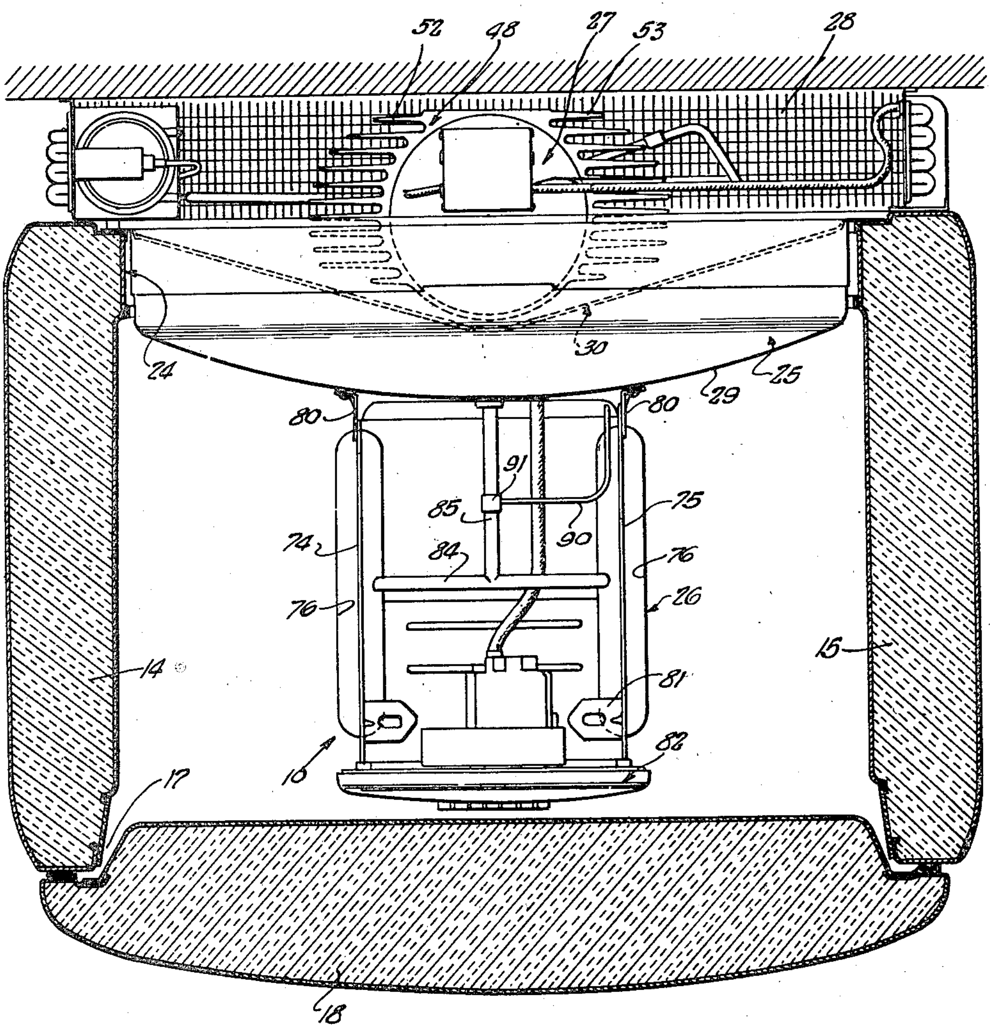
REFRIGERATOR CONSTRUCTION

Filed Feb. 28, 1946 4 Sheets-Sheet 4

Fig. 4



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UNITED STATES PATENT OFFICE

2,438,114

REFRIGERATOR CONSTRUCTION

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Application February 28, 1946, Serial No. 650,804

9 Claims. (Cl. 62—116)

The present invention relates to refrigerator construction, and is particularly concerned with refrigerators of the type employing an evaporator, condenser and motor compressor.

One of the objects of the invention is the provision of a more compact, efficient and economical arrangement of the refrigeration apparatus within the cabinet in such manner that it is not necessary to have a machine compartment below the cabinet nor on the top of the cabinet, nor is it necessary to change the shape of the cabinet from the simple rectangular-sided box form to make room for the refrigeration apparatus.

As distinguished from the devices of the prior art, it is an important object of the present invention to make available for storage of food substantially the full volume of the inside of a cabinet of this type, except a small space behind the evaporator, which, with the adjacent cabinet wall space, is utilized for housing part of the motor compressor and for providing insulation, while the rest of the motor projects slightly from the rear of the cabinet in position to be subjected to convection currents of cooling air from the condenser, which is preferably located below the motor compressor.

Another object of the invention is the provision of an improved refrigerator construction of the class described in which it is not necessary to utilize any other form of cooling for the motor compressor except that which is brought about by the use of improved forms of fins, and by the arrangement of the parts so that the motor compressor is cooled adequately by convention air currents.

Another object of the invention is the provision of an improved refrigeration unit of the package type which is adapted to be removed as a unit from the cabinet, and which is more easily removed from the cabinet by reason of the fact that it is mounted back of the cabinet.

Another object of the invention is the provision of an improved unit of the class described which is simple, compact, sturdy, efficient, and adapted to be used for a long period of time without the necessity for repair and replacement of its parts.

Referring to the drawings, of which there are four sheets,

Fig. 1 is a front elevational view of a refrigerator of the household type equipped with an evaporator embodying the invention.

Fig. 2 is a fragmentary vertical sectional view taken on the plane of the line 2—2 of Fig. 1, looking in the direction of the arrows, showing the arrangement of the refrigeration unit with respect to the cabinet.

Fig. 3 is a fragmentary rear elevational view of the top rear of the cabinet and apparatus.

Fig. 4 is a horizontal sectional view taken on the plane of the line 4—4 of Fig. 1, looking in the direction of the arrows.

Fig. 5 is a plan view of the heat-radiating fin unit used on the motor compressor in Fig. 4.

Fig. 6 is a similar view of another heat-radiating fin unit of the sheet metal type.

Referring to Fig. 1, 10 indicates a refrigeration unit mounted in a cabinet 11 of the simple rectangular-sided box type, having a top wall 12, bottom wall 13, side walls 14, 15, and a rear wall 16. The front of the cabinet is provided with a door opening 17 closed by means of a door 18 mounted upon suitable hinges 19 and provided with a suitable latch (not shown).

The cabinet is of the usual construction, having an outer shell 20 of metal and an inner shell or linear 21 secured together in spaced relation by the usual breaker strips 22 at the door opening, and the space between the shells is filled with suitable insulation, such as rock wool, 23.

At its rear wall 16, near the top wall 12, the cabinet is provided with an opening 24, Fig. 2, which is adapted to be closed by an insulating plug 25 which supports the evaporator 26 on its front, and supports a motor compressor unit 27 on its rear side, with a condenser 28 located below the motor compressor 27.

The insulating plug 25 may also consist of an inner stamped sheet metal shell 29 of substantially box shape, and an outer sheet metal shell 30 which is dished so that it is adapted to receive substantially half of the motor compressor unit 27, these two members being secured together by the insulating breaker strips 31.

The chamber 32 inside the plug 25 is preferably filled with suitable insulation, such as rock wool, so that the plug 25 has a heat-insulating value equivalent to the wall insulation 23. The outer dished shell 30 may be formed with an outwardly projecting flange 33 extending completely around its border, this shell being rectangular in shape and substantially fitting in the aperture 24, and the flange 33 may be formed with an inwardly facing channel 34 provided with a rubber sealing strip 35 engaging in a rabbeted recess 36 in the outer shell 20.

Suitable securing devices, such as screw bolts, passing through apertures 37 in the corners of the flange 33, Fig. 3, secure the unit in the aperture 24 of the cabinet. At its top the dished metal member 30 is provided with a pair of apertured sheet metal brackets 38, and at its bottom with one such bracket 39 for support of the motor compressor unit 27.

Coil springs 40 have one end hooked in the brackets 38, 39, Fig. 3, and the other end hooked in an aperture formed in an angle bracket 41 which is, in each case, carried by the motor compressor housing 27. The angle brackets 41 on the motor compressor housing 27, which are at the top, are equally spaced and located toward the outer corners of the compressor housing 27, while the bracket 41 at the bottom is centrally located on the bottom.

The springs 40 are all preferably provided with an initial tension so that the motor compressor is thus resiliently supported in such manner as to permit it to vibrate without causing vibration of the cabinet or other parts of the apparatus.

The motor compressor unit 27 may consist of a unit of the sealed type having a housing which is provided with a substantially cylindrical wall 42 at its sides, and with rounded end walls 43, 44. The size of such a suitable motor compressor unit is such that it may have substantially half of its volume housed in a dished member 30 of the plug 25, the other half projecting rearwardly from the cabinet in an amount something like three or four inches.

The motor compressor unit 27 is preferably enclosed on its rear side, that is, the left of Fig. 2, by a substantially U-shaped shield 45 having an open upper end 46 and an open lower end 47, which forms a chimney, so as to direct the air which is passing upward from the condenser 28 into engagement with the heat-radiating fins carried by the motor compressor unit 27. These fins may be of one of two types, but, in each case, they preferably comprise a heat-radiating fin unit of the type shown in Fig. 5 or Fig. 6.

Fig. 5 shows such a fin unit which is adapted to be heated so that it will expand sufficiently so that it can be slid endwise on the motor compressor unit 27 and shrunk by cooling until it is frictionally held about the cylindrical wall 42.

The fin unit of Fig. 5 comprises a cast metal member 48, such as a member of aluminum or aluminum alloy, having a partially cylindrical body 49 which is bare on its rear side 50, and on its front side 51 in respect to fins. The reason for this is that it is undesirable to cause the unit to project further toward the rear of the cabinet, and it is also unnecessary to provide it with fins inside the dished member 30 other than the fins which extend laterally, and which are presently to be described.

The cylindrical body 49 has a plurality of laterally projecting fins 52, 53 which may project laterally from the side portions 54 and 55 of the cylinder 49, and these fins are spaced by relatively deep grooves 56, 57 which preferably terminated in curved surfaces 58 at their bases.

The fins 52, 53 preferably taper toward their outer edges 58, and they may be of substantially the same length throughout, except that toward the front side 51 the last fin or fins 59 may be made narrower in order to space them from the dished member 30. The fins in the case of a cast metal member are, of course, integral with the cylinder 49, and the grooves 56 form vertical passages through which the air may pass from the condenser 28 to effect a cooling of the motor compressor unit 27.

Referring now to Fig. 6, this is a modified form of fin unit made of sheet metal. The cylindrical portion 60 of this fin unit 61 may consist of a single sheet of sheet metal of rectangular shape which is overlapped and welded at 62. Here, again, the sheet metal unit may be shrunk on the motor compressor unit 27 to secure it in place. The fastening at 62 may be by welding, riveting, or any convenient fastening means, the former being preferred.

At its sides the cylindrical member 60 is provided with a multiplicity of U-shaped metal members 63, each one having a yoke 64 which is substantially complementary to the external cylindrical surface of the cylinder 60 at the point where that particular fin is to be attached. Thus the angularity of the yokes 64 varies for the different fins.

The legs of each U-shaped member 63 form a heat-radiating fin, while the yoke 64 of each one is welded to the cylinder 60 which supports them. The width of the heat-radiating fins in this case also depends on location, and the width of all of the fins may be the same except that those at the extreme front or back may be narrower to space them sufficiently from the adjacent housing.

The spaces 65 between the legs of each U-shaped member 63, and the spaces 66 between the legs of adjacent V-shaped members, form air conduits through which the air may pass from the condenser 28 in order to cool the motor compressor unit 27.

The condenser 28 may be supported by the chimney 45 by means of a pair of side plates 67, 68, Fig. 3, which are secured to the lower part of the chimney side walls by screw bolts 69. The side plates 67, 68 have transverse slots 70 regularly spaced and adapted to receive the laterally extending portions 71 of the condenser coils, and these coils also support a multiplicity of intermediate thin sheet metal fin members 72 which are similarly slotted.

The coil and fin assembly 71, 72 may be secured together by dipping this assembly in solder, which hardens and secures the tubes 70 to the fins 72 at their points of contact.

The side plates 67 and 68 are secured to the rearward portions of the side walls of the chimney 45 and slope downwardly and forwardly into engagement with the outer shell 20. Thus the condenser assembly 28 forms the lower opening of the chimney 45 and all air which passes through the chimney 45 must pass between the fins 72 of the condenser assembly 28.

The motor compressor unit 27 being located in the chimney above the condenser 28, it is subjected to the flow of air from the condenser 28, and the heat radiated from both the condenser and the motor compressor unit to the air in the chimney causes this air to rise by convection currents and pass out of the top of the chimney.

Various types of evaporator units 20 may be employed with such as assembly, one of the preferred forms comprising a substantially U-shaped sheet metal member, the yoke of the U forming the bottom 73 of the evaporator, Fig. 2, while the sides of the U form the sides 74, 75 of the evaporator, which has its top open but closed by the top wall 12 of the cabinet.

The preferred form of evaporator is of the two-sheet type, the sheets of which are formed with half cylindrical, forwardly and rearwardly extending pressed formations 76 at the top forming headers. These headers communicate with a plurality of downwardly extending conduits 77 which are formed between the sheets by pressed grooves, the downwardly extending conduits 77 extending transversely across the bottom and communicating with a pressed forwardly and rearwardly extending conduit 78 acting as an inlet manifold.

The width of the evaporator may vary, leaving space on each side of the evaporator, as shown in Fig. 1, for placing bottles on the wire shelf 79, or the width may be made such as to substantially fill the upper part of the cabinet, leaving only a slight space between the inner liner 21 and the evaporator 26, depending on the width of the bottom wall 73.

The evaporator may have suitable inner guides and plates (not shown) for supporting ice trays or food, and the evaporator itself is supported by a plurality of angle brackets 80 at the back which are bolted, or otherwise secured, to the inner shell 29 of the plug 25, and in some embodiments of the invention the evaporator 26 may have angle brackets 81 at the front and top for securement to the ceiling, as indicated in Fig. 5.

A front door 82, which may be mounted for pivotal motion on the evaporator, closes the front opening of the evaporator, while a suitable covered pan 83 may be located on the shelf 79 below it.

The course of the refrigerant in the system is as follows:

Evaporated refrigerant gas is pumped from the headers 76 of the evaporator 26 by means of a transverse conduit 84 which is in communication with another conduit 85 leading rearwardly from the evaporator to the motor compressor housing 27.

The refrigerant gas is compressed in the motor compressor and passes from the motor compressor at the relatively small outlet pipe 86, Fig. 3, which communicates with the tubular coils 71 of the condenser assembly 28 at the upper right corner of the condenser, Fig. 3. The refrigerant is there condensed to a liquid, giving off its heat to the fins 72 which, in turn, radiate their heat to the passing air in the chimney 45. From the lower end of the condenser 28 the liquid refrigerant passes by means of conduit 77 to a float chamber 87 which is preferably provided with means for removing moisture from the liquid refrigerant in the form of a silica jell contained in an upper chamber 88 of the float chamber 87.

The discharge from the float chamber is by means of a float-controlled valve leading to the lower conduit 89 which is connected to a very small tube 90 which may be of capillary proportions. The tube 90 may pass into the tube 85 leading from the evaporator to the motor compressor in order to utilize the remaining cooling action of the vaporized gas from the evaporator in pre-cooling the liquid coming from the float chamber.

At a fitting 91, Fig. 4, in the pipe 85, the relatively small liquid tube 90 emerges and passes over into communication with the inlet manifold 78 of the evaporator 26. Suitable restrictions between the inlet manifold 78 and the laterally upwardly extending conduits 77 of the evaporator, aid in increasing the circulation of refrigerant from the inlet manifold 78 into said conduits, where the refrigerant again evaporates, and its cooling action is utilized in cooling the air inside and outside the evaporator, or in cooling the fluid with which the evaporator is in contact.

The side walls of the chimney 45 may be indicated by the numerals 92, 93, and side wall 93 adjacent the float chamber is preferably provided with an aperture 94 to permit external air to cool the float chamber 87. The float chamber

87 is also preferably baffled from the ascending warm air from the condenser 28 by means of a laterally extending baffle wall 95 and an upwardly extending baffle wall 96 in order to maintain the float chamber at the proper operating temperature.

The operation of the motor compressor 27 is controlled intermittent operation, as required, to keep the evaporator 26 at a predetermined temperature by means of a thermostatically operated electric switch 97, Fig. 2, having its bulb carried by the side of the evaporator 26. The motor is also controlled by means of a thermally responsive overload switch 98 located on top of the motor compressor unit 27. The thermally responsive overload switch located on top of the motor compressor unit is adapted to afford a better protection in this location than elsewhere because it is affected not only by the flow of heavy current for extended predetermined periods, but by the radiation and conduction of heat to the thermal overload switch from the motor compressor unit itself.

The thermostatic switch controlling the intermittent operation of the motor may be located on the front of the evaporator 26 at 99, and may be provided with a suitable manual adjustment 100 for changing the temperature at which the switch closes or opens, either by adjusting its contacts or adjusting spring tension which opposes or aids the action of the thermostatic switch.

The space below the lower wall 13 of the cabinet may be occupied by a tilting pan 100 provided with a handle 102 and pivoted adjacent its lower edge so that it may tilt outward for access to its contents. Thus all of the space below the lower wall 13 may be utilized for storage of food products which do not require cooling, as all of the apparatus required for the refrigeration unit is located at the top and rear of the cabinet.

The location of the motor compressor unit 27 partially in the rear wall and partially outside, enables the use of the space behind the evaporator for the location of the insulating plug 25, and this is space which was formerly unused.

The present refrigerating apparatus may be removed as a unit from the back of the cabinet when it is necessary to do so for repair or inspection of any of its parts. It occupies a minimum amount of space and thus leaves a maximum space for the storage of food inside the cabinet.

Since it requires no fans for driving air through the condenser and about the motor compressor, it has a minimum of moving parts and may be constructed at a minimum cost. Test of the units which are provided with such heat radiating fins shows that the temperature of the motor may be kept within proper limits when the refrigeration unit is carrying its maximum load.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being

recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, said motor compressor unit having an external cylindrical surface, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, and a cooling unit for said motor compressor unit, comprising a cylindrical body complementary in shape to the exterior cylindrical surface of the motor compressor, said cylindrical body having a multiplicity of laterally extending fins projecting from each of its opposite sides, the fins being located parallel to each other and to said chimney member.

2. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, said motor compressor unit having the external cylindrical surface, a chimney member open at its upper and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said condenser extending diagonally downward and forward from the rear wall of the chimney to engage the outer shell of the rear of the cabinet, and a cooling unit for said motor compressor unit, comprising a cylindrical body complementary in shape to the exterior cylindrical surface of the motor compressor, said cylindrical body having a multiplicity of laterally extending fins projecting from each of its opopsite sides, the fins being located parallel to each other and to said chimney member.

3. A removable refrigerator unit comprising an an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, and a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said motor compressor unit having its housing provided with laterally extending metallic heat conducting fins spaced from each other to provide air passages, and the said fins being of sufficient area to maintain the motor compressor unit at a suitable temperature at maximum load on said refrigerator unit.

4. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, and a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said motor compressor unit having its housing provided with laterally extending metallic heat conducting fins spaced from each other to provide air passages, and the said fins being of sufficient area to maintain the motor compressor unit at a suitable temperature at maximum load on said refrigerator unit, the said fins being an integral part of a fin unit comprising fins and a cylindrical metal member adapted to be shrunk into heat conducting engagement with the outside of said motor compressor unit.

5. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, and a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said motor compressor unit having its housing provided with laterally extending metallic heat conducting fins spaced from each other to provide air passages, and the said fins being of sufficient area to maintain the motor compressor unit at a suitable temperature at maximum load on said refrigerator

unit, the said fins being part of a fin unit comprising a cylindrical sheet metal member in heat conducting contact with the side walls of the motor compressor unit and having a plurality of substantially U-shaped members with their yokes welded to said cylindrical member to form laterally extending fins with spaces between them for air passages.

6. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, and a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said motor compressor unit having its housing provided with laterally extending metallic heat conducting fins spaced from each other to provide air passages, and the said fins being of sufficient area to maintain the motor compressor unit at a suitable temperature at maximum load on said refrigerator unit, the said fins being part of a fin unit comprising a cylindrical sheet metal member in heat conducting contact with the side walls of the motor compressor unit and having a plurality of substantially U-shaped members with their yokes welded to said cylindrical member to form laterally extending fins with spaces between them for air passages, the said yokes being welded to the said cylindrical body.

7. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, and a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said motor compressor unit having its housing provided with laterally extending metallic heat conducting fins spaced from each other to provide air passages, and the said fins being of sufficient area to maintain the motor compressor unit at a suitable temperature at maximum load on said refrigerator unit, the said motor compressor unit having its motor controlled to prevent overload by a thermal overload relay located on top of the motor compressor unit and subjected to heat from the convection currents and heat radiated and conducted from the motor compressor unit.

8. A removable refrigerator unit comprising an insulating plug having an inner metallic shell to be located inside the cabinet and an outer metallic shell, the said shells being joined by breaker strips at their edges and the outer shell being recessed to receive and house a portion of a motor compressor unit, the space between said shells being filled with suitable heat insulation, forming a plug adapted to close an aperture in the rear of a refrigerator cabinet, said plug supporting an evaporator on its inner shell and said plug supporting a motor compressor unit in the recess of its outer shell, said motor compressor unit having an external cylindrical surface, a chimney member open at its upper end and lower end and enclosing the projecting part of said motor compressor unit to form an air circulation chimney about the motor compressor unit, a condenser for said unit located to extend across the lower opening of said chimney whereby the air heated by said condenser will pass up said chimney and induce convection air currents past said motor compressor unit to cool the latter, the said chimney having one of its side walls apertured, a float chamber member located adjacent said aperture to control the flow of refrigerant in said system, said float chamber member being cooled by external air and having a baffle shielding it from air which passes upwardly from said condenser, and a heat exchanger for the motor compressor unit, presenting a minimum thickness from front to back of the refrigerator unit, comprising a cylindrical band in heat conducting contact with the external cylindrical surface of said motor compressor unit, said band supporting a multiplicity of substantially parallel laterally projecting fins on the opposite sides of said band, the said fins being located substantially parallel to said chimney, and the said band being devoid of fins at its front and back.

9. A removable refrigerator unit, comprising an insulating plug having an inner shell adapted to project into a cabinet and to utilize space behind an evaporator, said shell suporting on its inner surface an evaporator, said plug also including an outer shell secured to but insulated from the inner shell and dished inwardly to receive a portion of a motor compressor unit, heat insulation in the space between said shells, a motor compressor unit spring supported from said outer shell and located in said dished portion, but out of contact therewith, said motor compressor unit projecting outwardly from the rear of said outer shell, and a chimney having a rear wall and side walls surrounding said motor compressor unit, and directing the passage of air about it, said chimney having openings at its top and bottom, a condenser unit located across one of said openings and adapted to assist in creating convection air currents through said chimney about said motor compressor, and a heat exchange unit of minimum size from front to back, having a cylindrical band in heat contact with said motor compressor unit, said band supporting laterally projecting, substantially parallel fins, through which the convection currents of air pass in said chimney to cool said motor compressor unit.

JAMES H. DENNEDY.

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