Oct. 7, 1930. L. G. COPEMAN 1,777,786

REFRIGERATOR CABINET

Filed Oct. 18, 1926 2 Sheets-Sheet 1

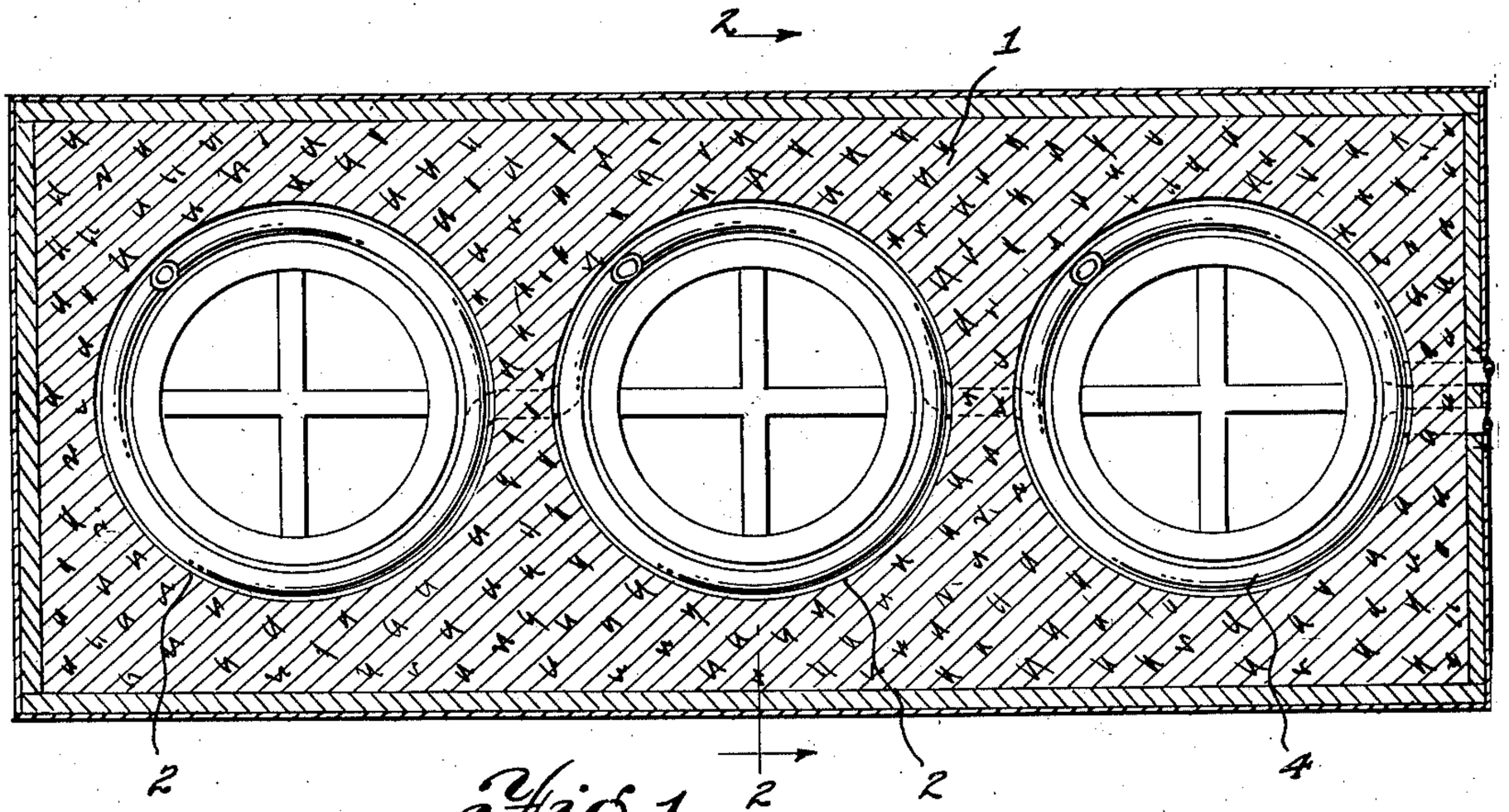

Fig. 1

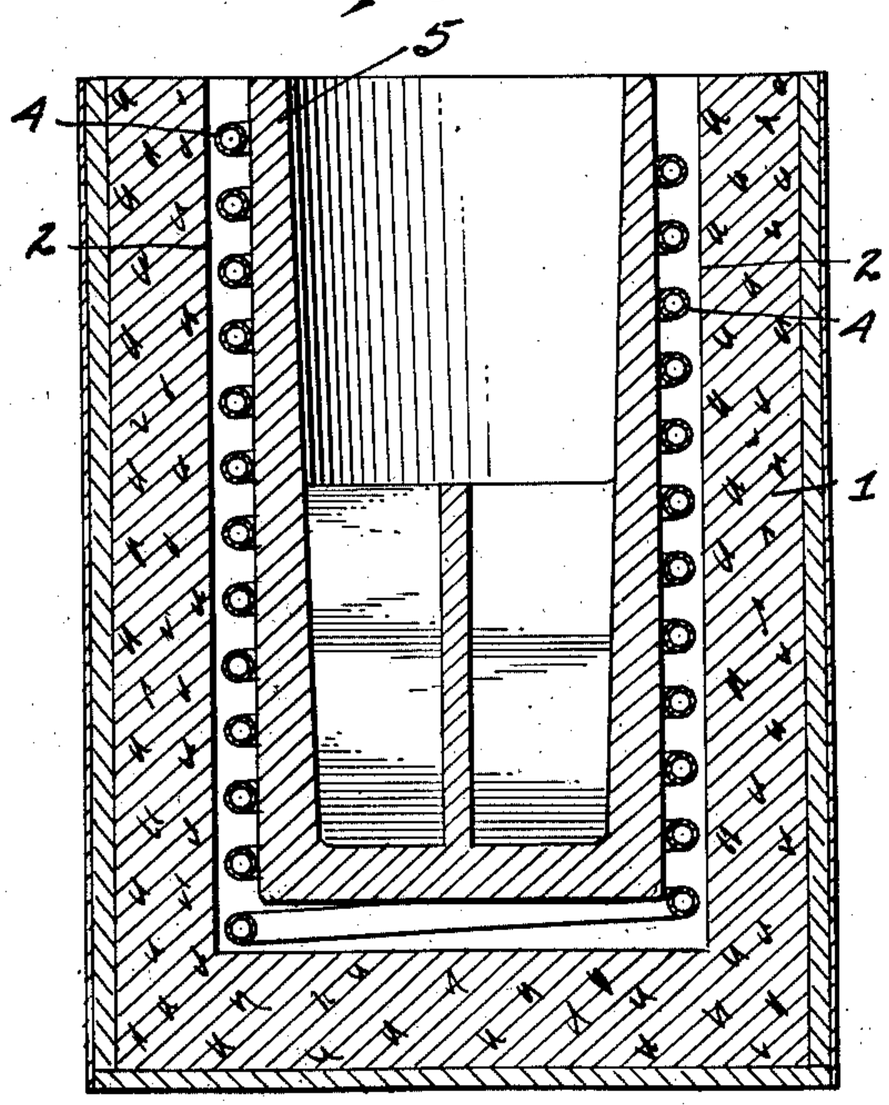

Fig. 2

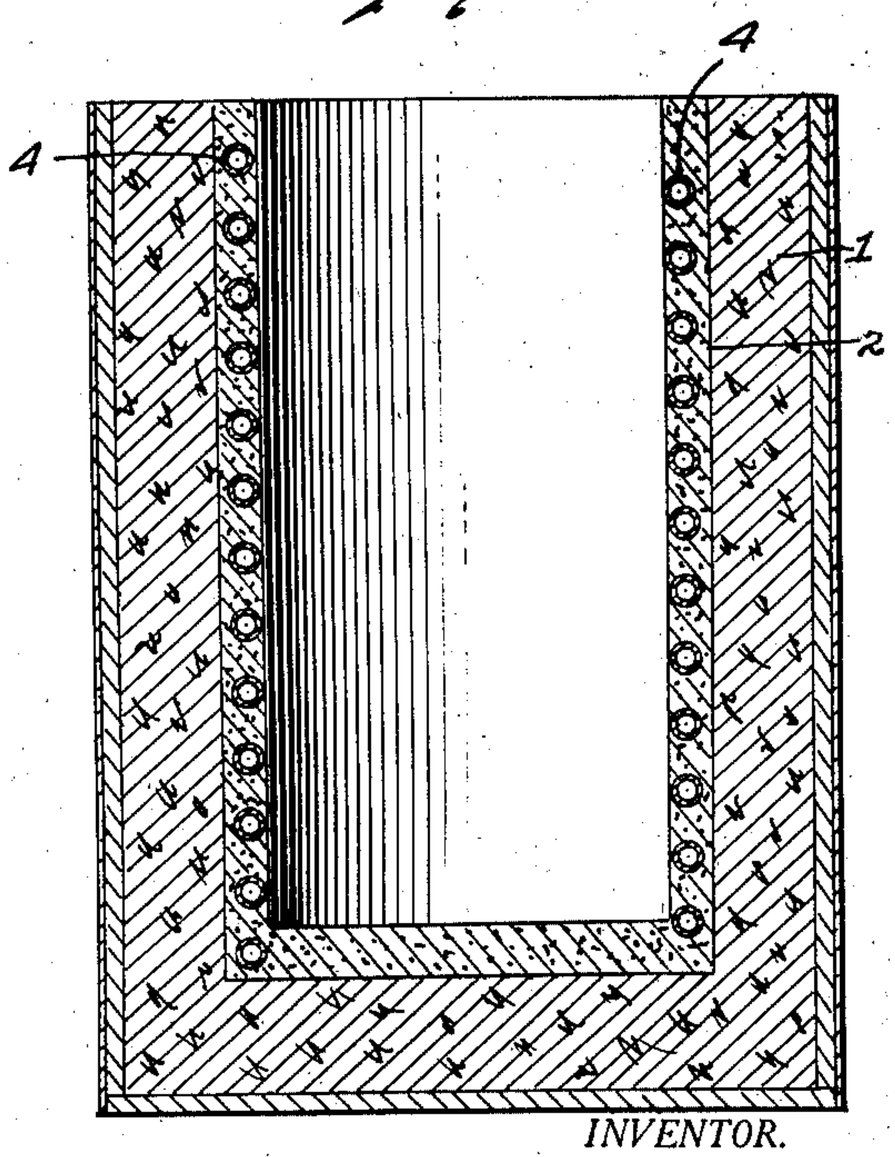

Fig. 3

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REFRIGERATOR CABINET

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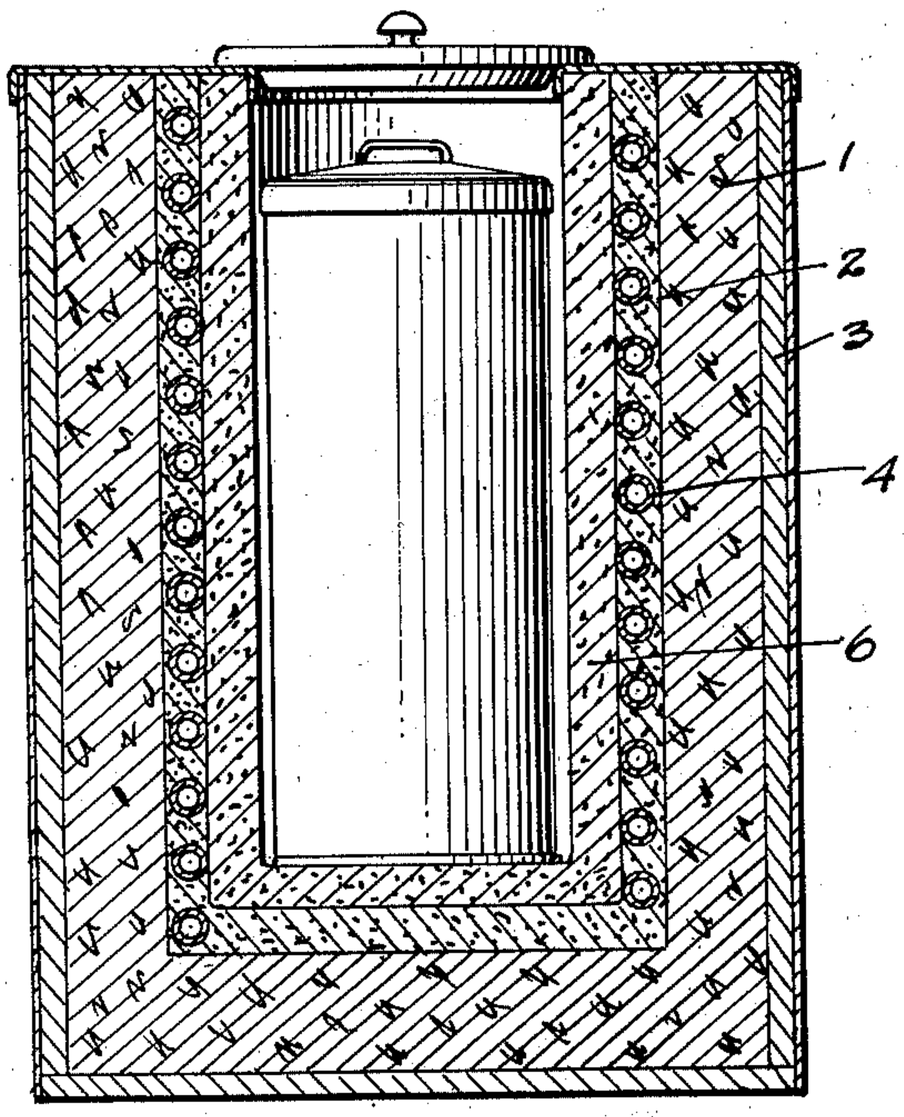

Fig. 4

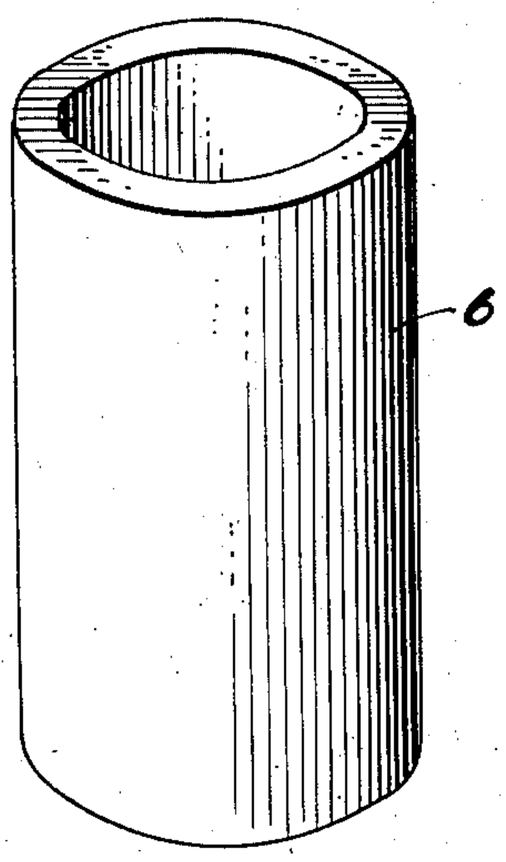

Fig. 5

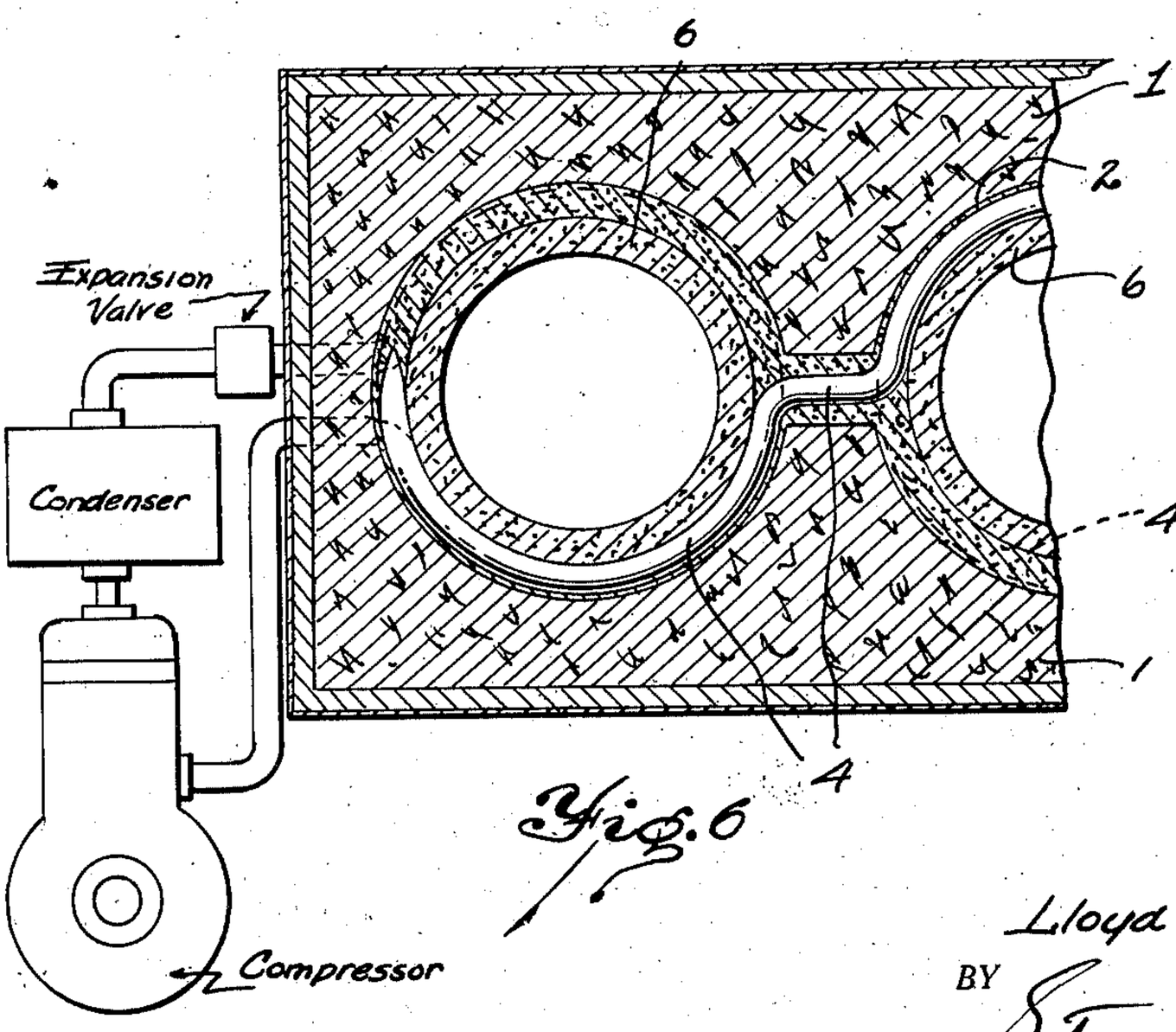

Fig. 6

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UNITED STATES PATENT OFFICE

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REFRIGERATOR CABINET

Application filed October 18, 1926. Serial No. 142,296.

This invention relates to a refrigerator cabinet and pertains particularly to cabinets of the larger type such as ice cream cabinets, containing a plurality of units.

Heretofore in the manufacture of ice cream cabinets, or similar structures, utilizing mechanical refrigeration, it has been the practice to construct the main cooling unit of the cabinet of a suitable container which has been filled with brine or other non-freezing solution, and in which is positioned suitable expansion coils for effecting heat absorption and cooling of the brine. This method of cooling cabinets of this type has been objectionable, not only because of its low efficiency, but also because of the expensive construction, the replacing of the brine and the liability of the brine seeping and eating through the joints of the container shell. Another great disadvantage of this type of cabinet, and the disadvantage which is the particular object of this invention to overcome, is the large amount of space and the weight which is necessarily incident to such construction.

It is the primary object of this invention to provide a refrigerating cabinet of the type adapted to utilize mechanical refrigeration which entirely does away with the use of brine or other non-freezing or holdover mediums, and which at the same time presents a cabinet which is relatively light as well as extremely compact.

Another object of the present invention is the provision of a refrigerating cabinet, the main part of which includes the cabinet and insulating structure which is designed to be manufactured and shipped as a separate article to the consumer, the said cabinet being fitted and completely equipped ready to be connected to the refrigerating apparatus, but minus the means which I utilize for taking the place of the brine container. By this structure I have made it possible to completely build and ship an ice cream cabinet, or the like, which is extremely light and compact, direct to the user. After this cabinet has been received by the user, the conducting and holdover members which form a part of this invention may be manufactured and inserted or replaced as desired. This provision of an extremely light and compact unit for shipping, and the insertion of the heavy and somewhat fragile members at the place of use is of extreme importance, and particularly with reference to the shipping of the units.

In the drawings:

Fig. 1 is a plan view partly in section of an ice cream cabinet constructed in accordance with my invention and illustrating the relative positioning and dimensions of the various elements going to make up the cabinet.

Fig. 2 is a vertical sectional view taken on line 2—2 of Fig. 1 and illustrating the manner of securing the expansion coils in place.

Fig. 3 is a view similar to Fig. 2, and showing the coils cast in place.

Fig. 4 is a vertical sectional view through the completely installed cabinet showing the outer lining of the cabinet, the insulating material, the cast embedded coils, and finally the cast stone container adapted to be inserted within the coils.

Fig. 5 is a perspective view of my cast stone container which serves as a container and holdover medium for replacing the brine.

Fig. 6 is a fragmentary sectional view, partly diagrammatic, and illustrating the manner of positioning and connecting the coils of the several units, and also the manner of positioning the cast stone container and holdover within the coils.

In the drawings I have shown an embodiment of my invention as comprising a standard ice cream cabinet. The construction of this cabinet and the over-all size will be determined by the amount of insulation desired, and as shown in Fig. 1, this insulation may comprise a main body of cork or similar material 1. It will be obvious therefore, at a first glance, that this cabinet need only be very small in size, as the thickness of the insulation determines the width and length of the cabinets in addition to the diameter of the ice cream containers. This cork lining, or body of the cabinet is provided with a plu-

rality of apertures 2 which are slightly larger than the diameter of the ice cream can, or container.

The outside of the cabinet may be formed of any suitable framework 3, as desired. The refrigerating effect may be accomplished by direct expansion coils, or by coils of the flooded type system, and if desired, the refrigeration may be accomplished in part by the use of brine coils which may be spaced alternately with the refrigerating coils, as disclosed in my copending application No. 86,719, filed Feb. 8, 1926. In the drawings I have shown direct expansion coils which may be designated 4. The coils of each unit are positioned, as shown in Figs. 1 and 2, and may be connected together as shown. I preferably secure these coils in place by inserting a suitable core 5, as shown in Fig. 2, within the apertures 2 formed by the cork insulation, and then pouring a suitable binding material which is preferably an oxy-chloride cement in order to bind and secure the coils in position. This cement preferably enters the pores and interstices of the cork and thus securely binds the coils in position, The core 5 may then be withdrawn to present an ice cream cabinet of the mechanical refrigeration type ready for shipping.

After the cabinet has been shipped to the user, a suitable container, which may be designated 6, and which is illustrated in Fig. 5, may be shipped to the user, or may be manufactured at the place of installation, and this container is preferably formed of an oxy-chloride cement which may be made up of a mixture of magnesium oxide and fine silica, or sand, to which may be added enough magnesium chloride in solution whereby to make a mixture that may be easily poured. This container 6 may be manufactured in suitable moulds, as will be obvious to those skilled in the art, and preferably of a size to snugly fit within the apertures formed by the embedded coils 4, as best shown in Fig. 4.

The cast stone or other binding material for holding the coils 4 in place is preferably just sufficient to cover the coils, or even better, it is just sufficient to connect the coils, and may leave the coils partly exposed at their inner surface. The cast stone container and holdover 6 will then, when inserted in the cabinet, either contact with the coils 4, or the binding material covering the same, and will serve as an excellent conductor for abstracting the heat from the ice cream container, and for maintaining the temperature incident to its "holdover" properties. The expansion coils therefore form a permanent part of a cabinet, are rigidly secured in place, and do not add materially to the weight of the cabinet. The heavy stone container 6 may be inserted at any time after the cabinet has been shipped to the user, and it not only serves as a conductor, but also as a good holdover, and therefore takes the place of the brine heretofore used in similar cabinets. The coils 4 may be positioned and connected in the usual manner, and in Fig. 6, I have shown a conventional arrangement whereby the refrigerant may be circulated through the expansion coils.

What I claim is:

1. A brineless ice cream cabinet, or similar structure, comprising a cast stone member separate from the cabinet for receiving the container to be cooled, a lining of insulating material closely adjacent said member and a refrigerating coil positioned in said space between said member and lining surrounding the cast stone member, said coil being separated from, but in heat conducting relation to said member.

2. A brineless refrigerating cabinet comprising a removable storage compartment of cast stone, refrigerating coils positioned in heat exchange relation to and surrounding the compartment and forming a permanent part of the cabinet, and a lining of insulating material spaced from said compartment a distance substantially the diameter of said coils.

3. A brineless refrigerating cabinet comprising insulating material formed to provide one or more apertures, and refrigerating coils positioned within said aperture, or apertures, to complete the cabinet for shipping, and a separate and removable stone storage compartment in the form of a conductor and holdover, adapted to be inserted in said apertures and within said coils at the time of installation.

4. A refrigerating cabinet, comprising a body of insulating material formed to provide one or more apertures, refrigerating coils positioned on the inside of said aperture, or apertures, and secured thereto by plastically applied material, and a removable member insertable within the aperture or apertures at the place of installation and adapted to receive the container to be cooled.

5. An ice cream cabinet, or similar structure, comprising insulating material formed to present an aperture, or apertures, refrigerating coils positioned within the aperture, or apertures, the coils being secured to the walls of said apertures by plastically applied stone, and a separate storage container of a material serving as a holdover and adapted to be inserted within the aperture formed by said coils.

6. An ice cream cabinet, or similar structure, comprising a relatively light cabinet built up of insulating material provided with apertures and refrigerating coils positioned within and along the sides of said apertures, and a cast stone storage container adapted to be inserted within the apertures formed by said insulating material and coils at the place of installation.

7. An ice cream cabinet, or similar construction comprising a food chamber formed of solid cast stone, refrigerating coils surrounding said chamber, said cast stone chamber and coils being independent of each other and in heat conducting relation thereto, insulating material surrounding said coils and spaced from the chamber a distance substantially equal to the diameter of said coils, and means for securing and positioning said coils to said insulating material.

8. An ice cream cabinet or similar structure, comprising a cabinet having insulating material formed to provide one or more apertures, containers formed of relatively high heat conducting material positioned in said aperture or apertures and shaped to receive an ice cream can or the like, refrigerating coils positioned within the aperture or apertures and in heat conducting relation with said containers, said coils being held in heat conducting relation with said containers by plastically applied stone allowed to harden.

9. An ice cream cabinet or similar structure, comprising a cabinet having insulating material formed to provide one or more apertures, containers formed of relatively high heat conducting material positioned in said aperture or apertures and shaped to receive an ice cream can or the like, refrigerating coils positioned within the aperture or apertures and in heat conducting relation with said containers, said coils being held in heat conducting relation with said containers by plastically applied stone allowed to harden, said stone serving as a hold-over for the refrigerating coils and securing said coils within said apertures, and said containers being removable from the respective apertures.

In testimony whereof I affix my signature.

LLOYD G. COPEMAN.