June 14, 1949. M. SIEBIGTEROTH 2,473,178

ICE TRAY

Filed June 23, 1947

FIG. 1

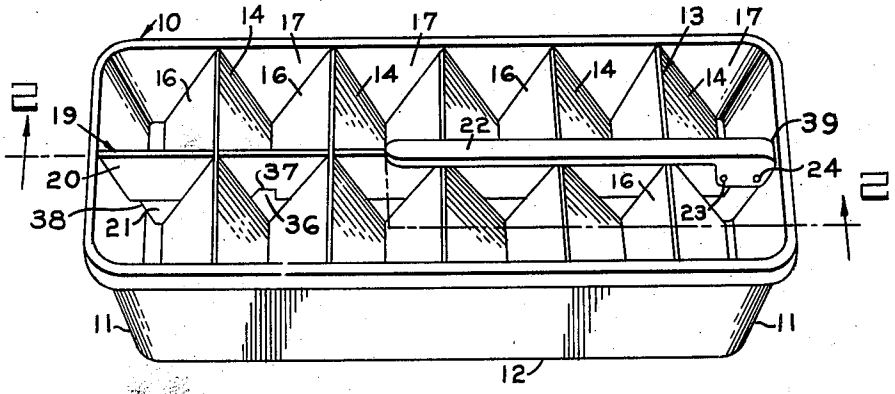


FIG. 2

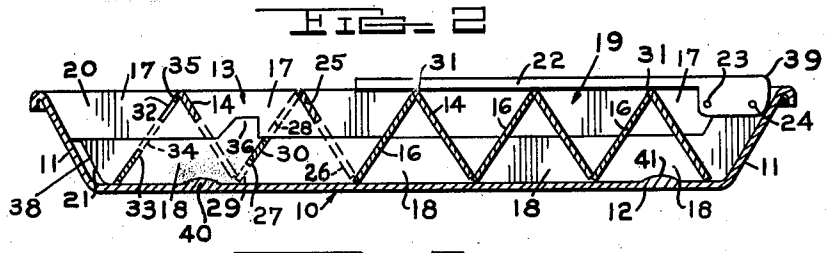


FIG. 3

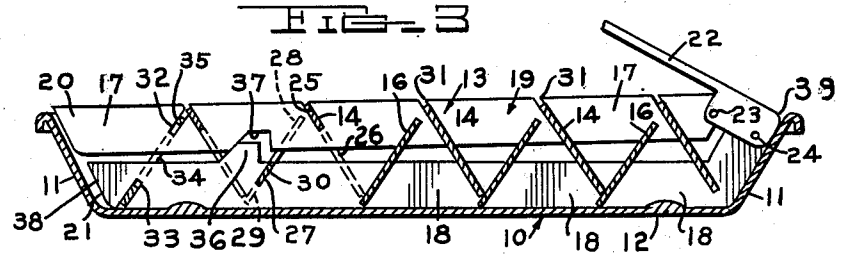
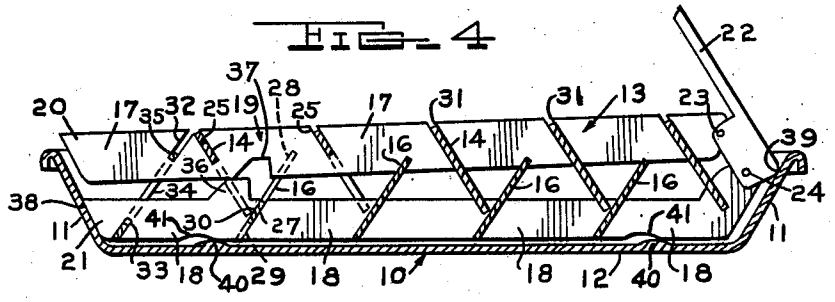


FIG. 4



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ICE TRAY

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8 Claims. (Cl. 62—108.5)

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This invention relates to an ice tray such as is used in dometic refrigerators and more particularly to an improved grid construction for an ice tray.

In my copending application Serial No. 705,726, filed October 25, 1946, there is disclosed a grid for an ice tray in which the grid partition walls are arranged in zig-zag relation to form a plurality of triangular ice compartments above and below the partitions. The adjacent walls are bodily movable with respect to each other and are arranged to slide one upon the other so as to eject the ice cubes retained above the grid partition. The cubes below the partition may be removed by torsionally flexing the tray.

It is an object of this invention to provide means for the type of tray disclosed in my copending application above referred to for breaking the bond between the ice cubes below the grid partitions and walls of the tray so that the cubes above and below the grid partition may be removed from the tray by a single operation without the necessity of flexing the tray.

Other objects and improvements of my grid construction will become obvious upon reading the following specification in conjunction with the drawings in which:

Figure 1 is a perspective view of an ice tray and grid embodying my invention.

Figure 2 is a sectional view taken substantially along line 2—2 of Figure 1.

Figure 3 is a view similar to Figure 2 showing the operation of the grid for removing the ice blocks above the grid partition.

Figure 4 is a view similar to Figure 3 showing the follow-through operation of the grid member for breaking the ice cubes below the partition free of the tray.

Referring now to the drawings, there is shown a conventional ice tray 10 having end walls 11 preferably inclined outwardly with respect to the bottom wall 12 of the tray. Within the tray 10 a grid 13 is adapted to be removably retained. The grid is made up of a plurality of transverse partitions 14 and 16 which are arranged in zig-zag relation longitudinally of the tray to form a plurality of ice freezing compartments 17 and 18 above and below the grid partitions respectively. The tray is further divided by a central longitudinal partition 19 which comprises an upper and lower divider 20 and 21 respectively. Dividers 20 and 21 are interconnected at one end by a handle 22 which is pivoted on divider 20 as at 23 and on divider 21 as at 24.

In order to effect ready removal of the ice

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cubes within the compartments, transverse partitions 14 are mounted so as to be movable with divider 20 and partitions 16 are mounted and movable with divider 21. These partitions may be mounted on their respective dividers by any suitable means. For the purpose of economy in manufacture I prefer to employ cooperating slots on the dividers and partitions for accomplishing this. Divider 20 is provided along its top edge with a plurality of inclined slots 25 which extend downwardly toward the handle end of the grid. Partitions 14 are slotted centrally from the lower edge upwardly as at 26 so that they may be inserted in slots 25 and retained on the upper divider 20 in this manner. In the same manner divider 21 is provided along its upper edge with parallel slots 27 inclined oppositely to slots 25. Partitions 16 are slotted at both the upper and lower edge as at 28 and 29 leaving integral portion 30 which supports the partition within slot 27 on divider 21. Slots 25 and 27 may be peened at their upper edges as at 31 to prevent the partitions from falling off the divider when the grid is manipulated. At the end of the grid opposite handle 22 divider 20 is slotted downwardly from its top edge as at 32 and divider 21 is slotted at its lower edge as at 33. The end partition 16 is slotted downwardly from its upper edge as at 34 and retained within slot 33 on divider 21. The upper end of slot 34 is peened inwardly so as to provide a pair of nibs 35 which are guided within slot 32 and abut against the lower end thereof to limit the vertical movement of divider 20 with respect to divider 21.

As is shown more clearly in Figure 3, handle 22 is pivoted to divider 20 and 21 so that when the handle 22 is lifted, divider 21 is raised and moved longitudinally towards the handle end of the grid. To effect a similar combined vertical and longitudinal movement of the other end of divider 20, divider 21 is provided with an upwardly projecting cam portion 36 which engages a recess 37 on divider 20 and serves to lift the end of the upper divider when it is moved forwardly by handle 22.

It will be readily understood that by lifting handle 22 partitions 14 slide upwardly over partitions 16 and eject the cubes in the compartments above these partitions. This movement, however, may not result in breaking of the bond between the ice blocks in the lower compartments and the walls and bottom of the ice tray. In order to effect a removal of these cubes the end 38 of divider 21 opposite the handle end of the

grid is spaced from the end wall 11 of the tray, so as to permit limited longitudinal movement of divider 21 within the tray. Handle 22 is provided with a cam portion 39 which is arranged to engage the adjacent end wall 11 of the tray when the handle is raised. The camming action resulting from this movement serves to shift the lower divider 21 forwardly in the tray to a position where its end 38 abuts against the opposite end wall 11 of the tray. Since partitions 16 are mounted on and movable with divider 21, the ice blocks in the lower compartments are broken loose from the tray by the forward movement of these partitions.

To further aid the removal of ice blocks from within the compartments and especially the blocks within end compartment 17 opposite the handle end of the grid, the bottom wall 12 of the tray may be provided with one or more upwardly projecting cam portions as indicated at 40 and the lower grid member 21 with complementary recesses 41 which are disposed so as to cooperate with the cam portions on the bottom wall of the tray when the grid is inserted within the tray in the collapsed condition. It will be observed that when handle 22 is raised so that cam portion 39 engages the end wall 11 of the tray the lower longitudinal partition member 21 is moved forwardly in the tray and at the same time rides up over the cam portions 40 so that an upward impressive force is exerted in the block within end compartment 17 as well as a lateral force.

It will thus be seen that the grid construction provided effects a ready removal of all the ice blocks from the tray in a simple and efficient manner. If it is desired to remove only the ice blocks above the grid partition, handle 22 is raised slightly as is shown in Figure 3 to slide partitions 14 upwardly along partitions 16. The ice blocks in the upper compartments are thereby broken loose from the tray and grid and may be readily withdrawn from the tray. The ice blocks in the lower compartments together with the ice block at the end of the grid opposite handle 22 are broken loose from the grid and tray upon further upward movement of handle 22 as is shown in Figure 4. The camming action of cam 39 against end wall 11 shifts divider 21 and partitions 16 forwardly in the tray with sufficient force to break the lower row of ice blocks and the end block free from the tray and grid walls. The grid may then be removed from the tray and the loose ice blocks readily withdrawn.

I claim:

1. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises an upper and lower member, a plurality of transverse partitions forming transverse walls and dividing the tray into a plurality of compartments, one transverse wall of each compartment being connected to and movable with said upper member and the other transverse wall of each compartment being connected to and movable with said lower member, manually operable means cooperating with said upper and lower members for imparting bodily movement to said upper member relative to said lower member so that one transverse wall of each of said compartments is bodily moved with respect to the other transverse wall of said compartment and means for bodily moving said lower member with respect to said tray so that the transverse walls connected to said member

are bodily moved with respect to the walls of said tray.

2. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises an upper and lower member, a plurality of transverse partitions forming transverse walls and dividing the tray into a plurality of compartments, one transverse wall of each compartment being connected to and movable with said upper member and the other transverse wall of each compartment being connected to and movable with said lower member, manually operable means cooperating with said upper and lower members for imparting bodily movement to said upper member relative to said lower member so that one transverse wall of each compartment is bodily moved with respect to the other transverse wall of said compartment and means actuated by said manually operable means for bodily moving said lower member with respect to said tray so that the transverse walls connected to said member are bodily moved with respect to the walls of said tray.

3. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises an upper and lower member, a plurality of transverse partitions dividing the tray into a plurality of compartments adapted to retain blocks of frozen substance, the adjacent transverse walls of said compartments being disposed at an angle to each other and being arranged so that one wall is movable with said upper member and the other wall is movable with said lower member, manually operable means connected to said upper member and to said lower member for imparting bodily movement to said upper member and the transverse walls movable therewith with respect to said lower member and the transverse walls movable therewith, said tray having a greater length than said lower longitudinal member, and cam means arranged to be actuated by said manually operable means to engage an end wall of said tray for imparting bodily movement to said lower member and the transverse walls movable therewith relative to said tray whereby the blocks frozen in some of said compartments are separated from said tray by the bodily movement of said upper member and the remainder of the blocks frozen in said compartments are separated from said tray by the bodily movement of said lower member.

4. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises an upper and lower member, a plurality of transverse partitions arranged in zig-zag relation to divide the tray into a plurality of triangular shaped compartments above and below said transverse partitions which are adapted to retain blocks of frozen substance, one transverse wall of each of said compartments being connected and movable with said upper member and the other transverse wall being connected to and movable with said lower member, handle means connecting said upper and lower members and arranged to move said upper member and the transverse partitions connected thereto relative to said lower member and the transverse partitions connected thereto to effect a removal of the frozen blocks in said upper compartments, and cam means for bodily moving

said lower member and the transverse partitions connected thereto relative to said tray to facilitate the separation of the frozen blocks in said lower compartments from the walls of said tray.

5. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises two members positioned one above the other, a plurality of transverse walls disposed in zig-zag relation to divide the tray into a plurality of compartments adapted to retain a substance to be frozen, one of said walls of each compartment being movable with said upper longitudinal member and the adjacent transverse wall being movable with said lower longitudinal member, handle means for separating said longitudinal members to produce movement of one wall of each of said compartments with respect to its adjacent wall, and cam means engageable with the end wall of said tray for bodily moving said lower longitudinal member within said tray whereby the walls movable with said lower longitudinal member exert a compressive force against the blocks of frozen substance disposed beneath such walls to separate said blocks from the walls of the tray.

6. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises two members positioned one above the other, a plurality of transverse walls disposed in zig-zag relation to divide the tray into a plurality of compartments adapted to retain a substance to be frozen, one of said walls of each compartment being movable with said upper longitudinal member and the adjacent transverse wall being movable with said lower longitudinal member, handle means for separating said longitudinal members to produce movement of one wall of each of said compartments with respect to its adjacent wall, said tray having a greater length than said lower longitudinal member, and cam means on said handle means engageable with an end wall of said tray and arranged to produce longitudinal movement of said lower longitudinal member within said tray when said handle means are actuated whereby the blocks of frozen substance disposed beneath the walls movable with said lower longitudinal member are separated from the walls of said tray.

7. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises two members positioned one above the other, a plurality of transverse walls disposed in zig-zag relation to divide the tray into a plurality of compartments adapted to retain a substance to be frozen, one of said walls of each compartment being movable with said upper longitudinal member and the adjacent transverse wall being movable with said lower longitudinal member, handle means for separating said longitudinal members to produce movement of one wall of each of said compartments with respect to its adjacent wall, said tray having a greater length than said lower longitudinal member, and cam means arranged to engage an end wall of said tray when said handle means are fully actuated to produce movement of said lower longitudinal member within said tray whereby the blocks of frozen substance disposed beneath the walls movable with said lower longitudinal member are separated from the walls of said tray.

8. In a sharp freezing container the combination of a tray and a grid adapted to be removably positioned in said tray, said grid comprising a longitudinal partition which comprises an upper and lower member, a plurality of transverse partitions dividing the tray into a plurality of compartments adapted to retain blocks of frozen substance, the adjacent transverse walls of said compartments being disposed at an angle to each other and being arranged so that one wall is movable with said upper member and the other wall is movable with said lower member, manually operable means connected to said upper member and to said lower member for imparting bodily movement to said upper member and the transverse walls movable therewith with respect to said lower member and the transverse walls movable therewith, said tray being greater in length than said lower longitudinal member, cam means actuated by said manually operable means to engage an end wall of said tray for moving said lower member and the transverse walls movable therewith longitudinally within said tray, and cam means acting between said lower member and the bottom of said tray for raising said lower member within said tray when the lower member is moved longitudinally whereby the blocks frozen in some of said compartments are separated from said tray by the bodily movement of said upper member and the others of the blocks frozen in said compartments are separated from said tray by the bodily movement of said lower member.

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No references cited.