Jan. 16, 1940. F. P. KEIPER 2,187,083

ICE TRAY

Filed March 15, 1938 4 Sheets-Sheet 1

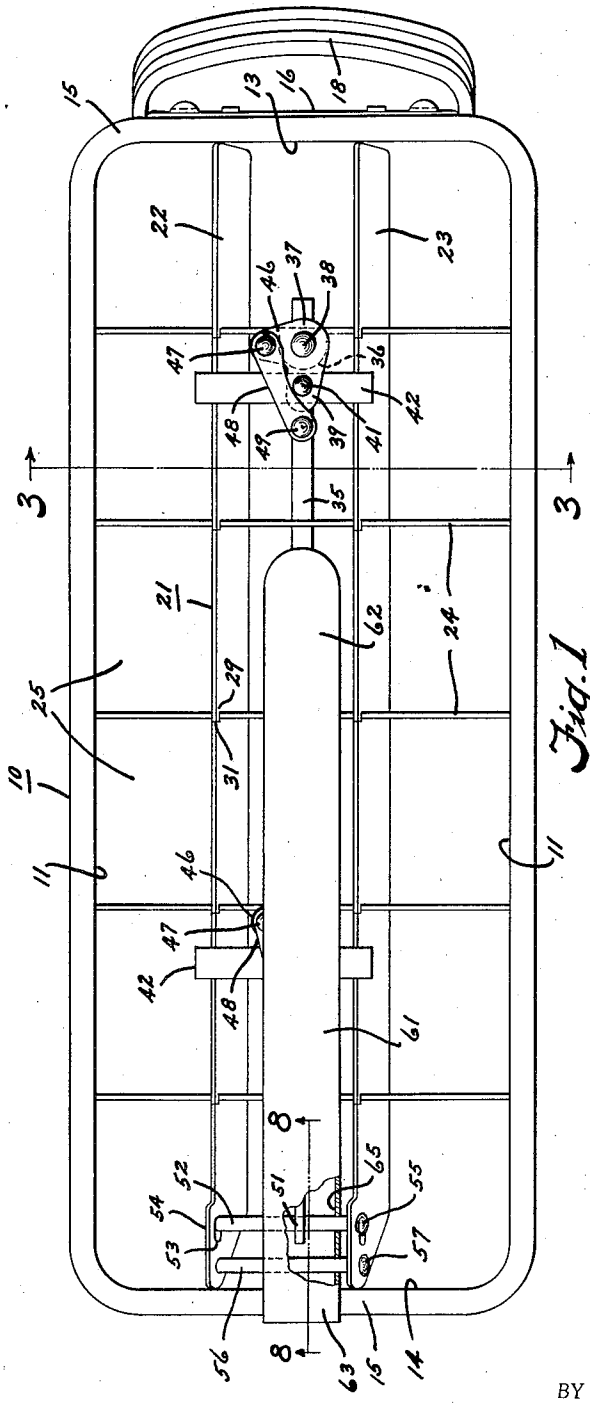


Fig. 1

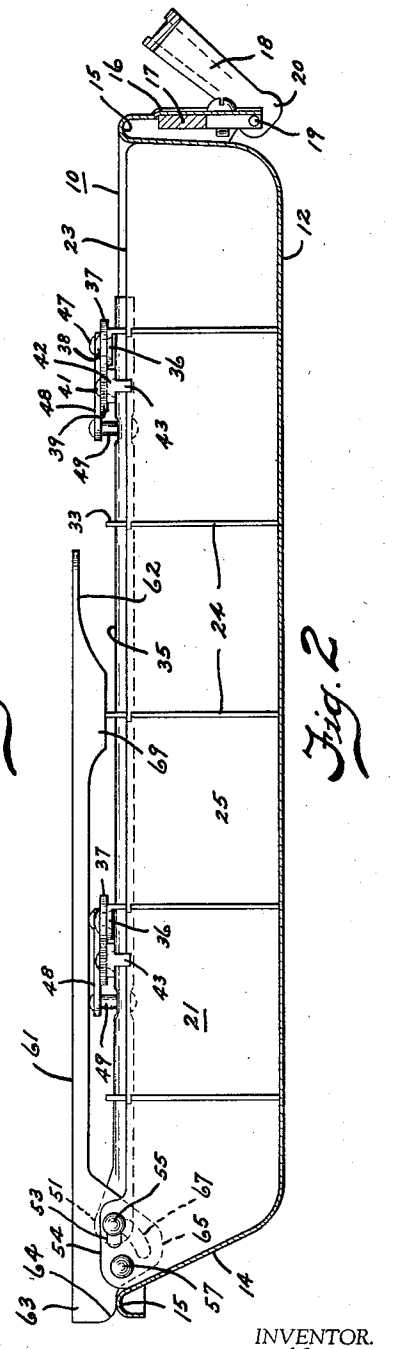


Fig. 2

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ICE TRAY

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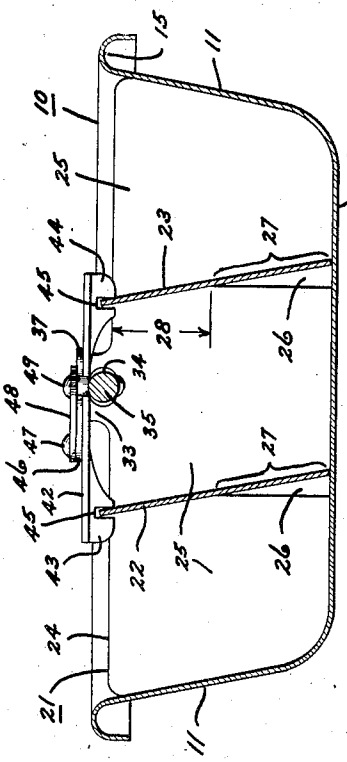


Fig. 3

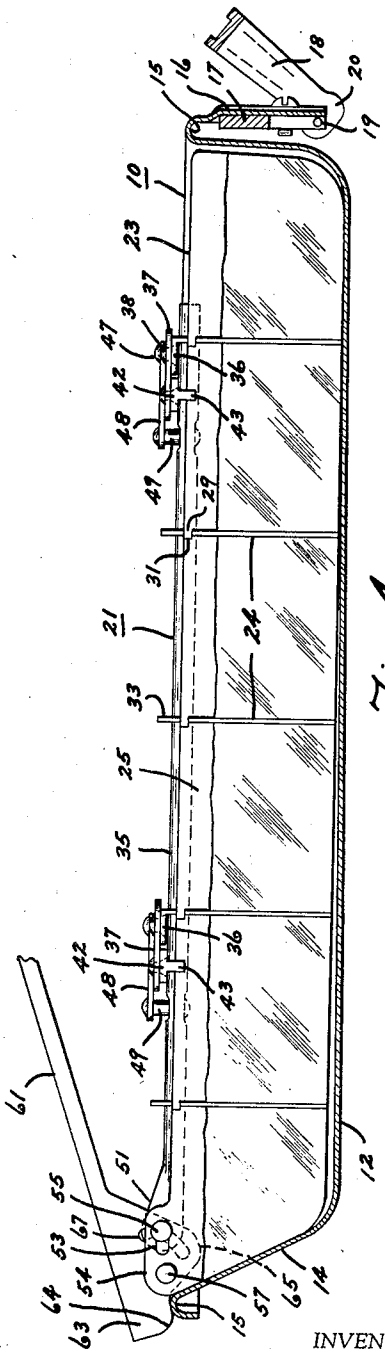


Fig. 4

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ICE TRAY

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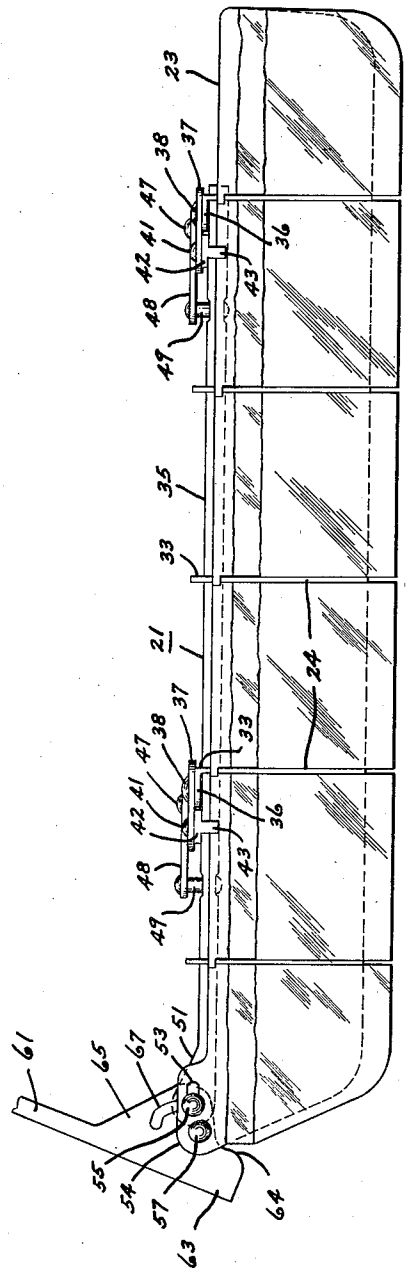


Fig. 5

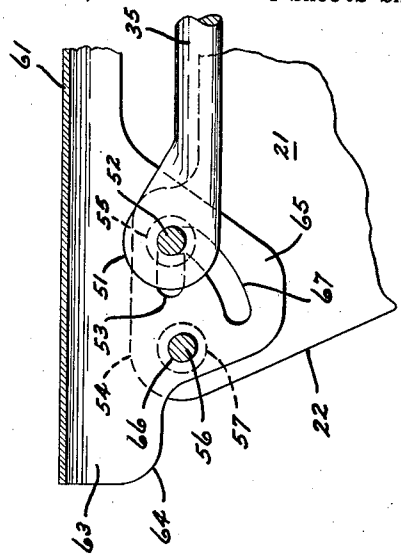


Fig. 8

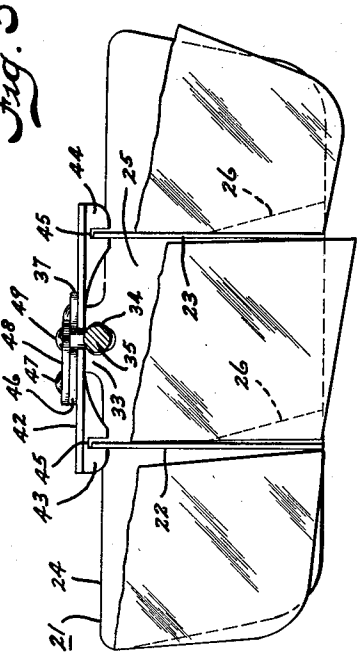


Fig. 7

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ICE TRAY

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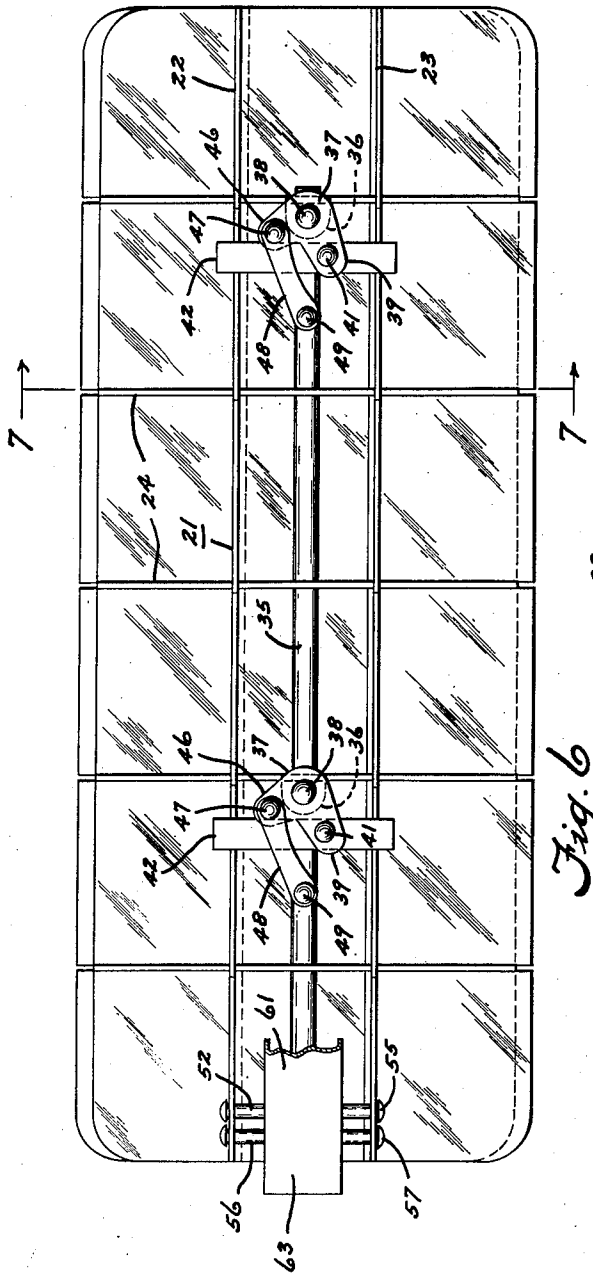


Fig. 6

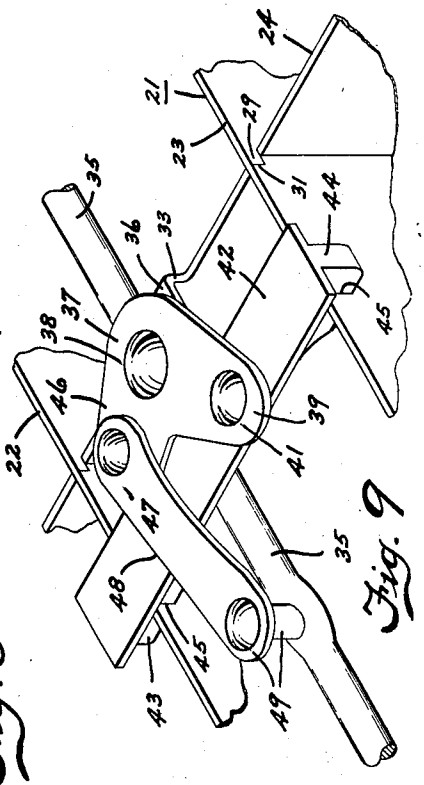


Fig. 9

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Patented Jan. 16, 1940 2,187,083

UNITED STATES PATENT OFFICE

2,187,083

ICE TRAY

Francis P. Keiper, Philadelphia, Pa., assignor to General Motors Corporation, Dayton, Ohio, a corporation of Delaware

Application March 15, 1938, Serial No. 196,034

14 Claims. (Cl. 62—108.5)

This invention relates to freezing devices and particularly to ice trays and grids therefor employed in household refrigerating apparatuses.

Recently, there has been placed on the market liquid freezing devices such as ice trays and grids wherein the grid is of a rigid metal-wall unitary construction and divides the interior of the tray into a plurality of ice block compartments. The grid is removable from the tray as a unit and has certain walls thereof movable independently of and relative to other walls for breaking the bond between ice blocks and their compartment walls in order to effect release of the ice blocks from the grid structure. The grids of devices of this type have been limited to a structure which forms only two longitudinal rows of ice block compartments in a tray, thus reducing the number of ice blocks obtainable from a single tray and consequently necessitating the provision of a great number of trays in household refrigerators. I, therefore, contemplate the provision of an ice tray grid for such freezing devices which is of a unitary substantially rigid wall construction and wherein a plurality of horizontally spaced apart longitudinal walls cooperate with and are movable relative to transverse walls to divide the interior of a tray into three or more longitudinal rows of ice block compartments.

An object of my invention is to provide an improved rigid movable grid wall structure adapted to be disposed in an ice tray for dividing the tray into three or more longitudinal rows of ice block compartments and a novel method of removing the grid from the tray and particularly ice blocks from the grid structure without applying heat thereto.

Another object of my present invention is to provide an ice tray with a removable single thickness substantially non-flexible metal-walled unitary grid structure which has spaced apart longitudinal walls and a plurality of spaced apart walls extending transversely thereto dividing the tray into three or more longitudinal rows of ice block compartments and wherein at least one of the longitudinal grid walls is movable relative to the other longitudinal grid wall and independently of the transverse grid walls for enlarging the ice block compartments between the longitudinal walls and for breaking the bond between the ice blocks and the compartment walls to release ice blocks from the grid structure.

A further object of my invention is to provide an ice tray grid structure having spaced apart longitudinal walls cooperating with a plurality of transverse walls to form three or more longitudinal rows of ice block compartments wherein the transverse walls are substantially vertically disposed and the longitudinal walls extend parallel to one another in an inclined or acute angled position to form compartments therebetween of a parallelogram shape in one direction of cross section therethrough and wherein these longitudinal walls are movable relative to and independently of the transverse walls to change their normal inclination or to move them out of their normal angled position to enlarge the ice block compartments therebetween and release ice blocks from the walls thereof.

In carrying out the foregoing objects it is a still further object of the invention to provide a grid structure of the type described with rigid or substantially non-flexible metal walls and wherein movement of the longitudinal grid walls to enlarge the parallelogram-shaped ice compartments between the longitudinal walls also imparts a force to ice blocks beyond the longitudinal walls to break the bond between these ice blocks and the transverse grid walls to facilitate removal of ice blocks from the grid structure.

Still further and more specific objects and advantages reside in details of construction of my improved grid structure and in novel combinations and arrangements of parts thereof as will more fully appear in the course of the following description.

In the drawings:

Fig. 1 is a top plan view of a liquid freezing device comprising a tray having a grid constructed in accordance with the present invention disposed therein;

Fig. 2 is a side view of the device disclosed in Fig. 1 showing the tray in section;

Fig. 3 is a transverse vertical sectional view of the freezing device taken on the line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 2 showing the grid structure and ice blocks bonded thereto elevated relative to the tray;

Fig. 5 is a view of the grid removed from the tray and disclosing walls thereof moved to break the bond between same and ice blocks therein;

Fig. 6 is a top plan view of the grid and ice blocks shown in Fig. 5;

Fig. 7 is a sectional view of the device taken on the line 7—7 of Fig. 6;

Fig. 8 is an enlarged fragmentary sectional view taken on the line 8—8 of Fig. 1 and showing certain movable parts of the grid connected together; and

Fig. 9 is a fragmentary perspective view of one

part of the mechanism employed to move certain walls of the grid.

Referring to the drawings, for illustrating my invention, I have disclosed my improved liquid freezing device as including a metal ice tray 10 having side walls 11 (see Fig. 3), a bottom wall 12 and opposed end walls 13 and 14. The tray side walls 11 and the front wall 13 thereof converge outwardly toward the top of the tray. The tray back wall 14 is converged outwardly toward the top of the tray a greater distance than other walls thereof for a purpose which will become apparent hereinafter. The walls 11, 13 and 14 of tray 10 have their upper portion rolled over as at 15 to provide a rim which extends continuously around the top of the tray to increase its structural strength. A portion of the metal of tray 10 is extended downwardly from the rim 15, as at 16, (see Fig. 2) at the front of the tray and provides a mounting for a heavy metal piece 17 which has a handle 18 pivotally secured thereto as at 19. The handle 18 facilitates placing of the freezing device in or on a freezing support or shelf of an evaporator of a refrigerating system and a cam surface 20 formed thereon functions, upon actuating the handle, to break an ice bond between the tray and its support to permit removal of the freezing device and its frozen contents from the evaporator in the well-known manner.

The tray 10 has in combination therewith a unitary metal grid structure, generally represented by the reference character 21, and this grid is removably disposed within the tray. The grid 21 includes two single thickness substantially non-flexible horizontally spaced apart metal walls 22 and 23 and a plurality of single thickness rigid metal walls 24 extending transversely thereto in spaced apart relation along the length thereof to divide the interior of tray 10 into three longitudinal rows of open top cells or compartments 25. It will be noted that the cross or transverse walls 24 of grid 21 are vertically disposed and that the longitudinal walls 22 and 23 extend substantially parallel to one another and are normally inclined or located at an acute angle, other than a right angle, relative to the bottom wall 12 of tray 10. Thus, the ice block compartments located between the longitudinal walls 22 and 23 are of a parallelogram form in one direction of cross section therethrough (see Fig. 3), and the compartments beyond the walls 22 at the one side of the tray 10 are also of a substantially parallelogram form, while the compartments beyond wall 23 at the other side of tray 10 are of a substantially trapezoid form. The purpose of providing the parallelogram-shaped compartments between the longitudinal walls 22 and 23 is to permit enlargement of these compartments for releasing ice blocks therefrom as will become apparent hereinafter.

Each longitudinal walls 22 and 23 of grid structure 21 has a plurality of spaced apart elongated openings extending from a point intermediate the top and bottom edges thereof upwardly to a point slightly spaced from the top edge thereof. Each transverse wall 24 of grid 21 has a pair of slots 26 cut therein and extending from the bottom edge thereof upwardly to a point slightly above the central part thereof (see Fig. 3). The web portions, indicated as at 27 in Fig. 3 of the drawings, of longitudinal walls 22 and 23 and located below the openings therein are received in the slots 26 of walls 24. The web portions, indicated as at 28 in Fig. 3 of the drawings, of transverse walls 24 and located above the slots 26 therein are received in the elongated openings of the longitudinal walls 22 and 23. Thus, the walls 22, 23 and 24 of grid 21 are interlocked together, preferably for movement relative to one another. A web 29 located above the elongated openings in longitudinal walls 22 and 23 is slit as at 31 and the web 29 is bent outwardly away from wall 22 or 23 to permit webs 28 of transverse walls 24 to be inserted into the elongated openings of walls 22 and 23. After the walls 24 have been located in position with their slots 26 straddling the webs 27 of walls 22 and 23, the webs 29 are bent back parallel with walls 22 and 23 and the slit 31 is soldered or welded closed to permanently secure the grid walls together to form a unitary structure. The walls 22 and 23 are movable relative to walls 24 of grid 21, and the substantially triangular form of slots 26 in transverse walls 24 permit this relative movement. In the present disclosure, the transverse grid walls 24 each have a raised central top edge portion 33 (see Fig. 3) having an opening 34 therethrough which receives a rod 35. The end transverse grid wall 24 adjacent the front wall 13 of tray 10 and one of the transverse grid walls 24 near the lever end of the structure 21 is provided with a bent-over ear part 36 formed integral with the extended top edge portion 33 of these walls 24. Each of these bent-over ear parts 36 in the two transverse grid walls 24 serve to support a toggle device or the like employed for changing the direction of longitudinal movement of rod 35 into a transverse force for application to the walls 22 and 23 of the grid structure 21. Therefore, each ear part 36 has a cam member 37 pivotally mounted thereto by a pin or rivet 38. Each member 37 is provided with a finger 39 which is connected by a pin or rivet 41 with a cross bar element 42. The element 42 has depending legs 43 and 44 each provided with a slot 45 which fits over the top edge of longitudinal grid walls 22 and 23. Bar element 43 is thus permitted to slide along the top edge of walls 22 and 23 lengthwise of the grid structure when member 37 is rotated to impart force to element 42 in a direction transverse of the grid structure. Member 37 is also provided with a second finger 46 which is connected by a pin or rivet 47 to one end of a link 48. The opposite end of the link 48 is secured by a pin or rivet 49 to rod 35. The two toggle devices are similarly constructed and the parts thereof are arranged for free movement relative to one another so as to cooperate in transmitting a lengthwise movement of rod 35 into a transverse movement of bar element 42 to tilt the longitudinal grid walls 22 and 23 in the manner and for the purpose to be hereinafter more fully described. Rod 35 has a flattened end portion 51 provided with an opening which receives a short shaft 52 (see Fig. 8). The shaft 52 extends through a horizontally elongated opening 53 provided in an upstanding end portion 54 of each longitudinal grid wall 22 and 23, and the shaft 52 has enlarged ends 55 which maintain it in position on the grid walls 22 and 23. A second short shaft 56 extends throuh round holes provided in the upstanding end portion 54 of walls 22 and 23 and has enlarged ends 57 for locking same to the walls 22 and 23. It is to be understood that, since the longitudinal grid walls 22 and 23 are tilted or moved in a manner to be presently described, the fit of shafts 52 and 56 in the openings provided therefor in walls 22 and 23 is loose to permit angular movement of these walls about shafts 52 and 56 without binding. An operating lever 61, which is sub-

stantially U-shaped in cross section, has a handle end 62 and a short end 63 provided with a cam surface 64. Legs 65 (see Fig. 8) depending from lever 61 are provided with round holes 66 which receive shaft 56 to thereby pivotally mount lever 61 upon the grid structure. The legs 65 of lever 61 also have elongated curved openings 67 provided therein which receive shaft 52 and serve as cam means for moving shaft 52; and, consequently, the rod 35 connected thereto lengthwise of the grid structure 21. Lever 61 has a pair of depending lips 69 (see Fig. 2) which rest against the top edge of one transverse grid wall 24 to prevent the lever from becoming bonded to the unitary removable grid construction.

As hereinbefore stated, the longitudinal walls 22 and 23 of grid structure 21 are normally inclined or are disposed at an acute angle while the transverse walls 24 are vertically disposed. This normal inclination of the grid walls to form parallelogram-shaped compartments between the walls 22 and 23 has a definite purpose in the present device as will become apparent in the description of operation thereof. The rigid longitudinal grid walls 22 and 23 are tiltable or movable independently of and relative to the transverse grid walls 24 for breaking ice blocks loose from the walls and for enlarging the compartments located between the grid walls 22 and 23. Walls 22 and 23 are mounted for movement about the top edge of slots 26 in walls 24 and, when moved out of their normal disposition of inclination into a substantially vertical position as shown in Figs. 5, 6 and 7 of the drawings, the parallelogram-shaped compartments 25 therebetween are changed to a rectangular form and these compartments are thereby enlarged.

Assume that water has been frozen in tray 10 in the form of ice blocks in compartments 25, by the cooling effect of an evaporator of a refrigerating system, and the tray 10 has, by manipulation of tray handle 18, been removed from the evaporator and it is now desired to harvest ice blocks from the freezing device. The handle end 62 of operating lever 61 is, therefore, elevated to pivot the lever 61 about shaft 56. This pivoting of lever 61 causes the cam surfaces 64 on the short end 63 thereof to engage the rim 15 at the back of tray 10 and exert a force against the tray. This force applied to the rear wall of tray 10 causes the unitary grid structure 21 together with ice blocks adhering or bonded thereto to be elevated relative to the tray as shown in Fig. 4 of the drawings. It will be noted that this initial movement of lever 61 does not move rod 35 because the walls of elongated openings 67, in the legs 65 of lever 61, are shaped to permit this initial movement of lever 61 by passing freely over shaft 52. After the bond between the ice blocks and tray 10 has been broken, by elevation of the grid structure 21 in the manner described, the grid may be removed from the tray. Therefore, further movement of lever 61, in its single direction of motion, causes the walls at the lower portion of openings 67 to impart a force to shaft 52. Since rod 35 has its end 51 secured to shaft 52, this pulling force moves shaft 52 and also rod 35 lengthwise of the grid structure 21 toward the lever end thereof with shaft 52 moving horizontally within elongated openings 53 provided in walls 22 and 23 as shown in Fig. 5 of the drawings. The lengthwise movement of rod 35 pulls on the links 48 of the two toggle devices, and this pulling force rotates cam members 37 about their pivot pins or rivets 38. Rotation of members 37 causes pins or rivets 41 to exert a thrust to bar members 42 in a direction transverse of the grid structure 21 (see Fig. 6). The transverse movement of bar members 42 causes, since walls of slots 45 provided therein engage walls 22 and 23, a simultaneous tilting movement of the longitudinal grid walls 22 and 23 out of their normal acute angled position or disposition of inclination into a substantially vertical position as shown in Fig. 7 of the drawings. Grid walls 22 and 23 pivot about the top of slots 26 provided in the transverse grid walls 24 to move relative to and independently of these transverse walls. Movement of grid walls 22 and 23 in this manner changes the position thereof and enlarges the compartments located therebetween while, at the same time, moving the blocks of ice to break the bond between them and walls of their compartments. The parallelogram form of the compartments located between grid walls 22 and 23 is thereby changed into a rectangular shape, and this change widens the compartments to permit the loosened ice blocks to freely fall therefrom. It is to be understood, however, that Figs. 5, 6 and 7 of the drawings are merely imaginary views, since the drawings show ice blocks within the grid compartments to illustrate their position relative to the grid walls just prior to being removed from the grid structure 21. The removed ice blocks may fall into a suitable receptacle or upon a table top. Movement of the longitudinal grid walls 22 and 23 does not alter the unitary character of the grid structure, and these walls may be returned to their normal angled disposition by lowering lever 61 into its normal position against the top of the grid structure 21 to again render same ready to be repositioned in a tray. Releasing of ice blocks and harvesting thereof from the grid structure 21 may, if desired, be facilitated by treating or coating walls of the ice block compartments with a waxy or the like substance.

It will be apparent that I have provided an improved freezing device by providing an ice tray grid structure which forms three or more longitudinal rows of ice blocks in a tray and my moving the parallelly extending longitudinal grid walls relative to and independently of the transverse grid walls to effect a novel method of breaking of ice blocks loose from the structure. By providing a movable rigid grid wall structure of the type described, I increase the ice block capacity of a freezing device for household refrigerating apparatuses to thereby reduce the number of such devices ordinarily required in such apparatuses. In my present device I have utilized the desirable feature of employing a single lever operable in one direction of motion only for removing the grid and ice bonded thereto from the tray and for also simultaneously moving certain walls of the grid structure relative to and independently of other walls thereof to effect release of ice blocks from the ice compartments of the grid structure. My improved rigid metal walled device is strong, durable and effective to remove ice blocks without shattering same while at the same time possessing the fast freezing characteristics of metal tray and grid combinations.

While the form of embodiment of the invention as herein disclosed, constitutes 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. A grid for disposition in a freezing tray comprising, a plurality of spaced apart longitudinal walls and a plurality of walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a unitary grid structure defining three or more longitudinal rows of ice block compartments, said longitudinal grid walls extending substantially parallel to one another and being normally inclined with respect to the disposition of said transverse walls to provide ice block compartments therebetween of parallelogram form in one direction of cross-section therethrough, at least one of said longitudinal grid walls being movable relative to said transverse grid walls, and means for moving said one longitudinal grid wall relative to said transverse grid walls out of its normal inclined position to enlarge the compartments between said longitudinal grid walls.

2. A grid for disposition in a freezing tray comprising, a plurality of spaced apart longitudinal walls and a plurality of walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a unitary grid structure defining three or more longitudinal rows of ice block compartments, said longitudinal grid walls extending substantially parallel to one another and being normally inclined with respect to the disposition of said transverse walls to provide ice block compartments therebetween of parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, and means for moving said longitudinal grid walls relative to said transverse grid walls out of their normal inclined position to enlarge the compartments therebetween.

3. A grid for disposition in a freezing tray comprising, a plurality of spaced apart longitudinal walls and a plurality of walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a unitary grid structure defining three or more longitudinal rows of ice block compartments, said longitudinal grid walls extending substantially parallel to one another and being normally inclined with respect to the disposition of said transverse walls to provide ice block compartments therebetween of parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, and mechanism associated with said longitudinal grid walls for imparting a force thereto to simultaneously move same relative to said transverse grid walls out of their normal inclined position to enlarge the compartments therebetween.

4. A grid for disposition in a freezing tray comprising, a plurality of spaced apart substantially uniform single thickness rigid metal longitudinal walls and a plurality of rigid metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a unitary grid structure defining three or more longitudinal rows of ice block compartments, said longitudinal grid walls extending substantially parallel to one another and being normally inclined with respect to the disposition of said transverse walls to provide ice block compartments therebetween of parallelogram form in one direction of cross-section therethrough, at least one of said longitudinal grid walls being movable relative to said transverse grid walls, and means for moving said one longitudinal grid wall relative to said transverse grid walls out of its normal inclined position to enlarge the compartments between said longitudinal grid walls.

5. A grid for disposition in a freezing tray comprising, a plurality of spaced apart substantially uniform single thickness rigid metal longitudinal walls and a plurality of rigid metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a unitary grid structure defining three or more longitudinal rows of ice block compartments, said longitudinal grid walls extending substantially parallel to one another and being normally inclined with respect to the disposition of said transverse walls to provide ice block compartments therebetween of parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, and means for moving said longitudinal grid walls relative to said transverse grid walls out of their normal inclined position to enlarge the compartments therebetween.

6. A grid for disposition in a freezing tray comprising, a plurality of spaced apart substantially uniform single thickness rigid metal longitudinal walls and a plurality of rigid metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a unitary grid structure defining three or more longitudinal rows of ice block compartments, said longitudinal grid walls extending substantially parallel to one another and being normally inclined with respect to the disposition of said transverse walls to provide ice block compartments therebetween of parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, and mechanism associated with said longitudinal grid walls for imparting a force thereto to simultaneously move same relative to said transverse grid walls out of their normal inclined position to enlarge the compartments therebetween.

7. In combination, a tray having a grid disposed therein, said grid comprising a plurality of spaced apart longitudinal walls and a plurality of walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, at least one of said longitudinal grid walls being movable relative to said transverse grid walls, means for elevating said unitary grid structure together with ice blocks adhering thereto relative to the tray, and means for moving said one longitudinal grid wall relative to said transverse grid walls out of its normal inclined position after the unitary structure has been elevated relative to the tray to enlarge the compartments between said longitudinal grid walls and to break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

8. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart longitudinal walls and a plurality of walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable

unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, means for elevating said unitary grid structure together with ice blocks adhering thereto relative to the tray, and means for simultaneously moving said longitudinal grid walls relative to said transverse grid walls out of their normal position of inclination after the unitary structure has been elevated relative to the tray to enlarge the compartments therebetween and to break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

9. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart longitudinal walls and a plurality of walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, and means movable in a single direction of motion for elevating said unitary grid structure together with ice blocks adhering thereto relative to the tray and for also moving said longitudinal grid walls simultaneously relative to said transverse grid walls out of their normal position of inclination after the unitary structure has been elevated relative to the tray to enlarge the compartments therebetween and to break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

10. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart single thickness substantially non-flexible metal longitudinal walls and a plurality of single thickness substantially non-flexible metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, at least one of said longitudinal grid walls being movable relative to said transverse grid walls, means for elevating said unitary grid structure together with ice blocks adhering thereto relative to the tray, and means for moving said one longitudinal grid wall relative to said transverse grid walls out of its normal position of inclination after the unitary structure has been elevated relative to the tray to enlarge the compartments between said longitudinal grid walls and to break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

11. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart single thickness substantially non-flexible metal longitudinal walls and a plurality of single thickness substantially non-flexible metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being movable relative to said transverse grid walls, means for elevating said unitary grid structure together with ice blocks adhering thereto relative to the tray, and means for simultaneously moving said longitudinal grid walls relative to said transverse grid walls out of their normal position of inclination after the unitary structure has been elevated relative to the tray to enlarge the compartments therebetween and to break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

12. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart single thickness substantially non-flexible metal longitudinal walls and a plurality of single thickness substantially non-flexible metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, and means movable in a single direction of motion for elevating said unitary grid structure together with ice blocks adhering thereto relative to the tray and for also moving said longitudinal grid walls simultaneously relative to said transverse grid walls out of their normal position of inclination after the unitary structure has been elevated relative to the tray to enlarge the compartments therebetween and to break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

13. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart single thickness substantially non-flexible metal longitudinal walls and a plurality of single thickness substantially non-flexible metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, said

longitudinal grid walls being movable relative to said transverse grid walls, a lever for imparting a force to said tray to elevate said unitary grid structure and ice blocks adhering thereto relative to the tray, and mechanism having a part thereof engaging said longitudinal grid walls and operable by movement of said lever for imparting a force to said longitudinal grid walls to move same relative to said transverse grid walls out of their normal position of inclination into a substantially vertical position after the unitary structure has been elevated relative to the tray to enlarge the compartments therebetween and break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

14. In combination a tray having a grid disposed therein, said grid comprising a plurality of spaced apart single thickness substantially non-flexible metal longitudinal walls and a plurality of single thickness substantially non-flexible metal walls extending transversely thereto in spaced apart relation along the length thereof, said walls being secured together to form a removable unitary grid structure dividing the interior of the tray into three or more longitudinal rows of ice block compartments, said longitudinal grid walls being substantially parallel to one another and normally inclined with respect to the bottom of the tray to provide the ice block compartments therebetween with a parallelogram form in one direction of cross-section therethrough, said longitudinal grid walls being constructed and arranged for movement relative to said transverse grid walls about a point intermediate the top and bottom edges thereof, a lever carried by said grid structure for imparting a force to one end of said tray to elevate the unitary grid and ice blocks adhering thereto relative to the tray, and mechanism having a part thereof engaging the upper portion of said longitudinal grid walls and operable by movement of said lever for imparting a force to said longitudinal grid walls to move same relative to said transverse grid walls out of their normal position of inclination into a substantially vertical position after the unitary structure has been elevated relative to the tray to enlarge the compartments therebetween and break ice blocks loose from the compartment walls for causing release of ice blocks from said grid structure.

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