Oct. 11, 1949. J. A. F. ROCHÉ 2,484,121

ICE CUBE TRAY

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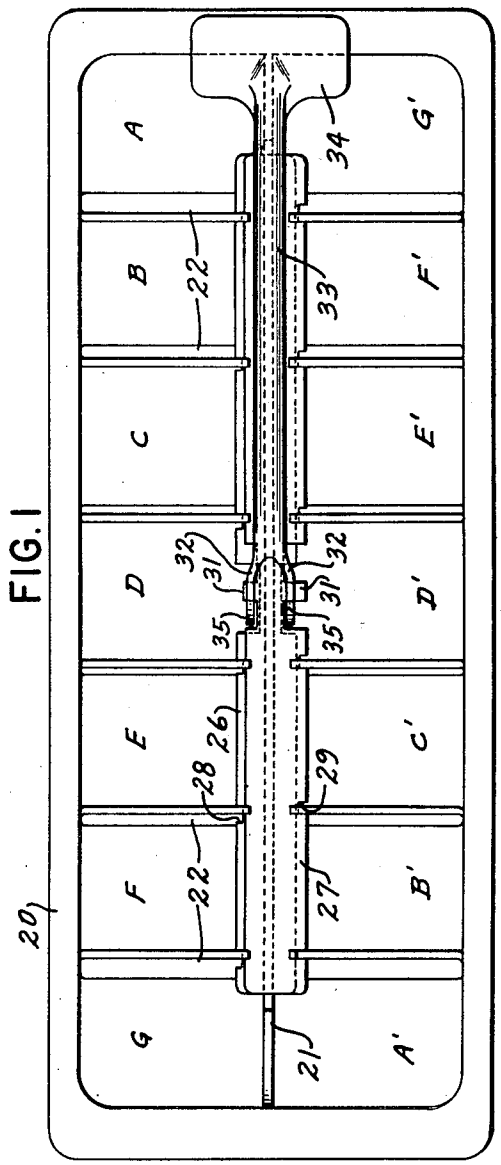


FIG. 1

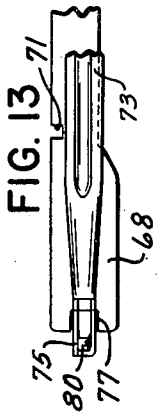


FIG. 13

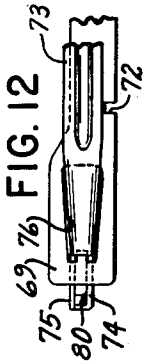


FIG. 12

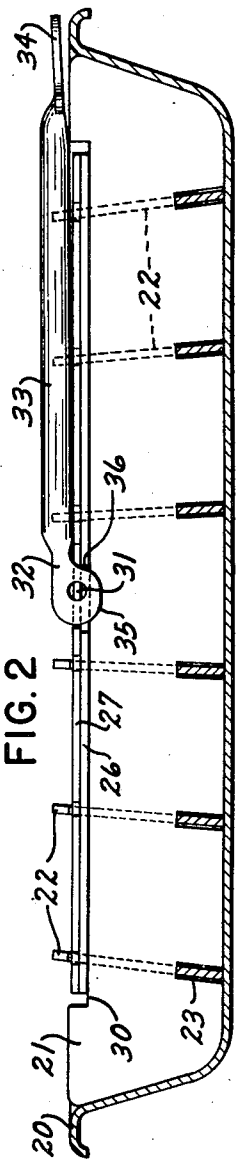


FIG. 2

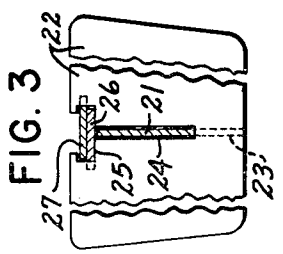


FIG. 3

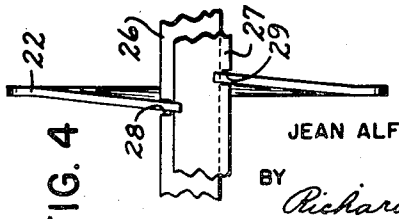


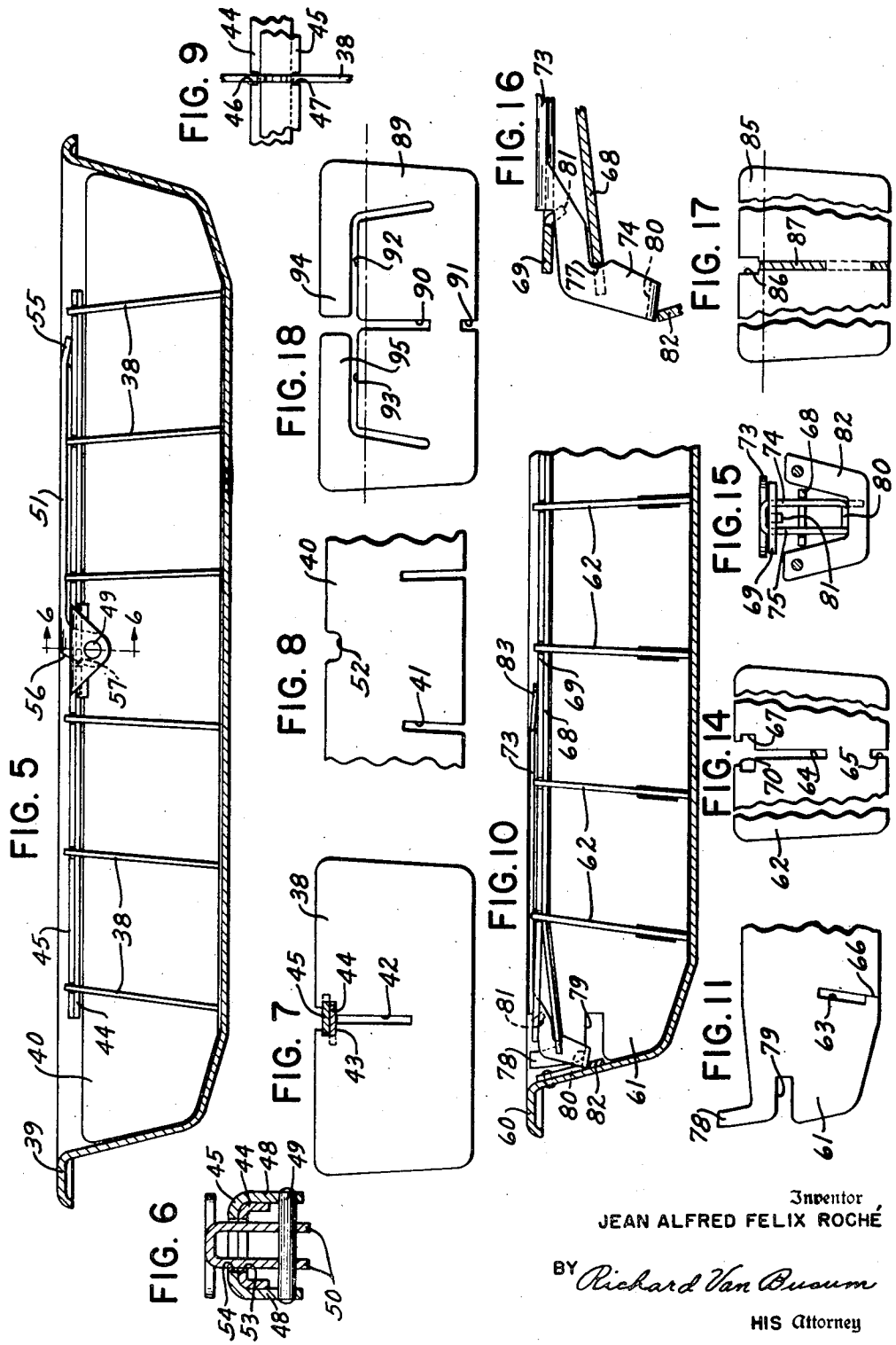
FIG. 4

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ICE CUBE TRAY

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ICE CUBE TRAY

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10 Claims. (Cl. 62—108.5)

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This invention relates to ice cube trays for use in mechanical refrigerators and is particularly directed to a releasable grid structure for use in such trays.

One object of the present invention is to provide a quick-release grid structure for use in ice cube trays.

Another object is the provision of a quick release grid structure for ice cube trays, comprising means to distort the cross grids or plates in two directions to release the ice cubes.

A further object is to provide a releasable grid structure for ice cube trays in which one half of each cross grid or plate of said structure is displaced in one direction and the other half of each of said cross grids or plates is displaced in another direction to release the ice cubes.

A still further object is to provide a novel grid structure for use in ice cube trays, said structure having means to impart a twisting movement or torsional strain to different parts of each cross grid or plate to release the ice cubes.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a top plan view of a preferred form of ice cube tray.

Fig. 2 is a longitudinal cross sectional view of the preferred form of ice cube tray.

Fig. 3 is a fragmentary detail view of one of the cross grids or plates of the preferred form of ice cube tray.

Fig. 4 is a detail view showing one of the cross plates of the preferred form and the manner in which it is distorted or twisted to release the ice cubes.

Fig. 5 is a longitudinal cross sectional view of a first modified form of ice cube tray.

Fig. 6 is an enlarged detail view, partially sectioned, of the operating lever and bars for the tray shown in Fig. 5.

Fig. 7 is a detail view of one of the cross plates for the tray shown in Fig. 5.

Fig. 8 is a fragmentary detail view of the separator plate for the tray of Fig. 5.

Fig. 9 is a fragmentary detail view of one of the cross plates and the operating bars therefor, for the tray of Fig. 5.

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Fig. 10 is a longitudinal cross sectional view of a second modified form of ice cube tray.

Fig. 11 is a fragmentary detail view of the separator plate for the tray shown in Fig. 10.

Fig. 12 is a fragmentary detail view of one of the operating bars for the tray shown in Fig. 10.

Fig. 13 is a fragmentary detail view of the other operating bar for the tray shown in Fig. 10.

Fig. 14 is a fragmentary view of a cross plate for the tray of Fig. 10.

Fig. 15 is a sectional end view of the operating bars and the operating lever for the tray of Fig. 10.

Fig. 16 is an enlarged fragmentary and partially sectioned side elevation of the rearward ends of the operating bars and the operating lever for the tray of Fig. 10.

Fig. 17 is a fragmentary detail view of an individually releasable cross plate for use in a tray similar to that shown in Fig. 10.

Fig. 18 is a detail view of another individually releasable cross plate for use in a tray similar to that shown in Fig. 10.

Description

The present invention is directed to a novel ice cube tray in which a twisting torque is applied progressively and successively to different portions of each cross grid or plate to efficiently and quickly release or separate all or the desired number of ice cubes from the grid structure of the tray.

Referring to Figs. 1 to 4 inclusive, which illustrate a preferred form of the invention and in which similar reference numerals refer to similar parts, an ice cube tray or pan **20**, formed of suitable material such as sheet aluminum, is constructed and arranged to receive an ice cube grid structure comprising a longitudinal separator plate **21** and a plurality of similar cross grids or plates **22**, said separator and said cross plates being made of suitable material such as sheet aluminum. The cross plates **22** are connected to the separator plate **21** by interfitting slots **23** and **24** in said plates **21** and **22**, said slots being large enough to permit sufficient relative freeing movement of said cross plates **22**. The slots **24** are in the center of the cross plates **22** and extend in length from the upper edges thereof substantially two-thirds of the width of said plates to have the effect of substantially separating the upper portions of said plates in flexible halves which may be flexed in a manner presently to be described to release the ice cubes. It will be noted by referring to Fig. 2 that the slots **23** in the separator plate **21** are progressively inclined

in opposite directions in each half of the grid structure, so that the cross plates are positioned substantially as shown here to facilitate the releasing and removal of the desired number of ice cubes.

Each of the cross plates **22** has the slot **24** therein enlarged at the upper end to form a notch **25** with a narrowed opening at its upper edge, said notches arranged to receive and slidably support operating bars **26** and **27**. The lower bar **26** has therein a series of notches **28**, and the upper bar **27** has a similar series of notches **29**, which engage opposite walls of the notches **25** in the corresponding cross plates **22**, when said operating bars **26** and **27** are properly assembled in said notches, as shown in Figs. 2, 3, and 4. It will be noted that, when the operating bars **26** and **27** are properly seated in the notches **25**, the lower bar **26** overlies and slidably contacts a recessed portion **30** of the separator plate **21** to retain said cross plates and said separator plate in proper assembled order, as shown here.

An undercut portion at the center of the upper operating bar **27** (Figs. 1 and 2) has formed therein similar opposed tenons **31**, arranged to engage corresponding axially alined holes in bent-over ears **32** formed on the rearward end of an operating lever **33**, to pivotally mount said lever on said operating bar. When the operating lever **33** is in down position, its central portion, which is of channel shape, as shown here, for increased strength, fits in the narrowed upper portion of the notches **25** in the forward cross plates **22**, and said lever rests on the upper bar **27**. The lever **33** is provided with an enlarged finger piece **34** on its forward end for the easy and proper manipulation thereof.

In assembling the grid structure of the preferred form (Figs. 1 to 4 inclusive), the cross plates **22** are first assembled to the longitudinal separator plate **21** by means of the interfitting slots **23** and **24**, after which the left-hand edge of the lower bar **26** (Fig. 3) is inserted through the narrowed openings and into the left-hand portions of the enlarged notches **25**, and the operating notches **28** in said bar are properly engaged with the left-hand walls of said notches **25**. This permits the right-hand edge of the operating bar **26** to by-pass the narrowed upper portion of the notches **25**, so that said bar may be properly seated in said notches, as shown here. After the lower bar has been properly assembled, the right-hand edge of the upper bar **27** (Fig. 3) is inserted into the right-hand portions of the notches **25**, and the operating notches **29** in said bar properly engaged with the left-hand walls of said notches **25**, after which the left-hand edge of said bar is free to be moved past the narrowed upper portion of said notches **25** and properly seated, as shown here.

After the bars **26** and **27** have been assembled in the notches **25** in the cross plates **22**, the ears **32** of the operating lever **33**, which are spaced apart sufficiently to clear the tenons **31** formed on the upper bar **27**, are passed over said tenons until the holes in said ears are alined therewith. The ears **32** are then squeezed together to engage said holes with said tenons and to cause said ears to snugly embrace the undercut central portions of the operating bars **26** and **27**, as shown best in Fig. 1. This completes the assembly of the grid structure and, together with the narrowed openings of the notches **25**, retains the operating bars **26** and **27** properly seated in said notches **25**.

To operate the grid structure of the preferred form, the finger piece **34** of the operating lever **33** is grasped, and said lever is moved upwardly or counter-clockwise (Figs. 1 and 2) upon the pivot tenons **31**. Counter-clockwise movement of the lever **33** causes similar cam surfaces **35**, formed on the peripheries of the ears **32**, in cooperation with corresponding forward shoulders **36**, formed by the undercut portion of the bar **26**, and operating in conjunction with the tenons **31**, to simultaneously shift the lower bar **26** forwardly and the upper bar **27** rearwardly.

The grid structure of the preferred form, in cooperation with the tray **20** (Figs. 1 and 2), forms a series of ice cube compartments, the upper half of which are identified by the letters A to G inclusive, and the lower half of which are identified by the letters A′ to G′ inclusive. The operating notches **28** in the lower bar **26** are enlarged slightly one over the other in successive order beginning with the right-hand or forward notch **28** (Fig. 1), which is in this case the smallest notch, and ending with the extreme left-hand or rearward notch **28**, which is the largest notch. Likewise, the notches **29** in the upper bar **27** are enlarged successively in reverse order to the notches of the bar **26**, beginning with the left-hand or rearward notch **29**, which in this case is the smallest notch, and ending with the extreme right-hand notch **29**, which is the largest notch. Forward and rearward shifting movement of the operating bars **26** and **27**, by operation of the lever **33**, as explained above, causes the notches **28** and **29** in said bars, in cooperation with the corresponding shoulders formed in the notches **25** in the upper portions of the cross plates **22**, to apply torsional strain to said plates, to release the desired number of ice cubes from the grid structure.

Initial forward movement of the lower bar **26** causes the extreme forward notch **28** therein, in cooperation with the upper wall of the notch **25** in the right-hand plate **22** (Fig. 1), to twist the upper half of said plate, as shown in Fig. 4, to release the ice cube contained in compartment A, and simultaneous rearward movement of the upper bar **27** causes the rearward notch **29** therein, in cooperation with the lower wall of the notch **25** in the left-hand cross plate **22**, to twist the lower half of said plate, to free the ice cube in compartment A′. This releasing movement progresses successively to the cross plates **22** for the compartments B and B′, C and C′, and so on, as continued releasing movement is imparted to the lever **33**. Finally, when the lever **33** is in fully operated position, in case it is desired to release all of the ice cubes from the grid structure, the opposite halves of the cross plates **22** are distorted in the manner shown in Fig. 4. The proper distortion of the cross plates **22** is facilitated and enhanced by the support given to the bottom portions of said cross plates **22** by the ice cubes and the manner in which said ice cubes are released from the grid structure.

It is obvious from the foregoing description that, by proper manipulation of the operating lever **33**, the ice cubes may be released from the grid structure in successive pairs and that it is possible to release only the desired number of pairs at one time.

This unique method of applying torsional strain in different directions to different portions of the cross plates **22** facilitates the releasing action of the grid structure and permits quick and easy removal of the ice cubes from said grid

structure and the tray without having to resort to the old and bothersome practice of first partially or fully defrosting the ice tray and its contents.

It is quite evident that the operating notches 28 and 29 (Fig. 1) may be arranged so that the two narrowest notches are opposite each other and so on, and this arrangement would result in the distortion of both halves of each cross plate at the same time (Fig. 4) to simultaneously release the ice cubes in compartments A and G' and so on in successive order through the adjacent compartments B and F', etc.

First modified form

Figs. 5 to 9 inclusive show a first modified form of ice tray, in which the cross grid plates 38 are similar in every respect to and operate exactly like the cross plates 22 of the preferred form shown in Fig. 1 and explained above. As in the preferred form, the cross plates 38, which are divided into substantial identical halves by central slots therein, are distorted or twisted in two directions to release the ice cubes from the grid structure and the tray in exactly the same manner as in the preferred form; however, a different form of operating mechanism is provided in this modification.

In addition to the cross plates 38, the first modified form includes a tray 39, formed of suitable sheet material such as aluminum, to provide a suitable receptacle for the grid structure. The cross plates 38 are retained in proper spaced relationship to each other by a longitudinal separator plate 40 having a plurality of properly spaced slots 41 in its lower edge, which, in cooperation with interfitting slots 42 in said cross plates 38, provide means for assembling said cross plates to said separator plate 40. The central slots 42 in the cross plates 38 are enlarged at their upper ends to form notches 43 (Fig. 7) for the reception of horizontal operating bars 44 and 45 each having a series of notches 46 and 47, which engage corresponding adjacent walls of said notches 43.

The lower operating bar 44 is strengthened at its center by bent-down extensions thereon, as shown in Fig. 6, and likewise the upper bar is strengthened at its center by bent-down extensions 48 thereof, which snugly overlie the bent-down extensions of the bar 44. The downwardly-bent extensions 48 support a rivet 49, which is freely engaged by alined holes in downwardly-bent ears 50 formed on the rearward end of an operating lever 51 to provide a pivot for said lever. The ears 50 of the lever 51 extend through and fit snugly in openings 53 and 54 (Fig. 6) cut in the strengthened center portions of the bars 44 and 45, respectively. The rivet 49 extends through a clearance notch 52 in the upper edge of the separator plate 40 and coacts with the forward wall of said notch 52 upon operation of the lever 51, to assist in freeing or releasing the ice cubes.

In assembling the grid structure of the first modified form (Figs. 5 to 9 inclusive), the cross plates 38 are first connected to the separator plate 40 by means of the interfitting slots 41 and 42, after which the edge of the lower operating bar 44, having the notches 46 therein, is inserted in the left-hand portion of the notches 43 in the cross plates 38 (Fig. 7), and said notches 46 are engaged with the adjacent left-hand walls of the corresponding notches 43. This permits the other edge of the bar 44 to pass the narrowed upper portion of the notches 43 and to be properly seated in said notches, as shown here. Next, the edge of the upper bar 45 (Fig. 7), having the notches 47 therein, is inserted in the right-hand portion of the notches 43 in the plates 38, and said notches 47 are properly engaged with the adjacent walls of said notches 43, thus permitting the other edge of the bar 45 to clear the narrowed portion of the notches 43 and be properly seated on the lower bar 44, as shown in Fig. 7.

The parallel ears 50 of the operating lever 51 are then inserted through the openings 53 and 54 in the operating bars 44 and 45 (Figs. 5 and 6), after which the rivet 49 is inserted through the holes in the ears 48 of the upper bar 45 and through the holes in the ears 50. The opposite ends of the rivet 49 are then upset, as shown here, to secure them and the parts associated therewith against displacement. The longitudinal portion of the operating lever 51 has a strengthening rib formed in its center, as shown in Fig. 5, for increased strength and rigidity, and said longitudinal portion of said lever fits in the narrowed upper portion of the notches 43 in the underlying cross plates 38 and rests against the upper surface of the bar 45, when the grid structure is properly placed in the tray 39.

Assembly of the operating lever 51 to the bar 45 by the rivet 49, as explained above, and the cooperation of the ears 50 of said lever with the openings 53 and 54 in the bars 44 and 45, prevent the removal of said bars through the narrowed upper portions of the notches 43 (Fig. 7) in the cross plates 38, and, inasmuch as the lower bar 44 overlies the upper edge of the separator plate 40, the assembly of the lever 51, as explained above, retains the grid structure together as a complete unit.

The forward end of the operating lever 51 is provided with an enlarged finger piece 55 (Figs. 5 and 6), and, in operating the grid structure, said lever is grasped by said finger piece 55 and moved upwardly or counterclockwise (Fig. 5) on the rivet 49. This movement causes similar camming surfaces 56, formed on the ears 50, to engage rearward shoulder 57 formed by the opening 53 in the lower bar 44, to shift said bar rearwardly and, through the rivet 49, to simultaneously shift the upper bar forwardly. The opening 54 in the upper bar 45 is long enough to provide ample clearance for proper coaction of the camming surfaces 56 and the shoulder 57.

The operating notches 46 and 47 in the operating bars 44 and 45 are spaced and enlarged in successive order in exactly the same manner as the notches in the operating bars 26 and 27 for the preferred form, and the releasing movement in opposite directions of said bars, under influence of the manipulation of the lever 51, causes the upper halves of the cross plates 38 to be distorted in exactly the same manner and in the same progressive order as explained in connection with the preferred form, shown in Figs. 1 to 4 inclusive.

Second modified form

Figs. 8 to 16 inclusive illustrate a second modified form of ice tray and grid structure, in which the cross grid plates are distorted in exactly the same manner as explained in connection with the preferred and first modified forms, to release the ice cubes from the grid structure and from the inside surface of the tray. In this form of the invention, the entire grid structure, with its frozen contents, is first separated from the inside surface of the tray or pan by initial movement of the operating lever, after which the continued move-

ment of the operating lever causes the cross plates of said grid structure to be distorted to progressively release the ice cubes from said grid structure.

The second modified form comprises tray 60 (Figs. 10 to 16 inclusive), formed of any suitable material, such as sheet aluminum, a longitudinal separator plate 61, and a plurality of cross grid plates 62. The separator plate 61 has therein a series of properly spaced slots 63, which, in cooperation with interfitting central slots 64 and 65 in each of the cross plates 62, provide means for assembling said cross plates to said separator plate. The webs formed by the slots 63 in the plate 61 are severed, as at 66 (Fig. 11), to form a locking projection, which may be separated or spread open to permit the insertion in said slots 63 of the webs formed on the cross plates 62 by the corresponding slots 64 and 65, after which said locking projections are bent into the corresponding slots 65 to secure the cross plates in position on the separator plate 61. The slots 64 (Fig. 14) in the plates 62 are enlarged near their upper ends into notches 67, to receive longitudinal operating bars 68 and 69, said notches being narrowed at their upper ends, as at 70 (Fig. 14), to retain said operating bars properly seated therein. Each of the operating bars 68 and 69 (Figs. 10, 12, and 13) has, respectively, a series of properly spaced notches 71 and 72 arranged to engage corresponding walls of the notches 67 in the cross plates 62 in exactly the same manner as explained in connection with the preferred and the first modified forms.

A hand lever 73 (Figs. 10, 12, 13, 15, and 16) is provided for shifting the operating bars 68 and 69 in opposite directions to distort the upper halves of the cross plates 62 in exactly the same manner as explained in connection with the preferred and the first modified forms, to release the ice cubes from the grid structure and the inside surface of the tray. The rearward end of the lever 73 has downwardly-bent parallel legs 74 and 75, which, upon assembly of said lever, extend through an opening 76 formed in an enlarged rearward portion of the upper bar 69 (Fig. 12), said legs having therein similar alined recesses which engage a forward wall of a notch 77 in an enlarged rearward portion of the operating bar 68 (Fig. 13). The legs 74 and 75 of the lever 73 straddle an upwardly-extending finger 78 formed on the rearward end of the separator plate 61. A notch 79 is formed in the rearward end of the plate 61 (Figs. 10 and 11) to provide operating clearance for a horizontal bent-over extension 80 of the leg 74 (Fig. 15).

In assembling the grid structure of the second modified form (Figs. 10 to 16 inclusive), the cross plates 62 are first assembled to the separator plate 61, after which the operating bars 68 and 69 are assembled in the notches 67 in the cross plates 62, in exactly the same manner as explained previously. After the operating bars 68 and 69 have been assembled in the notches 67, the legs 74 and 75 of the operating lever 73 are inserted through the opening 76 in the upper bar 69, and the alined recesses in said legs are properly engaged with the forward wall of the notch 77 in the lower bar 68.

In assembling the legs 74 and 75 and the operating bars 68 and 69, said legs are free to straddle the upturned finger 78 of the plate 61, because at this time the extension 80 of the leg 74 is straight, as shown in dot-and-dash lines (Fig. 15), and, after said parts are properly assembled, the extension 80 is bent over, as shown in full lines (Figs. 15 and 16) to assist in retaining the grid structure in proper assembled condition and to prevent displacement of the operating lever 73. A downwardly-bent tongue 81 formed in the opening 76 in the bar 69 (Figs. 10, 12, 15, and 16) cooperates with the lever 73, as will be explained presently, to assist in the operation of the bar 69 and to prevent displacement of said operating lever 73.

When the grid structure (Fig. 10) is properly placed in the tray 60, the horizontal bent-over portion 80 of the operating lever 73 rests upon a horizontal shoulder formed on a V-shaped plate 82 secured to the inside surface of the rearward end of the tray 60. The operating lever 73 is provided with an enlarged finger piece 83 (Figs. 10 and 15), which may be conveniently grasped to lift said lever 73 upwardly or counter-clockwise (Fig. 10) to release the ice cubes from the grid structure and the tray. Initial counter-clockwise movement of the operating lever 73 causes the bottom surface of the extension 80 (Figs. 10, 15, and 16), in cooperation with the horizontal shoulder on the plate 82, and the upper surface of said extension 80, in cooperation with the upper wall of the notch 79, to first lift the separator plate 61 and the grid structure upwardly to separate same and the ice cubes from the inside surface of the tray or pan 60, whereupon said grid structure, with the ice cubes intact, may be entirely removed from said tray 60 if desired. Continued counter-clockwise operation of the outer wall of the opening 76 adjacent the lever 73 causes it, in cooperation with the tongue 81 and the notch 77, to shift the bars 69 and 68 rearwardly and forwardly, respectively, to distort or twist the upper halves of the cross plates 62 to release the ice cubes from the grid structure. The tongue 81 prevents the outer wall of the opening 76 (Fig. 16) from riding upwardly off of the shoulder on the lever 73 when said lever is operated, as explained before, and also assists in maintaining said parts in proper assembled relationship to each other.

The arrangement of the notches 71 and 72 in the operating bars 68 and 69 causes the opposite halves of the cross plates 62 to be distorted progressively in exactly the same order and manner as explained in connection with the preferred and the first modified forms, so that the desired number of ice cubes may be separated from the grid structure in preparation for use.

Fig. 17 is a fragmentary detail view of a cross grid or plate 85, which may be used in connection with a tray of the type shown in Fig. 10 to provide a grid structure in which each cross plate 85 may be manually distorted independently of the other cross plates to release the desired number of ice cubes.

The cross plates 85 are provided with central slots which interfit with corresponding slots in a separator plate 87, which is similar to the separator plate 61 for the second modified form. The upper portions of the central slots in the plates 85 are enlarged into notches 86 (Fig. 17) to provide room for the insertion of any convenient blunt instrument, such as a screw driver, which may be used to twist the upper halves of the cross plates 85 in opposite directions to release the desired number of ice cubes in substantially the same manner as explained in connection with the other forms of the invention.

Fig. 18 illustrates a manually operable cross plate 89, which may be used in a tray similar to

the type of tray shown in Fig. 10. The cross plate 89 has central alined slots 90 and 91, which, in cooperation with interfitting slots in a central separator plate (not shown, but similar to the plate 87, Fig. 17), provide means for assembling the cross plates 89 to said separator plate. Extending from the central slot 90 are symmetrical right- and left-hand branch slots 92 and 93, which form symmetrical opposed extensions 94 and 95, which may be grasped by the fingers and used for twisting the upper halves of the cross plates 89 in opposite directions to free the desired number of ice cubes in substantially the same manner as explained in connection with the other forms of the invention.

The dot-and-dash horizontal lines in Figs. 17 and 18 indicate the proper level for the top surfaces of the ice cubes for the most efficient operation of the cross plates 85 and 89.

While the forms of mechanism shown and described herein are admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the forms or embodiments shown herein, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. An ice cube tray grid structure comprising a longitudinal grid element; a plurality of transverse grid members mounted on said element, said members having central openings separating the upper portions thereof into substantially similar parts connected at their lower edges; and means coacting with the similar parts to move certain of said parts in one direction and the rest of said parts in the opposite direction to impart torsional strain to said parts to release the ice cubes.

2. An ice cube tray grid structure comprising a longitudinal grid element; a plurality of transverse grid members mounted on said element, said members having central openings separating the upper portions thereof into substantially similar parts connected at their lower edges; means coacting with the corresponding similar parts to move them in one direction; and means coacting with the other corresponding similar parts to move them in another direction to distort said parts in opposite directions to release the ice cubes.

3. An ice cube tray grid structure comprising a longitudinal grid element; a plurality of transverse grid members mounted on said element, said members having central openings separating the upper portions thereof into substantially similar parts connected at their lower edges; means coacting with one corresponding set of parts; means coacting with the other corresponding set of parts; and means to move the coacting means in opposite directions to flex the parts of each member in opposite directions to release the ice cubes.

4. An ice cube tray grid structure comprising a longitudinal grid element; a plurality of transverse grid members, said element and said members having interfitting slots for the proper assembling of said members on said element, the slots in said members separating the upper portions thereof into symmetrical halves which are distortable independently of each other; means coacting with one set of symmetrical halves; means coacting with the other set of symmetrical halves; and manually operable means to apply pull to one of the coacting means and to simultaneously apply push to the other coacting means to distort the halves of each grid member in opposite directions to release the ice cubes from the grid structure.

5. A grid for use in ice cube trays, comprising a longitudinal partition; a series of cross partitions forming a grid assembly with said longitudinal partition, each of said cross partitions being split to form symmetrical halves of the upper portions thereof, said splits forming an enlarged recess at the upper edges thereof; a slide supported in the recesses and coacting with one set of the symmetrical halves; another slide supported in the recesses and coacting with the other set of symmetrical halves; and manually operable means to shift the slides in opposite directions to cause them to flex the symmetrical halves of each cross partition in opposite directions to release the ice cubes.

6. In an ice cube tray, the combination of a plurality of cross plates, each having an open slot to form symmetrical halves of the upper portion thereof; a longitudinal plate having a plurality of spaced slots extending from the lower edge thereof which interfit with the open slots to assemble the longitudinal plate and the cross plates into a grid structure which in cooperation with the tray forms two longitudinal rows of ice compartments; means coacting with the halves of the cross plates associated with one row of compartments; means coacting with the halves of the cross plates associated with the other row of compartments; and means mounted on one coacting means and effective, upon operation, to move the two coacting means in opposite directions to flex the portions of the cross plates for one row of compartments in one direction and to flex the portions of the cross plates for the other row of compartments in the opposite direction to release the ice cubes from the grid structure and the tray.

7. In a removable grid structure for ice cube trays, the combination of a series of cross plates each having a slot open at the upper edge to separate the upper portions of said plates into symmetrical and independently flexible halves, each of said slots having an enlarged recess near its upper edge; a longitudinal plate having a series of spaced slots open at the lower edge thereof and constructed and arranged to interfit with the slots in the cross plates to form a grid structure which with the tray comprises two longitudinal rows of ice compartments; a slide mounted in the enlarged recesses and coacting with the halves of the cross plates associated with one row of compartments; a slide mounted in the enlarged recesses and coacting with the halves of the cross plates associated with the other row of compartments; and a lever pivotally mounted on one of the slides and coacting with the other slide, upon operation, to shift said slides in opposite directions to cause them to flex one half of the cross plates in one direction and the other half of said cross plates in another direction to release the ice cubes.

8. In a removable grid structure for use in an ice tray, the combination of a longitudinal plate; a plurality of cross plates; interfitting slots in the plates for connecting the cross plates at their centers to the longitudinal plate, said slots in said cross plates recessed and open to form independently flexible upper portions on each side of the longitudinal plate; a slide mounted in the recesses and coacting with the flexible portions of the cross plates on one side of the longitudinal

plate; a slide mounted in the recesses and coacting with the flexible portions of the cross plates on the other side of the longitudinal plate; a projection on the inside surface of the tray; and a lever operatively connected to the slides and coacting with the projection and the longitudinal plate, upon initial movement thereof, to separate the grid structure and its contents from the tray, said lever also effective, upon continued movement thereof, to shift the slides in opposite directions to cause them to flex the portions of the cross plates on one side of the longitudinal plate in one direction and the other portions of said cross plates in the opposite direction to free the ice cubes from the grid structure.

9. A removable grid for ice cube trays, comprising a plurality of transverse partitions having central slots extending upwardly to an open end to divide each transverse partition into two independently flexible portions, said slots being enlarged at their open ends; a longitudinal partition having a series of spaced slots coacting with the slots in the transverse partitions to form said partitions into a grid structure having a central wall partition walls diverging therefrom in opposite directions; and means coacting with the enlarged recesses to flex the independently flexible portions of each transverse partition in opposite directions to free the ice cubes.

10. In a removable grid structure for use in

an ice tray to form ice cubes, the combination of a longitudinal plate; a plurality of cross plates; interfitting slots in the plates for connecting the cross plates at their centers to the longitudinal plate, said slots in said cross plates recessed and open to form a set of independently flexible upper portions on each side of the longitudinal plate; a bar shiftably supported in the recesses and having notches that coact with one set of the flexible portions of the cross plates; another bar shiftably supported in the recesses and having notches that coact with the other set of flexible portions of the cross plates; and a hand lever pivoted to one bar and coacting with the other bar to shift said bars in opposite directions to cause them to flex one set of the flexible portions in one direction and to flex the other set of the flexible portions in the opposite direction to free the ice cubes.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,287,971	Carney	June 30, 1942
2,321,669	Geyer	June 15, 1943
2,325,226	Carney	July 27, 1943