Jan. 10, 1933. W. H. F. SCHMIEDING 1,894,127

REFRIGERATING APPARATUS

Filed March 30, 1929 2 Sheets-Sheet 1

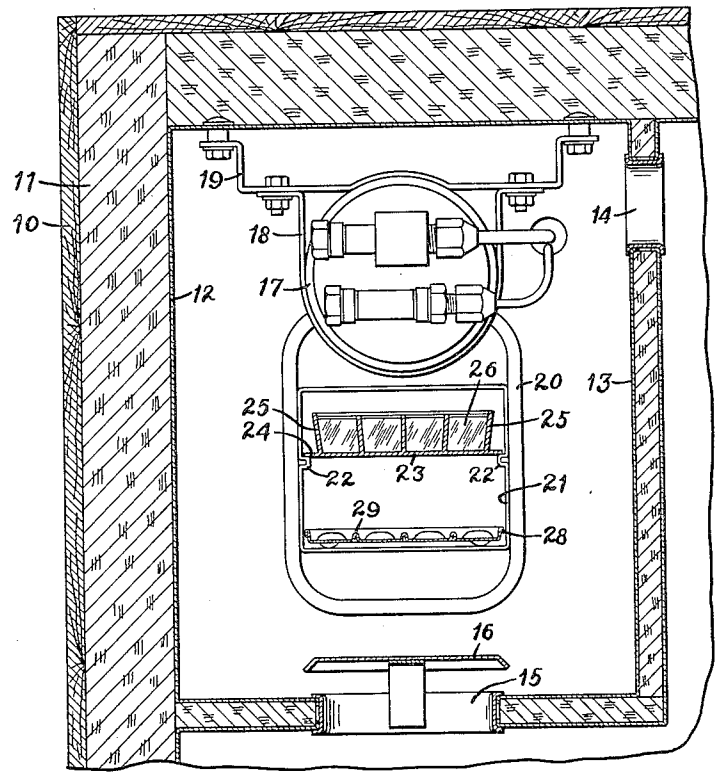


Fig. 1

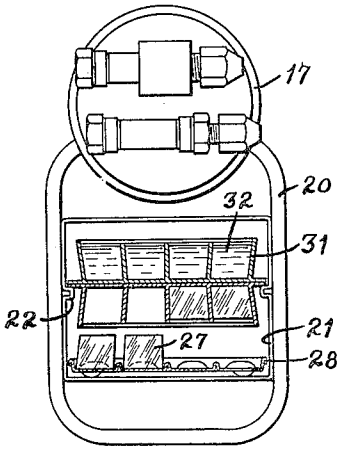


Fig. 2

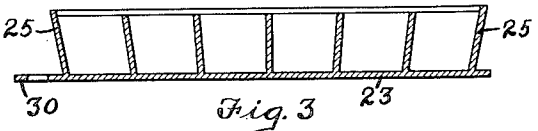


Fig. 3

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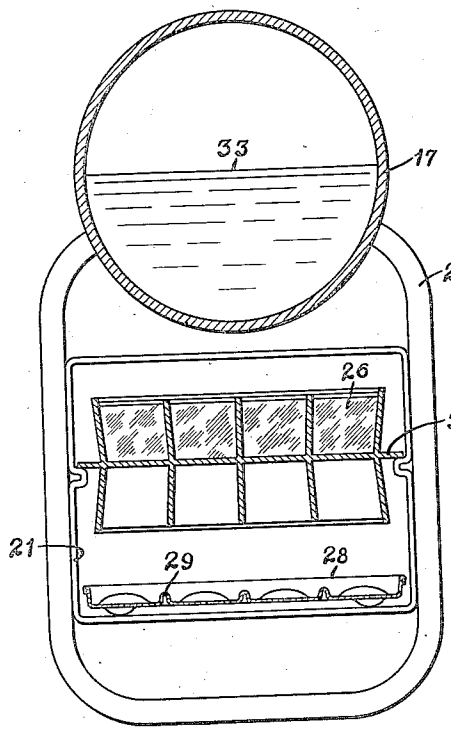


Fig. 5

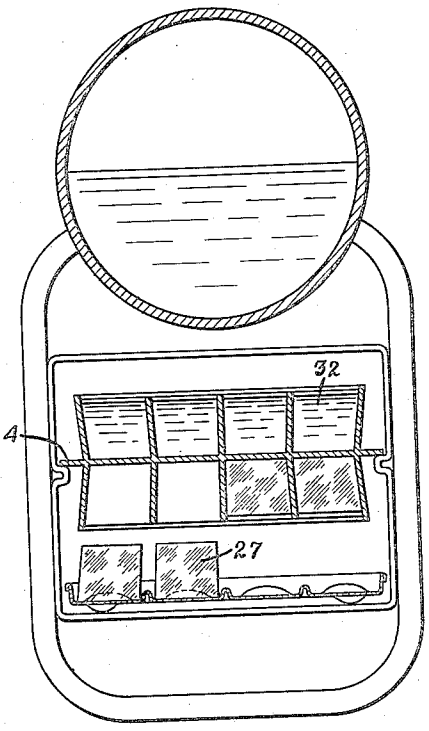


Fig. 6

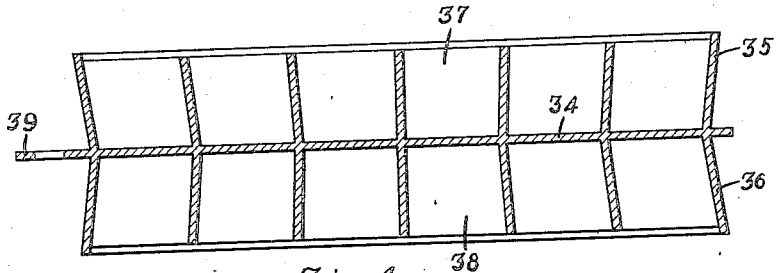


Fig. 4

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1,894,127

UNITED STATES PATENT OFFICE

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REFRIGERATING APPARATUS

Application filed March 30, 1929. Serial No. 351,445.

This invention relates to refrigerating apparatus especially to an improved method of separating frozen material such as ice cubes from the freezing receptacle.

An object of the invention is to provide a method whereby the frozen material will automatically separate itself from an ice tray.

Another object of the invention is to provide an improved ice tray whereby the preceding object can be accomplished.

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 front view of a section of a refrigerator disclosing a cooling unit and a plurality of trays therein;

Fig. 2 is a front view of the cooling unit in Fig. 1 disclosing the method of obtaining the ice cubes or blocks;

Fig. 3 is a cross-section through an improved ice tray;

Fig. 4 is a cross-section through a modification of the ice tray in Fig. 3;

Fig. 5 is a cross-section through a cooling unit with the ice tray in Fig. 4 located therein; and

Fig. 6 illustrates the method of obtaining the ice cubes from the tray disclosed in Fig. 4.

One of the objections to the use of ice trays or receptacles for the freezing of ice or other material has been the difficulty of separating the frozen contents of such trays or receptacles. This invention contemplates a method by which the frozen material may be more or less automatically separated by the use of other relatively much warmer material in thermal contact therewith.

In Fig. 1 is disclosed a cross-section of a portion of a refrigerator cabinet disclosing an application of the invention. The cabinet has the outer wall 10 enclosing insulation 11 and inner lining 12. A partition 13 having openings 14 and 15 provides a compartment for the cooling unit of the refrigerator. This cooling unit preferably has the header 17 for the refrigerant 33 with the depending hollow members 20 such as tubes or a plurality of plates enclosing what is usually referred to as the freezing compartment. The cooling unit is suspended from the inner lining by the bracket members 18 and 19. A bonnet 16 over the hole 15 prevents any moisture from dripping off the cooling unit through the hole to the food that might be placed below it. Inside of the tubes 20 is the sleeve 21 having a projection 22 for the support of any suitable ice tray or other type of receptacle. A preferred form of receptacle is disclosed in Fig. 3 having a supporting plane or bottom 23 with projecting lateral flanges 24. On the supporting plane or the mutually divergent walls 25 forming one and preferably more compartments therein for the reception of the material 26 to be frozen. A convenient handle 30 is located on the front of the receptacle. This receptacle or tray is filled with water or other material to be frozen and inserted in the cooling unit with its supporting lateral flanges 24 resting on the projection 22 of the sleeve. It will be noted that the flanges 24 extend beyond the projection of the walls 25 upon the plane or base 23. Good thermal contact is thus made between the contents of the tray through the plane 23, flanges 24, sleeve 21 and the tubes 20 containing the liquid refrigerant preferably sulphur dioxide. Accordingly the heat of the liquid 26 is conducted through this thermal contact to the refrigerant and with such extraction of heat the material freezes. An open pan 28 having dividing ridges 29 thereon preferably such as disclosed in the application of Donald H. Reeves, Serial No. 329,347, filed December 31, 1928 is placed below the pan or receptacle. The receptacle with its frozen content is removed and inverted and replaced as disclosed in Fig. 2 with its flanges 24 supported again on the projections 22. Another tray such as 31 is immediately filled with a relatively warm substance 32 which may be similar to the substance already frozen and placed on top of the bottom 23 of the first receptacle. There is immediate and excellent contact between the warm substance 32 and the bottom

23 and sides 25 bordering on the contents in the inverted tray. The heat of this warm substance will be immediately transferred to the cold surfaces of the material in the inverted tray and the contents of such tray will melt at these surfaces and fall into the tray 28 as disclosed in Fig. 2. Upon such melting and falling the blocks or cubes 27 may be easily and individually removed from the tray 28. The ridges 29 in the tray 28 will prevent the ice cubes freezing to one another.

In Fig. 4 is disclosed a double ice tray which might be used instead of a plurality of ice trays disclosed in Fig. 2. This ice tray has a supporting plane 34 similar to the supporting plane 23. The supporting plane 34, however, has mutually divergent walls 35 and 36 above and below it instead of having them only upon one side. Within these walls are preferably a series of compartments 37 and 38, opening on different horizontal planes and having an integral bottom formed by the plane 34. Any suitable handle 39 is located on the front thereof. In Figs. 5 and 6 is disclosed the material in the compartments 37 within a cooling unit. After the contents are frozen the tray is removed, inverted, the compartments 38 filled with a relatively warm substance and replaced in the cooling unit again. The frozen contents of the inverted section of the tray will melt at their surface contacts from the heat in the upper section and fall into the open tray 28 as disclosed in Fig. 6. Of course it is apparent that the tray 28 might be dispensed with and the cubes picked up from the bottom of the sleeve. However, the tray 28 has the advantage of keeping the ice cubes separated so that they will not freeze to one another.

There has thus been disclosed a very easy method of obtaining ice cubes or other frozen material from the receptacle without any other trouble than filling two trays or both sides of the special double tray disclosed in Fig. 4. It is obvious however, that the trays may assume any desired form and accordingly the words "blocks" or "compartments" are intended to cover any desired configuration of the trays or their frozen content. It is to be further noted that trays are very easily changed from one position to another due to the provision of the supporting lateral flanges on the supporting plane of either of the trays.

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 freezing receptacle for refrigerators comprising a central plate, walls projecting from opposite sides of the central plate to form molds on opposite sides, said walls forming side portions of said molds, and said central plate extending across the bottom of said molds.

2. A freezing receptacle for refrigerators comprising a plane supporting member for supporting the receptacle within the refrigerator, containing walls forming a receptacle on one side thereof, the plane supporting member being connected to the containing walls at the bottom of the receptacle and extending laterally beyond the projection of said containing walls on said plane supporting member, said plane supporting member being adapted to support said tray in inverted position upon ledges.

3. In combination, a compartment having a pair of tray supporting ledges, a tray supported by said ledges in inverted position, said tray having a pair of supporting flanges at its upper edge when in inverted position, said tray being adapted to contain a plurality of ice cubes, and means for releasing said ice cubes including a second tray supported on said first tray in bottom to bottom relation, said second tray being adapted to contain water to be frozen, said water being adapted to supply sufficient heat to release said ice cubes.

4. In combination, a compartment having a pair of tray supporting ledges, a pair of trays supported in bottom to bottom relation by said ledges, said trays having side flanges adjacent their bottom surfaces adapted to rest upon said ledges, the inverted lower tray being adapted to contain ice cubes to be released, the upper tray being adapted to contain water to be frozen, said water having sufficient heat to release said ice cubes.

5. In combination, a compartment having a pair of tray supporting ledges, a pair of trays supported in bottom to bottom relation by said ledges, said trays having side flanges adjacent their bottom surfaces adapted to rest upon said ledges, the inverted lower tray being adapted to contain ice cubes to be released, the upper tray being adapted to contain water to be frozen, said water having sufficient heat to release said ice cubes, a receiving tray, and means for supporting said receiving tray beneath said inverted tray for catching ice cubes released from said tray.

6. A freezing receptacle for refrigerators comprising a bottom wall, a plurality of walls projecting from the upper and lower sides of the bottom wall to form molds on the upper and lower sides thereof.

In testimony whereof I hereto affix my signature.

WARREN H. F. SCHMIEDING.