April 12, 1949. M. SIEBIGTEROTH 2,466,747

ICE TRAY

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FIG. 1

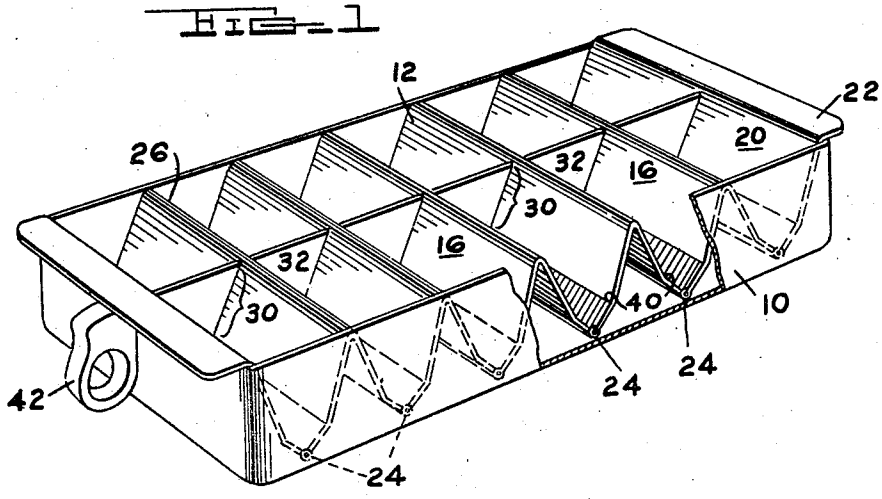


FIG. 2

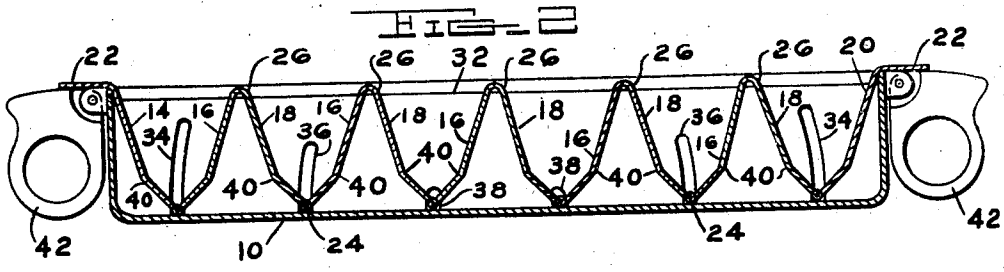
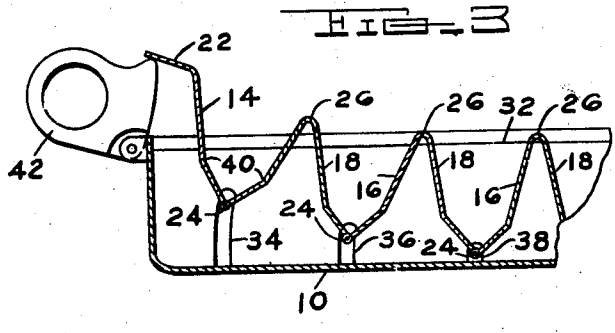


FIG. 3



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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 improved ice tray such as are used in domestic and commercial refrigerators for freezing ice cubes. In reissure Patent No. 20,693 dated April 12, 1938, there is disclosed an ice tray and grid combination wherein the grid is formed of a plurality of transverse wall sections flexibly connected together by hinging means to form a continuous ribbon-like construction extending longitudinally of the tray. Such a construction greatly facilitates the removal of ice from the tray in that the adjacent wall sections are movable about a fulcrum and relative to the walls of the tray.

It is an object of the present invention to improve the grid construction there disclosed so as to further facilitate removal of ice cubes and, in addition, to make it easier to restore the grid to position in the tray after the ice cubes have been removed. With previous constructions, the many hinged joints in the ribbon-like grid provide an extremely flexible grid which may readily swing far out from its normal contour and make it difficult to position properly in the empty ice tray without manipulation of the separate wall sections to secure their proper placement in the tray.

Furthermore, such a grid is not capable of supporting itself in place when held in the hand by one end thereof, the many hinged joints permitting the grid to flex downwardly and hang loosely from the end supported in the hand. The action in this respect is much like that of an accordion in that there is a total lack of rigidity to the structure except when it is properly supported in the tray. These difficulties are overcome in the present tray by arranging a central longitudinal partition in the grid work having means thereon cooperating with the transverse partitions to limit their displacement under hinging action. Such a member, furthermore provides a more convenient size of ice cube and facilitates the operation of removing the ice cubes from the tray.

Figure 1 is a perspective view of an ice tray and grid embodying a preferred form of the present invention.

Figure 2 is a cross section of line 2—2 of Figure 1.

Figure 3 is a view corresponding to Figure 2 showing the position of the parts during removal of the ice cubes.

Referring now to Figure 1, there is shown a rectangular ice tray 10 having the usual bottom, sides and walls for containing a quantity of water or other material to be frozen. Removably positioned within the tray 10 is a grid generally designated 12. Grid 12 is made up of a plurality

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of alternately inclined transversely extending wall sections 14, 16, 18 and 20. The sections 14 and 20 may have a protruding horizontal tongue 22 providing a ready means by which the grid may be grasped in the hand. Each of the adjacent wall sections is pivoted to an adjacent section along their bottom edges by any suitable pivotal joint such as the piano hinge illustrated at 24. The top edges of the wall sections are integrally joined by a V bend indicated at 26. The grid thus provides partition means which form alternately facing ice cube spaces which are in the shape of triangular prisms.

Each of the wall sections 14, 16 and 18 is provided with a slit 30 which extends from the bottom almost to the top as shown more clearly in Figure 1. Positioned in the slits 30 is a longitudinal partition 32 which preferably is one integral piece of sheet metal. The partition 32 is provided with elongated perforations 34, 36 and 38 through which the pins of the hinges 24 are inserted during assembly of the grid structure. The transverse partitions are thus freely slidable to a limited degree upwardly and downwardly relative to the longitudinal partition 32.

To further facilitate the removal of ice cubes from the grid, the contour of wall sections 14, 16 and 18 is deviated from a continuous straight line at 40 near the bottom portion thereof so that the angle included between hinged wall sections is greater at the pivotal connection 24 than at a short distance above said point. These wall sections may be formed from material of uniform thickness throughout and bent at 40 to provide the enlarged angle or they may be formed from rolled or extruded strips gradually thickened at both edges which cooperate to form the enlarged angle when assembled.

For the purpose of assisting in lifting the grid from the tray, there is preferably provided a pivot cam 42 at each end which normally lies underneath the projecting tongues 22 of the end walls 14 and 20. When raised, the upper surfaces of the cam rings 42 pry the tongues 22 upwardly to raise the grid from the tray.

In operation it will be seen that when the grid 12 is positioned in the tray as illustrated and the tray filled with water, the prismatic compartments between adjacent walls of the grid will form substantially triangular shaped ice cubes. When it is desired to remove the cubes from the tray, the cams 42 may be operated to raise the tongues 22. This bends the grid element as a whole tending to close the V shaped spaces at the top side of the grid and the cubes positioned

therein will be squeezed outwardly and upwardly to separate them from contact with the grid walls. The booster action of the enlarged angle at the pivot joint 24 becomes obvious at once. It provides an added lifting action to the cubes and greatly diminishes the squeezing force necessary to separate the cubes from the wall sections. The efficacy of this squeezing action will also depend to some extent upon the normal angle included between the wall sections which, of course, may be varied by providing more or fewer prismatic spaces in a tray of given length. The cubes remaining in the tray may be separated therefrom by diagonally twisting the body of the tray.

When it is desired to replace the grid in the tray, or in fact at any time it is being handled, it may be readily grasped by one or the other tongues 22. When so supported in the hand, the elongated slots 34, 36 and 38 together with the connection portions at the middle of the bends 26 serve to limit the unfolding action which the hinge would otherwise permit and cause the grid to remain substantially in the same shape as shown on the drawing. In other words, the grid naturally tends to keep its normal shape and conformation exactly the same as it would lie in the tray. Thus the grid may be readily placed in the tray without the necessity of individually manipulating any of the wall sections which may have become collapsed in previous constructions.

I claim:

1. An ice tray partition unit comprising a plurality of wall sections each extending transversely of the tray, each wall section being pivotally connected to an adjacent wall section along its bottom edge and rigidly joined to another adjacent section along its top edge, said wall sections being slotted from their bottom edge to a point near their top edges and a longitudinal partition lying in said slots, said longitudinal partition being perforated and pivot members extending through the perforations and connecting adjacent transverse wall sections at their bottoms.

2. An ice tray partition unit comprising a plurality of wall sections each extending transversely of the tray, each wall section being pivotally connected to an adjacent wall section along its bottom edge and rigidly joined to another adjacent section along its top edge, said wall sections being slotted from their bottom edge to a point near their top edges and a longitudinal partition lying in said slots, said longitudinal partition being provided with elongated perforations of varying length and pivot members extending through the perforations and connecting adjacent transverse wall sections at their bottoms whereby some transverse partitions may be raised bodily away from the tray to cause pivotal movement of other remote transverse partitions.

3. A sharp freezing container comprising a partition forming a plurality of wall sections dividing the container into compartments, the adjacent wall sections of adjacent compartments being integral and the wall sections of each compartment being hinged to each other, said adjacent integral wall sections being positioned at an angle to each other and a longitudinal partition member passing through said wall sections, said wall sections having hinge pins extending through the longitudinal partition.

4. A sharp freezing container comprising a partition forming a plurality of wall sections dividing the container into compartments, the adjacent wall sections of adjacent compartments being integral and the wall sections of each compartment being hinged to each other, said adjacent integral wall sections being positioned at an angle to each other and a longitudinal partition member passing through said wall sections, said wall sections having hinge pins extending through the longitudinal partition, said partition having elongated slots through which said hinge pins extend and by which their relative movement is limited.

5. A sharp freezing container comprising a partition forming wall sections dividing the container into compartments, the adjacent wall sections of adjacent compartments being integral and the wall sections of each compartment being hinged to each other, said adjacent integral wall sections being positioned at an angle to each other and a longitudinal partition member passing through said wall sections, said wall sections having integral connecting portions extending across the top of the partition and hinge pins extending through the partition.

6. A sharp freezing container comprising a partition forming a plurality of wall sections dividing the container into compartments, the adjacent wall sections of adjacent compartments being integral and the wall sections of each compartment being hinged to each other, said adjacent integral wall sections being positioned at an angle to each other, and a longitudinal partition member passing through said wall sections, said wall sections having integral connecting portions extending across the top of the partition and hinge pins extending through the partition, and means on the partition for limiting hinging movement of the walls.

7. An ice tray partition unit comprising a plurality of wall sections extending transversely of the tray, each wall section being pivotally connected to an adjacent wall section at its bottom edge and rigidly joined to another adjacent section at its top edge, said wall sections being alternately inclined to form a plurality of triangularly shaped compartments in said tray, at least one wall section between adjacent rigid connections having two surfaces inclined substantially to each and to the bottom wall of the tray whereby one of said surfaces acts as a booster in ejecting the ice cube from said compartments.

8. An ice tray partition unit comprising a plurality of wall sections extending transversely of the tray and dividing the tray into a plurality of compartments, each wall section being pivotally connected to an adjacent wall section along its bottom edge and rigidly joined to another adjacent section along its top edge, the bottom portion of at least one wall section of each compartment being inclined substantially to the bottom wall of said tray and upper portion of said wall section so that the angle included between lower portions of said pivotally connected sections is greater than the angle included between the upper portions of said pivotally connected wall sections.

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