Dec. 1, 1942. E. W. HAUGH ET AL 2,303,636

ICE TRAY GRID

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Fig. 1.

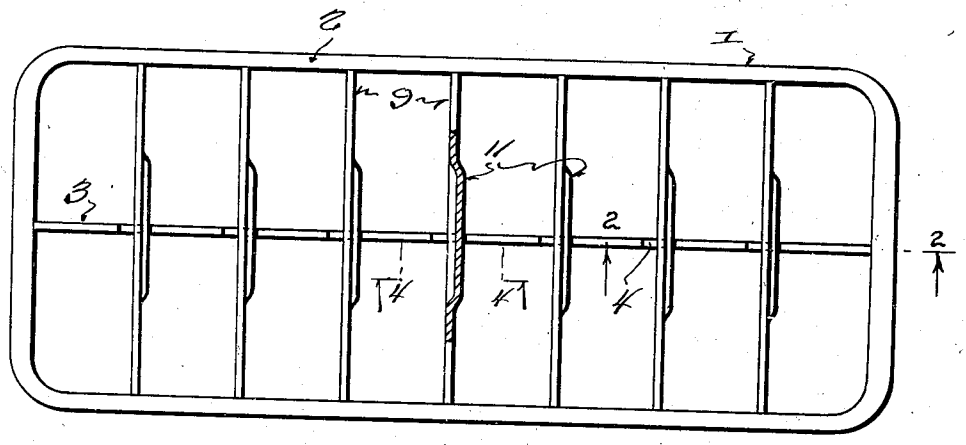
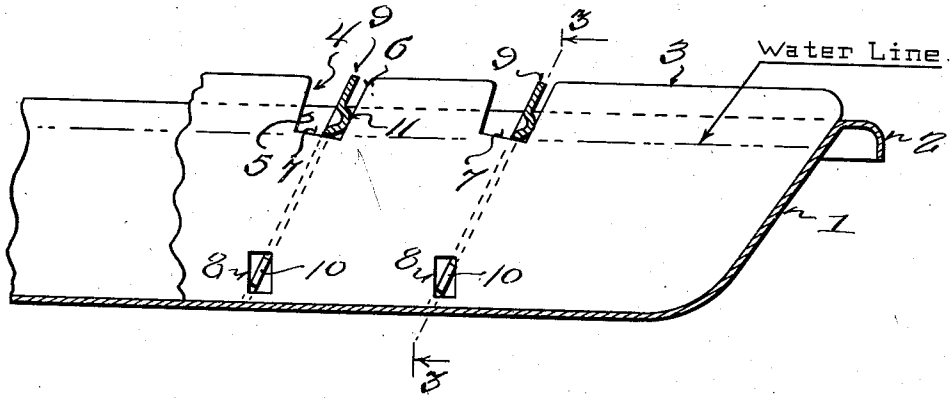


Fig. 2.



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Fig. 3.

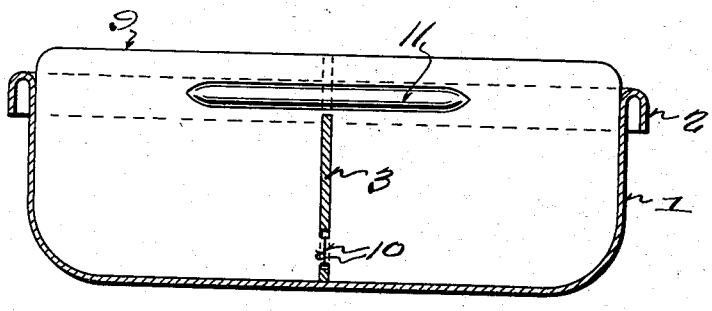


Fig. 4.

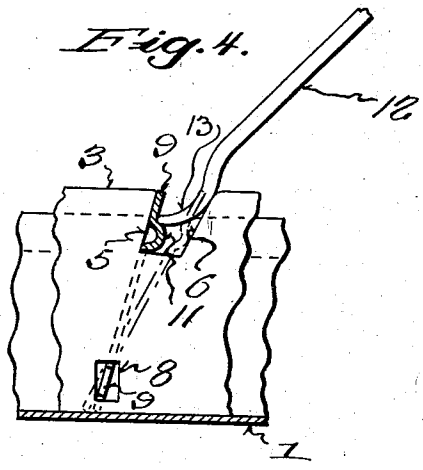


Fig. 6.

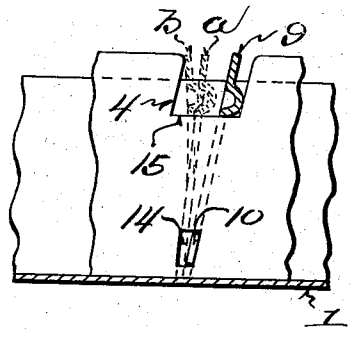
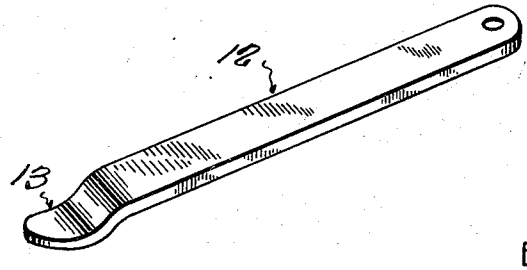


Fig. 5.



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Fig. 7.

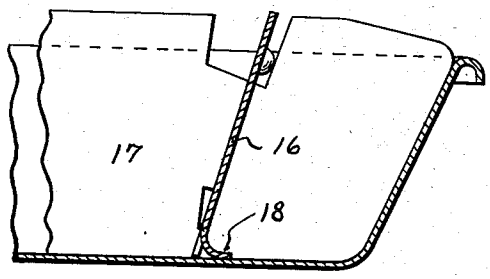


Fig. 8.

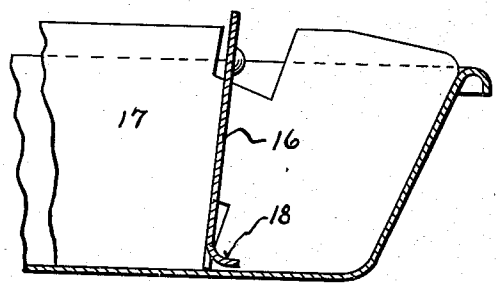
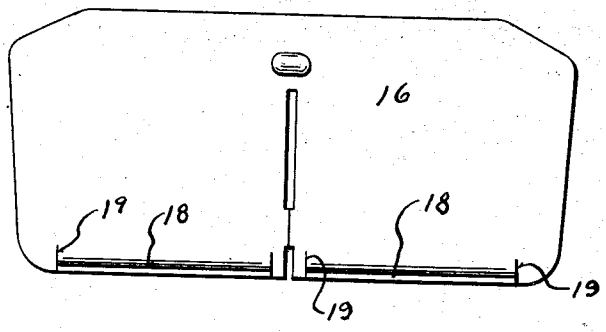


Fig. 9.



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UNITED STATES PATENT OFFICE

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ICE TRAY GRID

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Application September 13, 1940, Serial No. 356,686

4 Claims. (Cl. 62—108.5)

This invention relates to ice tray grids for separation of ice cubes from both the tray and grid, by means of a lever.

The invention has primarily for its object to provide an exceedingly simple and inexpensive grid, in which the transverse fins are shiftably mounted upon a longitudinal partition for successive release by a manually manipulated lever of any conventional type.

Incidental to the foregoing, a more specific object of the invention is to provide a grid structure of the foregoing character, in which the top edges of the longitudinal partition and transverse fins are flush for accommodation in a freezing compartment of minimum depth.

Another important object of the invention is to provide novel means for forming the transverse fins, so that the same can be readily engaged by a releasing tool, and whereby the fins will be effectively reinforced at the point of greatest strain.

A further object of the invention is to provide a grid to which transverse resilient fins are rockably connected in a manner to require flexing in the releasing operation, which, in turn, causes the transverse fins to spring back to normal position for refilling of the tray for subsequent freezing.

A still further object of the invention is to provide means formed on one end transverse fin for engaging under the last two cubes of ice in the tray, so that upon shifting of said end fin, the last two cubes of ice will be lifted up from the tray simultaneously with the breaking loose of the adjacent pair of ice cubes.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination, and arrangement of parts, substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawings is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

Figure 1 is a plan view of a conventional ice tray, equipped with a grid constructed in accordance with one form of the present invention, parts being broken away and in section to more clearly illustrate structural details.

Figure 2 is a longitudinal section, taken on the line 2—2 of Figure 1.

Figure 3 is a transverse section, taken on the line 3—3 of Figure 2.

Figure 4 is a fragmentary, longitudinal section, taken on the line 4—4 of Figure 1, showing one of the transverse fins shifted to releasing position.

Figure 5 is a perspective view of the tool or lever for shifting the transverse fins;

Figure 6 is a fragmentary, longitudinal section illustrating a modification of the invention, in which the transverse fin is flexed to effect the releasing operation.

Figure 7 is a fragmentary, longitudinal section, illustrating a further form of the invention.

Figure 8 is a view similar to Figure 7, but showing the end transverse fin in its shifted position; and

Figure 9 is a front elevational view of the end transverse fin.

Referring now more particularly to the accompanying drawing, the numeral 1 designates a conventional ice tray provided with a peripheral stiffening bead 2.

In that form of the invention illustrated in Figures 1 to 4, inclusive, the grid constituting the present invention comprises a longitudinal partition 3, provided with spaced notches 4 having diverging front and rear edges 5 and 6, respectively. As indicated in Figure 2, the lower edges 7 of the notches 4 are preferably formed in line with the normal water level when the tray is filled.

The longitudinal partition 3 is provided with spaced slots 8 adjacent its lower edge, and out of alinement with the notches 4 to prevent the transverse fins 9 from assuming a vertical position, as will be hereinafter described in connection with the operation of the grid.

The transverse fins 9 are slotted intermediate their ends to straddle the longitudinal partition 3, and adjacent their lower edges are provided with abutted tongues 10 extending through the slots 8, to provide tiltable or rockable connections with the longitudinal partition 3.

As will be noted, the top portions of the transverse fins 9, which straddle the longitudinal partition 3, are disposed within the notches 4, and to normally space the upper edges of the transverse fins from the rear edges 6 of the notches 4, the upper portion of the transverse fins are provided with transverse projections 11, preferably formed as ribs pressed out of the fins, to

reinforce the upper portion of the transverse fins, against which strain is exerted in the releasing operation, as will be later described.

In the releasing operation, any simple lever may be employed, such as a screw driver or household utensil, although an especially formed tool 12, such as shown in Figures 4 and 5 may be furnished, the lower end of which terminates in an arcuate foot 13.

In operation, the lower arcuate end 13 of the lever 12 is inserted between the rear edge 6 of a notch 4, and the upper portion of the transverse fin 9. Upon rocking the lever, the transverse fin will be shifted to a forward position against the front edge 5 of the notch 4, as best shown in Figure 4, which action breaks the bond between the preceding cube and both the tray and transverse fin.

In that form of the invention disclosed in Figure 6, the slots 14 formed in the longitudinal partition 3 are similar to the slots 8, shown in Figures 2 and 4, and so arranged with relation to the notches 15 formed in the upper edge of the longitudinal partition, as to normally prevent engagement of the upper portion of the transverse fins 9 with the forward edges of the slots. Therefore, to complete the releasing operation of the cubes, it is essential to flex the upper edge of the transverse fins from the position *a*, indicated in dotted lines in Figures 6, to position *b*. Consequently, when the actuating lever is withdrawn from between the transverse fins and the rear edge of the notches 15, the fins will spring rearwardly past a vertical position, which insures an angular position when the ribs 11 engage the rear edges of the slots 4 for subsequent filling and freezing.

In practice, the transverse fins 9 are formed from an aluminum alloy, which is extremely hard and possessed of desired resiliency.

It will also be appreciated that the projections or ribs 11 serve to reinforce the upper or weakest portion of the transverse fins at the point against which strain is exerted by the releasing lever.

In the manufacture of the present grid, the cost of complicated tools and dies is eliminated, and, as explained, no special tool is required for the releasing operation.

In Figures 7 to 9, inclusive, another preferred form of the invention has been illustrated. In this form, one end transverse fin 16 has formed on its lower edge, on each side of the longitudinal partition 17, ice cube lifting lips 18. These lips 18 are formed by slotting the lower edge of the fin 16 at spaced points, as at 19, and then curving the metal back between the slots.

The transverse fins 16 are assembled on the longitudinal partition 17 in the same manner as the forms previously described, and the fins are shifted likewise in the same manner, and by the use of a tool, such as illustrated in Figure 5.

During the shifting of the end fin 16, the last two cubes of ice will be broken loose and effectively raised upward a sufficient distance to allow the convenient removal thereof. The breaking loose of the last two ice cubes will be simultaneous with the releasing of the two forward adjacent ice cubes.

This feature is highly important and useful, in that in grids of this type, it has been impossible to effectively release the last two cubes in the tray. This was due to the fact that the cross-grid members or fins moved only in a forward direction, and, as a consequence, exerted no pressure on the last two cubes. Thus, by constructing the end cross-grid member or fin 16 in the manner shown, it is possible not only to release the two forward cubes, but release the two rear cubes as well.

From the foregoing explanation, considered in connection with the accompanying drawings, it will be apparent that an exceedingly simple and inexpensive grid has been provided for ice cube trays, in which the upper edges of the longitudinal partition and transverse fins are flush, thus enabling use of the trays in a freezing compartment of minimum depth, and permitting compact stacking.

Changes and details may be made, but what we claim as new is:

1. A grid for ice cube trays comprising, a longitudinal partition provided with spaced notches in its upper edge, transverse fins rockably carried by said longitudinal partition for tilting movement and having upper portions positioned in said notches, and reinforcing projections on said upper portions extending outwardly from said transverse fins disposed in said notches and engaging the rear edges of the notches for spacing the major part of said upper portions from one of the vertical edges of said notches.

2. A grid for ice cube trays comprising, a longitudinal partition provided with spaced notches in its upper edge, and resilient transverse fins loosely connected to said longitudinal partition intermediate its upper and lower edges, said connections serving to normally hold the upper portions of said fins out of engagement with the forward edges of said notches until said fins are flexed by means of a lever disposed between the rear edges of said notches and the upper portions of said fins, whereby upon release of said fins the same will spring back to their normal position.

3. A grid for ice cube trays comprising, a longitudinal partition provided with spaced notches in its upper edge, resilient transverse fins loosely connected to said longitudinal partition intermediate its upper and lower edges, said connections serving to normally hold the upper portion of said fins out of engagement with the forward edges of said notches until said fins are individually flexed by means of a lever disposed between the rear edges of said notches and the upper portions of said fins, and projections on said upper portions of said fins for spacing the same from the rear edges of said notches.

4. A grid for ice cube trays comprising, a longitudinal partition provided with spaced notches in its upper edge, a plurality of transverse fins including end and intermediate fins rockably carried by said longitudinal partition and having upper portions positioned in said notches, projections on said upper portions of said transverse fins for spacing the same from one of the side edges of the notches, and means on the lower edge of one end transverse fin for breaking loose and lifting ice cubes in the rear of said end transverse fin upon the rocking thereof.

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