

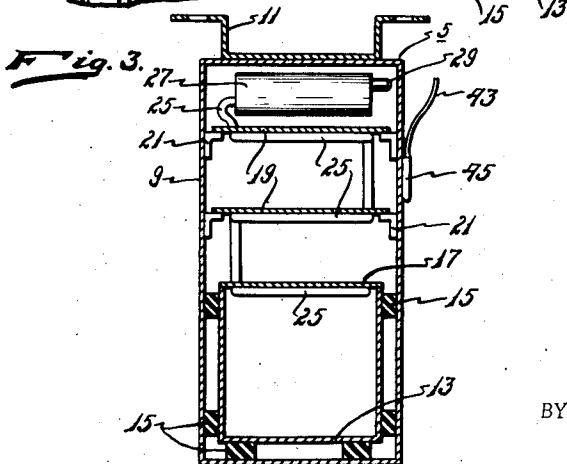
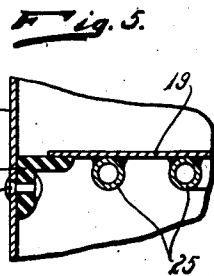
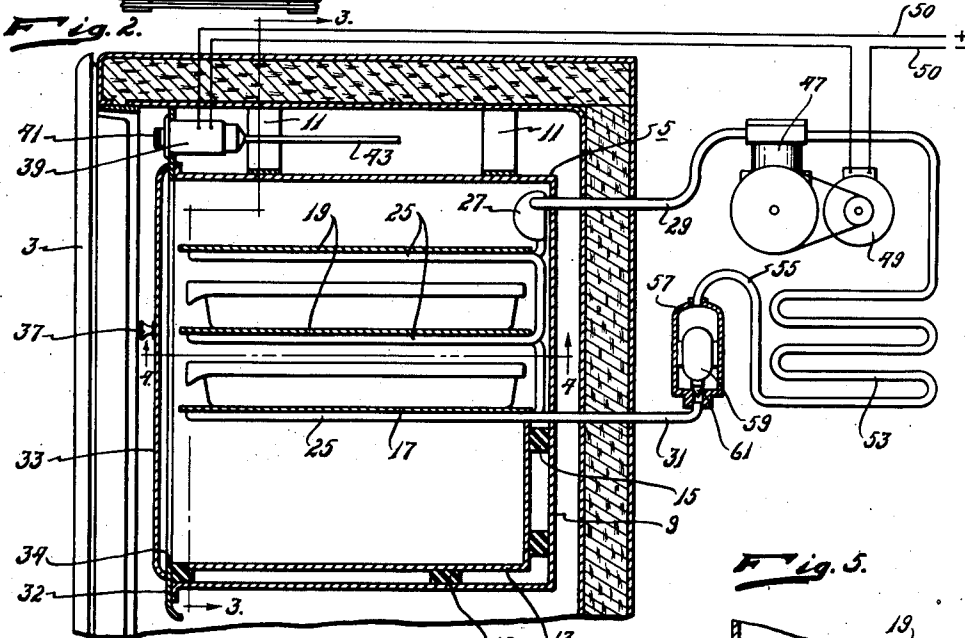
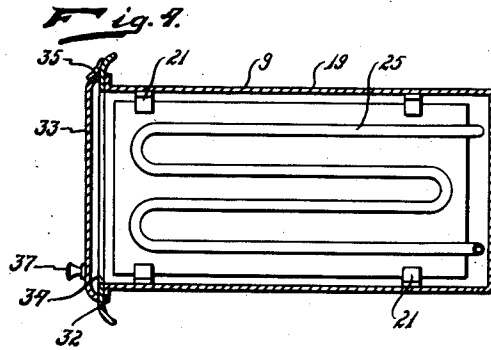
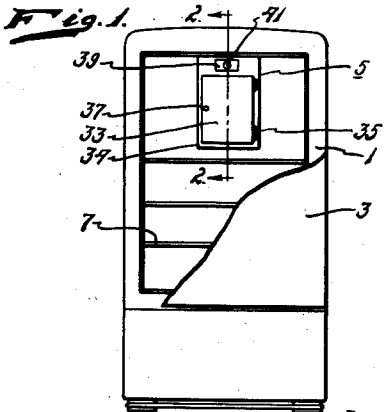
Nov. 17, 1942.

L. A. PHILIPP

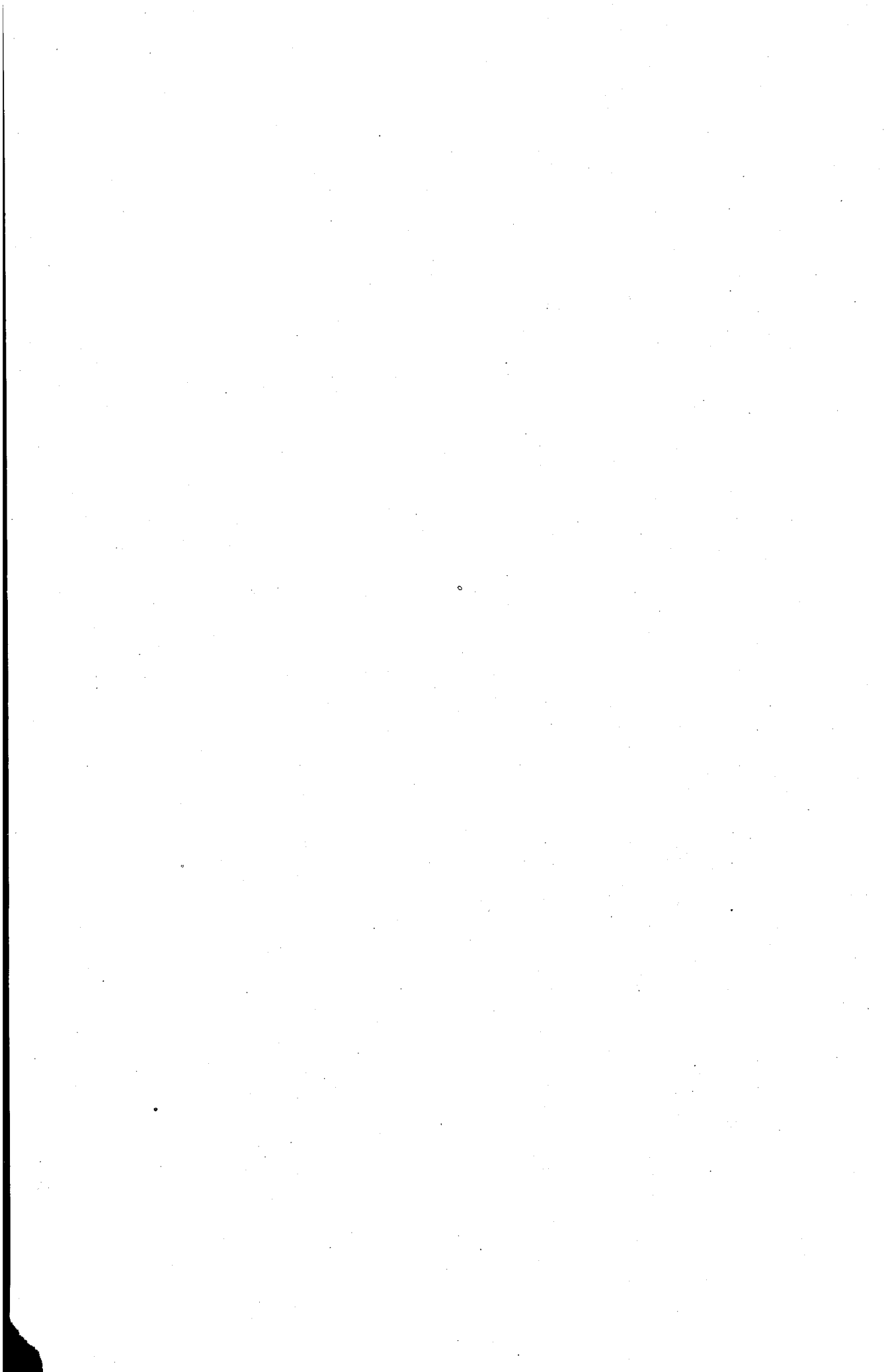
2,302,052

REFRIGERATING APPARATUS

Filed April 12, 1941



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2,302,052

REFRIGERATING APPARATUS

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Application April 12, 1941, Serial No. 388,251

5 Claims. (Cl. 62—126)

My invention relates to refrigerating apparatus and, more particularly, to refrigerating apparatus of the multiple temperature type.

One of the objects of my invention is to provide an improved cooling unit in a refrigerator cabinet for freezing large quantities of substances and for cooling the circulating air within the cabinet without collecting frost on said unit at least part of the time.

Another object of my invention is to provide an improved cooling unit for freezing substances and cooling circulating air comprising a casing of thin metallic material in which is supported a low temperature refrigerant evaporating element, said element nowhere being in direct thermal contact with the casing so that while freezing temperatures are maintained within the casing, non-frosting temperatures are maintained on the external surfaces of the casing at least part of the time for cooling the circulating air.

Another object of my invention is to provide an improved cooling unit for cooling circulating air and for freezing substances comprising a casing of thin metallic material and a low temperature refrigerant evaporating element supported within said casing out of direct heat conducting relation with said casing and arranged in vertically spaced positions therein so as to uniformly cool the casing by convection currents only, whereby non-frosting temperatures may be maintained on the outer surfaces of the casing for cooling the circulating air while uniform freezing temperatures are maintained within the casing for freezing large quantities of substances.

Another object of my invention is to provide an improved cooling unit having a frozen food storage chamber comprising a casing supported within a larger casing which is exposed to circulating air, said smaller casing being spaced from the larger casing by non-heat-conducting spacers and being associated in direct heat conducting relation with a low temperature refrigerant evaporating element disposed within the larger casing so that temperatures suitable for the freezing and storage of meats and other foodstuffs may be maintained within the smaller casing without being affected materially by the circulating air surrounding the outer casing.

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

In the drawing:

Fig. 1 is a front elevational view of a refriger-

ator cabinet with the door partially broken away, showing a refrigerator equipped with a cooling unit arranged in accordance with my invention;

Fig. 2 is an enlarged vertical sectional view taken through the center of the cabinet and the cooling unit on line 2—2 of Fig. 1 to illustrate the structural details thereof;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a cross-sectional view of the cooling unit taken on line 4—4 of Fig. 2; and

Fig. 5 is a detailed sectional view thereof.

In accordance with my invention, I provide for cooling the circulating air within a food storage compartment of a refrigerator cabinet and for freezing large quantities of substances, such as ice cubes, by utilizing a small compact refrigerant evaporating unit which is economical to operate and to manufacture. This cooling unit includes a casing or shell constructed preferably of thin sheet metal material which is uninsulated. Supported within this casing and spaced therefrom by non-heat-conducting spacers is a low temperature refrigerant evaporating element including a plurality of vertically spaced conduits for freezing ice cubes and the like and for maintaining a uniform freezing temperature throughout the interior of the casing. Since the metal casing enclosing the evaporating element is separated therefrom by insulating spacers, most of the heat transfer from the casing which is exposed to the circulating air to the evaporating element is by way of convection currents within the casing whereby a temperature differential is established between the casing and the evaporating element. By properly proportioning the casing with respect to the evaporating element, a sufficient temperature differential may be maintained so that no frost will collect upon the casing or at least only a film of frost will collect during periods when the refrigerating system is in operation, and this frost is melted from the outer surface of the casing by the heat of the circulating air when the refrigerating system is not in operation. In either event, there is very little dehydration of foodstuffs as compared to many systems now in operation wherein the air cooling element is continuously maintained below freezing temperatures.

In addition to the above, there may also be provided, if desired, a small casing enclosed within the air cooling casing out of direct contact therewith and associated with the refrigerant evaporating element for the purpose of maintaining relatively low temperatures there-