May 8, 1934. G. F. HOFFERBERTH 1,958,392

REFRIGERATING APPARATUS

Original Filed Feb. 27, 1931

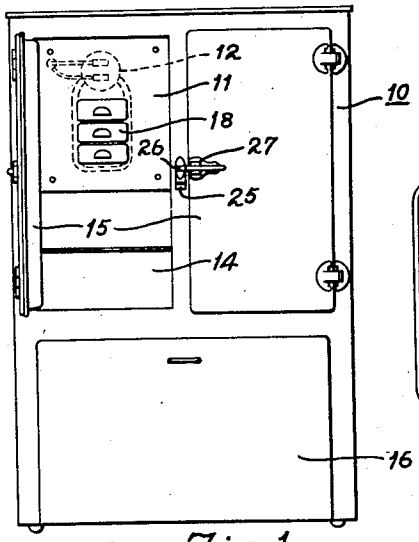


Fig. 1

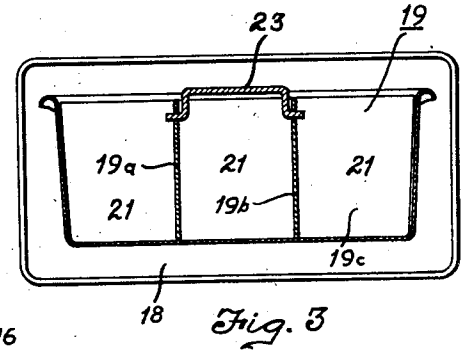


Fig. 3

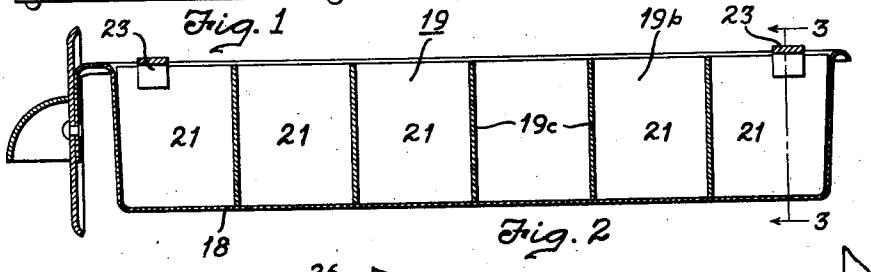


Fig. 2

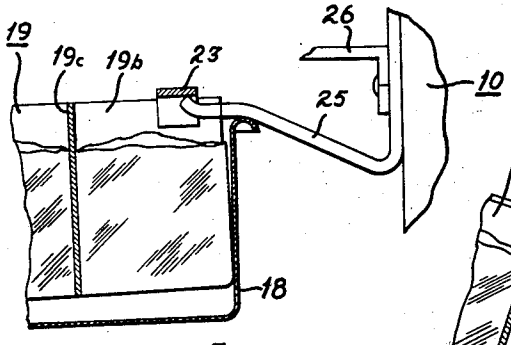


Fig. 5

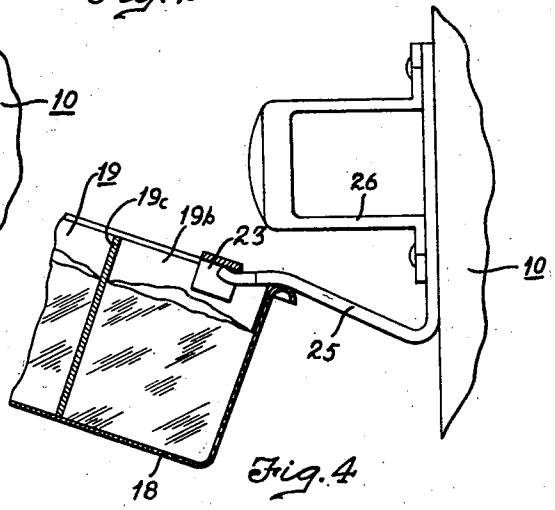


Fig. 4

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REFRIGERATING APPARATUS

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5 Claims. (Cl. 62—108.5)

This invention relates to refrigerating apparatus and more particularly to a mechanism for removing ice from ice trays.

Heretofore, considerable time was spent in applying heat in some form, to a tray containing a plurality of ice cubes, for instance those employed in household referigerators, such as applying heat to the tray by holding the tray in an inverted position under running water to release the ice cubes from the tray. Several mechanical mechanisms or devices for removing ice from trays have been designed but to my knowledge none of these devices have been entirely satisfactory for the reason that during the removal operation of the ice from the tray with these devices the ice would be cracked or broken into small pieces which would fly outwardly from the tray and could not be used.

An object of the present invention is to provide an improved mechanism for mechanically removing ice from a tray by prying a unitary grid and the ice bound thereto from the tray without cracking or breaking the ice blocks.

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 view of a household refrigerator cabinet showing ice trays located in a cooling unit disposed within the cabinet;

Fig. 2 is a sectional detail view of an ice tray constructed in accordance with the present invention;

Fig. 3 is a sectional view of the ice tray taken on the lines 3—3 of Fig. 2;

Fig. 4 is a sectional view of a portion of an ice tray shown in engagement with a rigid member; and

Fig. 5 is a sectional view of a portion of an ice tray shown in engagement with a rigid member and showing a grid and ice pried from the tray.

Referring to the drawing, a refrigerator cabinet 10 includes a cooling compartment covered by a suitable plate 11 in which compartment an evaporator or cooling unit 12 of a refrigerating system is located. The cabinet 10 also includes a food storage compartment 14 having doors 15 for permitting access thereto. A compartment in the lower portion of the cabinet which is closed by the door 16 may house the refrigerant circulating unit which may be operatively connected to the cooling unit 12 of the refrigerating system. It is to be understood that the cooling compartment has suitable openings or flues to permit the circulation of air therethrough and into the food storage compartment 14. Ice trays 18 are disposed within the cooling unit 12 and are adapted to contain substances to be frozen. Any substance, such as water, may be placed in these trays and the trays may then be inserted into the cooling unit where the water will be frozen for domestic use. Each of the trays 18 include a removable unitary grid structure 19 located therein and comprising longitudinal pieces 19*a* and 19*b* and a series of cross pieces 19*c* for dividing the interior of the tray into a plurality of molds or compartments 21 (see Figs. 2 and 3). These compartments or molds 21 provide ice cubes or blocks, after water placed in the trays has been frozen, of a suitable size to permit the cubes to be placed in glasses for use in serving cold drinks, etc.

My invention is particularly directed to a mechanism wherein the grid 19 and the ice frozen in the tray member, and which adheres to or is bound to the grid, can be removed from the tray 18 without cracking the ice cubes or breaking them into small pieces. For this purpose I have provided a strap 23 which bridges the longitudinal dividing pieces 19*a* and 19*b* of the grid 19 and has its ends secured thereto in any suitable manner. The strap 23 is formed to protrude upwardly above the top edges of the grid 19 so as to provide an opening between ice frozen in the tray member and the strap 23. This opening is of sufficient size to permit the reception of a rigid bar member utilized for prying the grid and ice adhering thereto from the tray 18. This bar member may be in the form of a hook or tool 25 which may be secured to a wall of the room in which the refrigerator cabinet is located or may be secured to the cabinet 10. In the embodiment disclosed, I have shown the member or tool 25 as being stationarily secured under the strike 26 which is employed to receive movable bolts of the latches 27 utilized for maintaining the doors 15 of the cabinet 10 in closed position.

It will be apparent from the drawing and from the foregoing description that the grid 19 and ice adhering or bound thereto can be removed from the tray member 18 in the following manner. After the tray 18 and its contents have been withdrawn from the cooling unit or evaporator 12, located in the cabinet 10, the tray 18 may be placed into communication with the bar member 25 so that the end of bar member 25 extends

between the ice in the tray 18 and the strap 23 secured to the grid 19 (see Fig. 4). Upon moving the tray member 18 downwardly the edge or top of the rear wall of the tray 18 engages an intermediate part of the tray 25, thus the intermediate part of the bar member 25 and the edge of tray 18 provide a fulcrum and further downward movement of the tray 18 causes the grid 19 and ice adhering or bound thereto to be loosened or pried from the tray member (see Fig. 5). The grid 19 and the ice removed from the tray may then be removed from the bar member 25 and placed over a suitable receptacle for receiving the ice cubes as the ice thaws and drops from the grid.

Obviously, the grid 19 may be placed into the tray 18 with either end thereof located at either end of the tray. In order to eliminate the necessity of reversing or changing the position of grid 19 if placed into the tray with the end which carries the strap 23 disposed in the wrong direction, I have provided a strap 23 at each end of the grid 19.

Since the unitary grid 19 comprises the dividing pieces 19*a*, 19*b*, and 19*c*, these pieces provide a metal contact, with the ice cubes formed thereby, on more sides of the cubes than the metal walls of the tray afford. This feature of my improved device is desirable and is an advantage over devices heretofore known in that, due to the grid having more metal in contact with the ice cubes than the tray, the ice cubes will be separated from the tray more readily than endeavoring to remove portions only of the grid from the tray. It will thus be seen that the force exerted between the tray and the grid to break the ice loose from the tray is not of sufficient intensity to cause a strain on the ice cubes for the reason that the cubes must only be separated from the walls of the tray and consequently these cubes are removed bodily from the tray along with the grid.

An advantage obtained by my improved mechanism is that of utilizing movement of the grid, with respect to the tray, for removing the ice cubes from the tray, which cubes will not crack or break by the force exerted to separate the grid and ice bound thereto from the tray. It is therefore apparent from the foregoing that ice cubes or blocks of uniform dimensions can be readily removed from the tray in which they were frozen by my improved mechanism. My invention therefore eliminates the disadvantages of mechanisms heretofore employed which, as previously pointed out, would crack and break the ice into small pieces, which pieces fly outwardly of the tray and cannot be used.

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. In combination, a tray adapted to be inserted in or on a cooling unit of a refrigerating apparatus and adapted to contain a substance to be frozen, a grid within said tray dividing the interior thereof into a plurality of molds, means for removing the grid from the tray, said means including a bar mounted independently of said grid and said tray for association therewith, said grid including means adapted to be engaged by an end of said bar, said bar including a portion adapted to engage a portion of said tray for prying the grid loose from the tray upon movement of the tray relative to said bar while said bar is in engagement with said means on said grid.

2. In combination, a tray adapted to be inserted in or on a cooling unit of a refrigerating apparatus and adapted to contain a substance to be frozen, a unitary grid within said tray comprising a plurality of longitudinal and cross pieces dividing the interior of the tray into a plurality of open top molds, means for removing the grid from the tray, said means including a bar mounted independently of said grid and said tray for association therewith, said grid including means bridging at least two of said longitudinal pieces thereof adapted to be engaged by an end of said bar, said bar including a portion adapted to engage a portion of said tray for prying the unitary grid loose from the tray upon movement of the tray relative to said bar while said bar is in engagement with said bridging means on said grid.

3. In combination, a tray member adapted to be inserted in or placed on a cooling unit of a refrigerating apparatus and adapted to contain a substance to be congealed or frozen, a grid within said tray member dividing the interior thereof into a plurality of molds, means for moving the grid relative to said tray member, said means including a bar member adapted to associate with said grid and said tray member, said grid including means adapted to be engaged by an end of said bar member, said bar member being independent of said grid and said tray member and including a portion adapted to engage a portion of said tray member for loosening the grid from the tray member upon movement of one of said members relative to the other of said members while said bar member is in engagement with said means on said grid.

4. In combination, a tray adapted to be inserted in or placed on a cooling unit of a refrigerating apparatus and adapted to contain a substance to be congealed or frozen, a grid within said tray dividing the interior thereof into a plurality of molds, means for moving the grid relative to said tray, said means comprising a stationary member independent of said grid and said tray and adapted to engage said grid and tray to cause said relative movement of said grid and tray.

5. In combination, a tray adapted to be inserted in or on a cooling unit of a refrigerating apparatus and adapted to contain a substnce to be congealed or frozen, a grid within said tray including a vertically disposed longitudinal member and a plurality of vertically disposed transverse members intersecting said longitudinal member, said longitudinal member and said transverse intersecting members of said grid dividing said tray into a plurality of open-top molds, means for moving at least a portion of said grid upwardly relative to said tray, said means comprising a lever member independent of said grid and said tray and adapted to engage a portion of said grid and tray to cause said relative movement of the grid and tray.

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