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2,251,827

FREEZING TRAY

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2. Sheets-Sheet 1

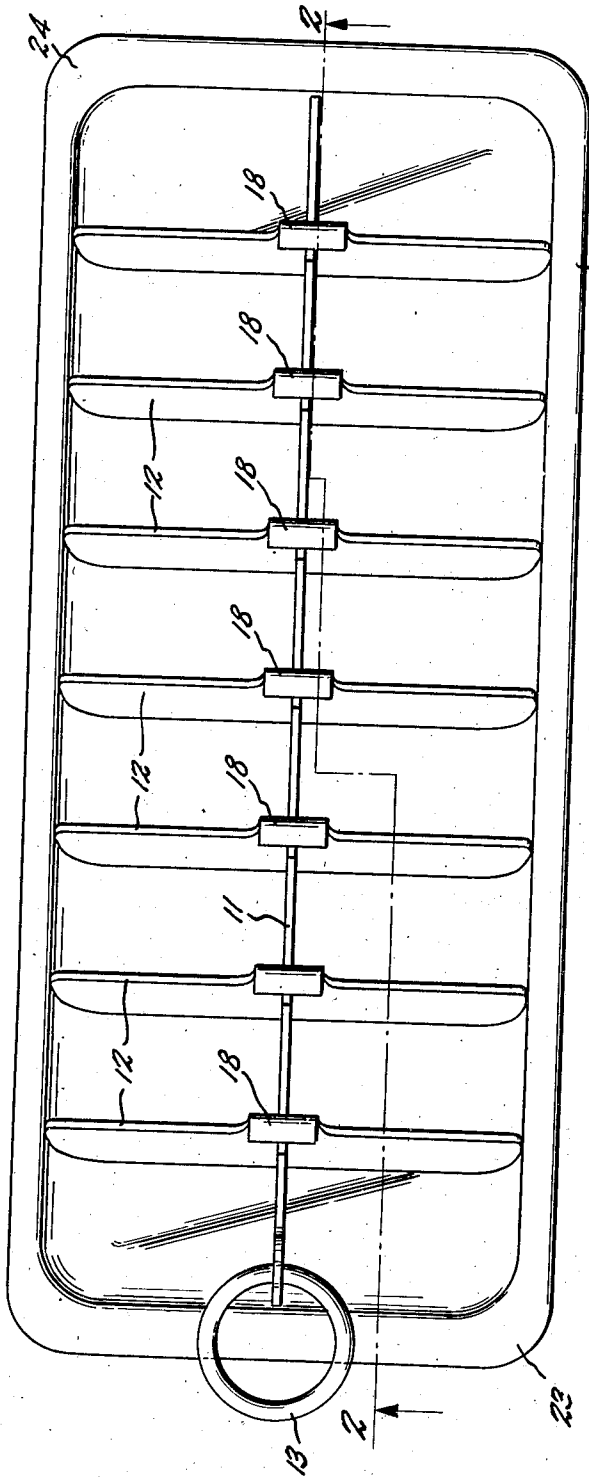


Fig. 1.

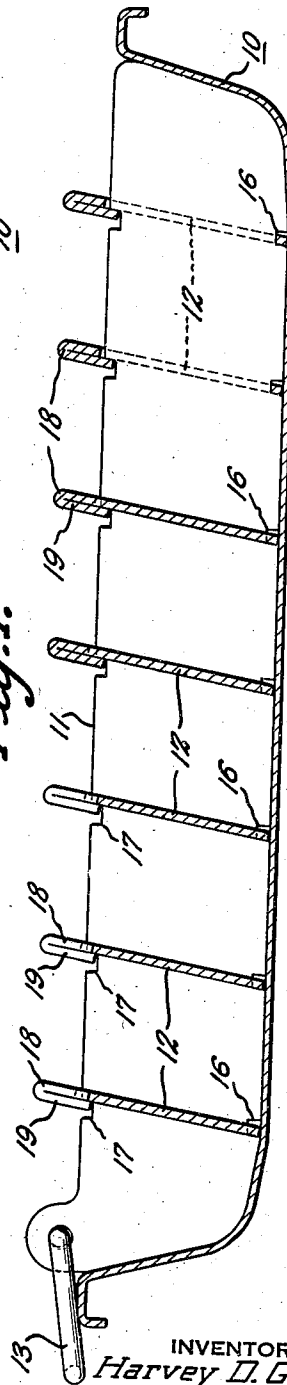


Fig. 2.

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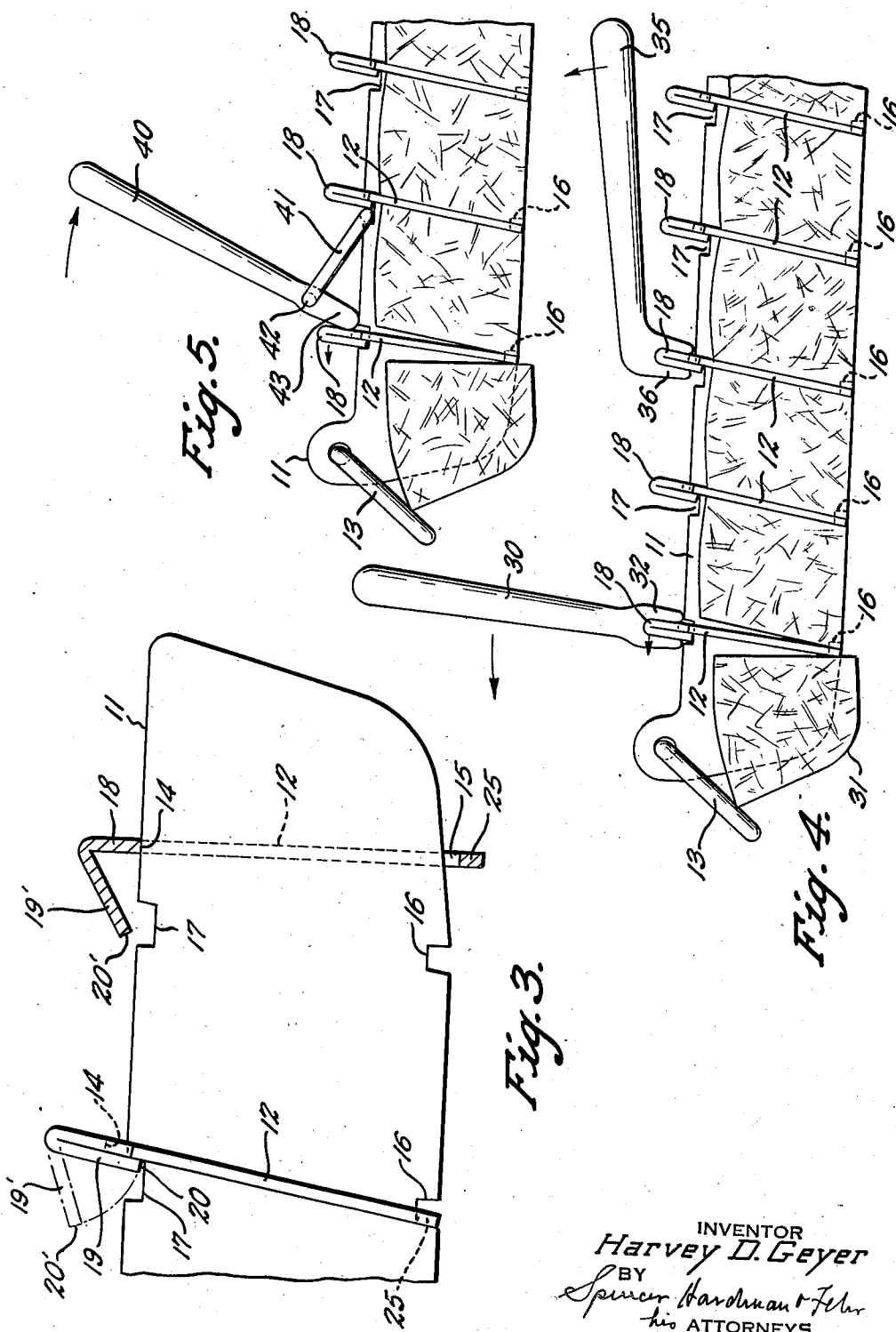
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,251,827

## FREEZING TRAY

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4 Claims. (Cl. 62—108.5)

This invention relates to freezing trays, particularly such as may be used in household refrigerators for freezing small blocks of ice for table use.

An object of this invention is to provide an improved partitioning grid for freezing trays having a main longitudinal wall and a series of cross walls spaced along the length thereof, the cross walls being separately tiltable longitudinally of said main wall one after the other by means of a suitable hand tool to be used by the person operating the device.

A feature of the grid of this invention is its simplicity of design and its minimum of parts, and hence its economy of manufacture.

Another feature of this grid is its high efficiency in operation whereby two or more hard frozen ice blocks may be very easily and quickly removed therefrom without the necessity of any melting of the ice blocks to loosen same from the grid.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein preferred embodiments of the present invention are clearly shown.

In the drawings:

Fig. 1 is a plan view of an ice tray with a grid, made according to this invention, inserted therein in freezing position.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 illustrates one method of permanently assembling the cross walls to the longitudinal wall.

Fig. 4 illustrates a method of removing the hard frozen ice blocks from the grid by the use of a suitable detached hand tool or lever. Two alternative forms of such a suitable hand tool are shown in this Fig. 4.

Fig. 5 illustrates a method of removing two ice blocks from the grid by the use of a third alternative form of suitable hand tool.

Similar reference characters refer to similar parts throughout the several views.

Referring to the drawings, 10 designates a one-piece pressed metal pan which may be of any known type, or it may be of non-metallic material such as flexible rubber if desired. However I prefer to use with the grid of this invention a slightly flexible metal pan which may be slightly flexed when filled with its frozen contents to first free the grid and its frozen contents as a block from the pan. Such a flexible metal pan is disclosed and claimed in my Patent No. 2,122,937 issued July 5, 1938, filed July 2, 1936.

The grid comprises a longitudinal metal partition wall 11 and a series of transverse metal walls 12 each retained loosely upon said center wall 11 so as to be capable of a small tilting movement relative thereto, as will be clear from the drawings. Transverse walls 12 are preferably retained in a slanted position as illustrated, however this is not necessary and their normal position may be vertical or slanted in the opposite direction from that illustrated.

The preferred method of making the grid will now be described. The center wall 11 is provided with notches 16 on its lower edge and somewhat wider opposed notches 17 on its upper edge (see Fig. 3), and shaped in outline to fit loosely in pan 10 to form a central partition wall. Each transverse wall 12 is first formed as shown in Fig. 3, having a punched out central slot 15 therein which has such depth that the central wall 11 may be threaded thru slots 15, as illustrated on the right side of Fig. 3. Each transverse wall 12 also has an integral upward projection 18 and a bent portion 19' turned down at such an angle that its lower edge 20' will still not interfere with the passage of central wall 11 thru slot 15. Obviously this permits each of the transverse walls 12 to be slipped over the end of central wall 11 and be passed therealong to its desired position.

To permanently assemble each transverse wall 12 upon the central wall 11, each wall 12 is passed along wall 11 until it registers with its particular lower notch 16, whereupon the wall 12 is raised upwardly causing its lower marginal portion 25 to enter and be retained in the notch 16. After such raising of wall 12 the upper boundary of slot 15 will lie at 14 and the bent portion 19' will lie in the dotted position shown in Fig. 3 (see left side of Fig. 3). The bent portion 19' may then be bent down to its final position 19, and thereby permanently retain wall 12 loosely in the two notches 17 and 16, as will be clear from the drawings. When thus finally assembled upon the central wall 11 each of the transverse walls 12 may be individually tilted relative thereto a small amount. Also each wall 12 may be bodily moved longitudinally of wall 11 a slight amount due to the excess width of the lower notches 16, as will be clear from Fig. 3. Wall 11 preferably has a loose ring 13, or other suitable handle attached thereto, whereby the grid may be more readily lifted from the pan 10 when filled with its frozen contents.

In operation, the grid unit is simply set within pan 10, either before or after pan 10 is filled with

the water to be frozen. All of the transverse walls 12 will tilt over by gravity and each will engage the similar end of its notch 17, so that when walls 12 are in their normal freezing position they will all be tilted at the same angle as best shown in Fig. 2. Furthermore they will all be urged to lie substantially perpendicular to the center wall 11 even though their loose fit may permit walls 12 to swing at a substantial angle to wall 11 as seen in top view. Such urging of the walls 12 to a parallel position (as seen in Fig. 1) is caused by their normal tilted position relative to the vertical and the engagement of the bottom edges of walls 12 with the bottom of pan 10. In other words, if any one tilted wall 12 should lie at an angle to center wall 11 (as seen in top view), one end of such wall 12 will necessarily lie below the other end thereof, and hence when this lower end of wall 12 engages the pan bottom it will be cammed back to its normal position at which its lower edge extends horizontally, as shown in Fig. 1. Hence Fig. 1 shows the only position of the walls 12 when the lower edges of these walls 12 lie in substantial uniform contact with the pan bottom. Therefore the grid unit may be inserted carelessly into the pan and then be given a shake or two, whereupon all the walls 12 will arrange themselves in their correct freezing position shown in Figs. 1 and 2.

To remove the ice blocks after being solidly frozen, the grid and its ice contents are first removed from the pan 10 in any known manner, which may be by slightly flexing pan 10 by downward hand pressure on its two diagonally opposed corners 23 and 24 as described in my said Patent No. 2,122,937, issued July 5, 1938.

The first transverse wall 12 may then be tilted forward with the thumb to release the first two ice blocks, leaving the remainder undisturbed. When more ice blocks are wanted, the other walls 12 may each be tilted forward, one after the other, until all the ice blocks are released.

Obviously if desired, a suitable hand tool may be used instead of the fingers to engage the projections 18 and tilt walls 12 forward one after the other. Or a suitable mechanism attached to the grid, including a longitudinally movable actuating bar or link extending along the top edge of center wall 11, may be employed to tilt walls 12 forward successively to release successive pairs of ice blocks as described above. Preferably all metal surfaces which are frozen-bonded to the ice are coated with a thin film of hard wax to materially facilitate the operation of the device.

At the left side of Fig. 4, a suitable separate hand tool 30 is shown being used to tilt forward the first cross wall 12, thereby causing the first two ice blocks 31 to be released. This hand tool 30 is a simple hand lever having a forked lower end 32 which is readily applied to the unobstructed upper center portions 18 of the cross walls 12 whereby to readily tilt the cross walls 12 forward one after the other.

In Fig. 4 there is also shown a slightly modified form of suitable hand tool 35. This hand tool 35 functions similarly to hand tool 30, simply by using its forked lower end 36 to successively grip the unobstructed upper center portions 18 of cross walls 12 whereby to tilt said cross walls forward by hand.

In Fig. 5 there is shown another modified form of suitable separate hand tool 40, which has a small link 41 pivoted thereto at 42. In operation, the upper end of tool 40 is swung in the direction

of the arrow to thereby cause its lower end 43 to pry against the unobstructed upper center portions 18 of cross walls 12, whereby to readily tilt said cross walls forward one after the other.

Figs. 4 and 5 illustrate three forms of separate hand tools which may be readily used to successively engage and tilt cross walls 12 forward to release the ice blocks. It is to be understood however that this invention is not limited to any specific form of separate hand tool, since other forms of such hand tools may be easily devised to suitably engage the unobstructed upper center portions 18 of cross walls 12 in order to more easily tilt same forward to release the ice. However it is obvious that the cross walls 12 are more easily tilted forward when the manual tilting force is applied thereto at their upper center portions, and for this reason the cross walls 12 have their upper center portions free and unobstructed by any other portion of the grid of this invention.

While the embodiments of the present invention as herein disclosed, constitute 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, an elongated grid structure for disposition in a freezing tray and removable therefrom as a unit, said grid structure comprising a longitudinal main wall having a series of cross-wall-retaining recesses therein spaced along its length and a series of normally inclined cross walls loosely retained in said recesses in such manner that said cross walls are individually tiltable longitudinally of said main wall from their normal inclined freezing positions, said cross walls each having an upper center portion of substantial area spaced from and unobstructed by all adjacent portions of said main wall when the grid parts are in freezing position, and a separate hand tool for successively and individually engaging said unobstructed center portions of said cross walls for manually tilting said cross walls one after the other longitudinally of said main wall to facilitate the removal of the ice from said grid.

2. In combination, an elongated grid structure for disposition in a freezing tray and removable therefrom as a unit, said grid structure comprising a longitudinal main wall having a series of openings in both its upper and lower marginal portions, and a plurality of normally inclined cross walls each loosely retained upon said main wall by a loose fit within an upper and a lower of said openings in said main wall, said cross walls being tiltable longitudinally of said main wall from their normal inclined freezing positions, said cross walls each having an upper center portion of substantial area clearing by a substantial distance adjacent portions of said main wall when the grid parts are in freezing position, and a separate hand tool for selectively engaging said cleared center portions of said cross walls for manually tilting said cross walls longitudinally of said main wall to facilitate the removal of the ice from said grid.

3. In combination, a grid structure for disposition in a freezing tray and removable therefrom as a unit, said grid structure comprising a main wall having a plurality of openings in both the upper and lower marginal portions thereof, and a series of cross walls each loosely retained upon said main wall by a loose fit within an upper and a lower of said openings in said main wall, both said upper and lower openings

permitting a substantial tilting movement of each of said cross walls longitudinally of said main wall, said cross walls each having an upper center portion extending clear of and in spaced relation with adjacent portions of said main wall when the grid parts are in freezing position, and a separate hand tool for engaging said upper center portions of said cross walls when the grid parts are frozen-bonded to the ice for manually tilting said cross walls one after the other longitudinally of said main wall to loosen the ice from said grid.

4. In combination, an elongated grid structure for disposition in a freezing tray and removable therefrom as a unit, said grid structure comprising a longitudinal main wall having a series

5 of cross-wall-retaining openings therein spaced along its length and a series of cross walls loosely retained in said openings in such manner that said cross walls are each tiltable longitudinally of said main wall from their normal freezing positions in order to facilitate the removal of the ice, the upper central portions of said cross walls when in freezing position being spaced from and unobstructed by all adjacent portions of said main wall, and a separate hand tool for forcibly engaging said unobstructed upper central portions of said cross walls for manually tilting said cross walls longitudinally of said main wall to facilitate the removal of the ice from said grid.

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