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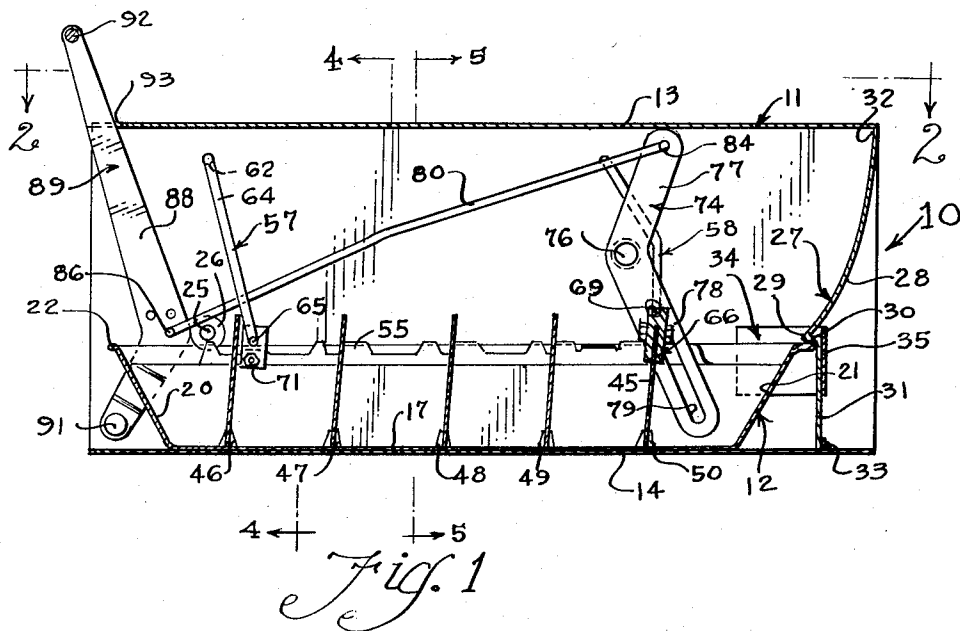
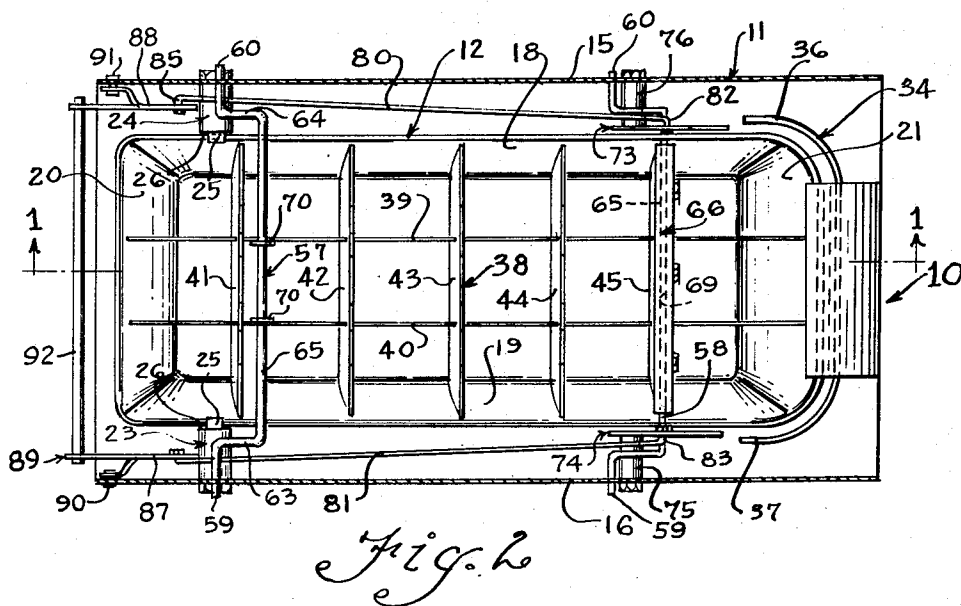
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2,949,020

ICE CUBE SHUCKERS

Filed July 9, 1957

3 Sheets-Sheet 1



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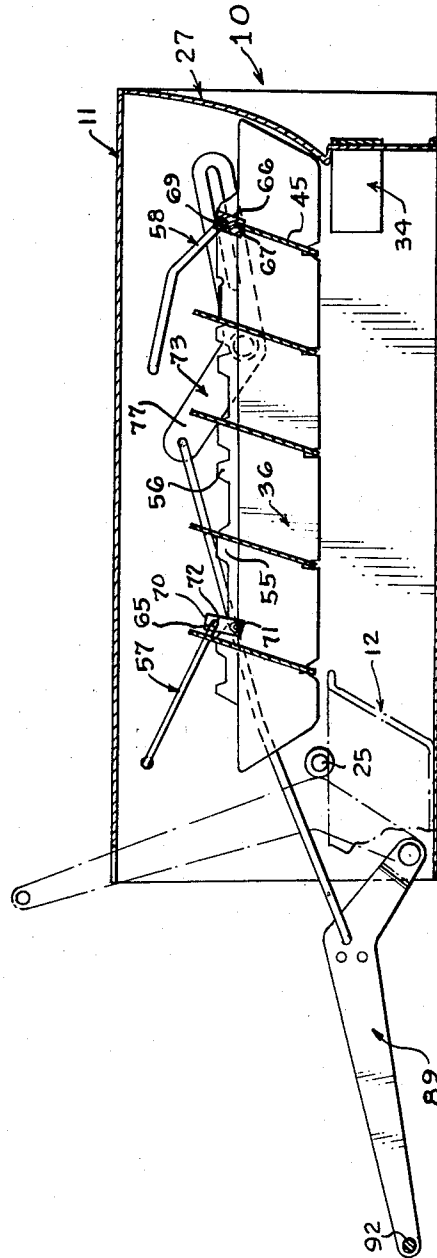


Fig. 3

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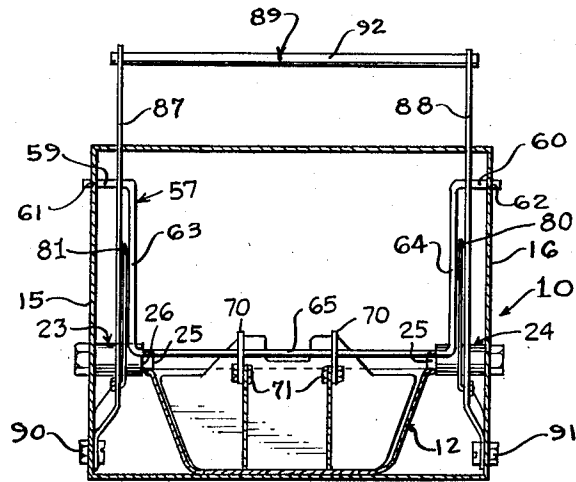


Fig. 4

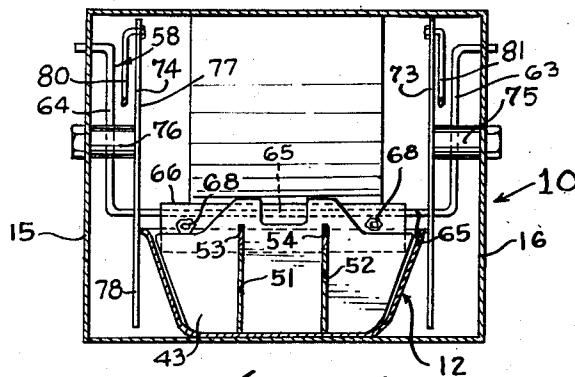


Fig. 5

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2,949,020

ICE CUBE SHUCKERS

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5 Claims. (Cl. 62—366)

The present invention relates to ice cube shuckers, and is particularly concerned with the type of ice cube shucker in which the grid is forcibly withdrawn from the ice tray.

One of the objects of the invention is the provision of a new and improved ice cube shucker which is adapted to be disposed in a freezing evaporator to receive an ice tray filled with water, so that the water in the tray may be frozen therein, the shucker having a grid disposable in the tray during the freezing of the water, and a suitable mechanism for forcibly tilting the grid to break the bond between the grid and the ice cubes in the tray and permitting the grid to be withdrawn from the tray, leaving the ice cubes loose in the tray.

Another object of the invention is the provision of such an improved ice cube shucker, in which the grid is provided with pockets so tapered upwardly that the grid is readily removed from the ice tray and the ice cubes.

Another object of the invention is the provision of an improved ice cube shucker which is simple in construction, durable, capable of economical manufacture, efficient, and adapted to be used for a long period of time without necessity for repair or replacement of any of its parts.

Another object of the invention is the provision of such an improved shucker in which the actuating lever is arranged to deliver the largest mechanical advantage at the start of the shucking motion when the cubes are being loosened by tilting the grid.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings in which similar characters of reference indicate similar parts throughout the several views.

Referring to the drawings accompanying this specification, of which there are three sheets,

Fig. 1 is a vertical sectional view taken on the plane of the line 1—1 of Fig. 2, looking in the direction of the arrows;

Fig. 2 is a horizontal sectional view taken on the plane of the line 2—2, looking in the direction of the arrows, with the top of the housing removed;

Fig. 3 is a view similar to Fig. 1, with the parts in the position which they assume when the ice grid has been elevated and ice cubes have been shucked and removed, with the tray in the course of being replaced under the grid;

Fig. 4 is a vertical sectional view taken on the plane of the line 4—4 of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a sectional view taken on the plane of the line 5—5 of Fig. 1, looking in the direction of the arrows.

Referring to Figs. 1 to 5, 10 indicates in its entirety the ice cube shucker unit, which preferably includes a housing 11, for enclosing the tray 12, and mounting the shucking mechanism.

The housing 11 may be open at both ends of access of the cold air in the evaporator in which the unit is placed, and the housing is preferably made of sheet metal, having a rectangular top 13, rectangular bottom 14,

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and two rectangular sides 15, 16, all secured together at the corners and forming a rectangular box.

The box may be made of a single sheet of metal bent at the corners of the box and having the adjacent ends of the sheet secured together.

The ice tray 12 may comprise a metal member having a plane bottom 17, two outwardly and upwardly extending side walls 18 and 19, and two outwardly and upwardly extending end walls 20 and 21, so that the tray tapers toward the bottom for convenient removal of the cubes.

The tray preferably has an outwardly projecting rim 22, about its top, and this rim is adapted to engage a pair of inwardly projecting metal lugs 23, 24, carried by side walls 15 and 16 at a suitable height to engage the top of the tray at each of its sides.

The lugs 23, 24 may have reduced end portions 25 for engaging the top of the tray, and the lugs have annular surfaces 26 surrounding the reduced end portions 25, which annular surfaces 26 engage the lateral edges of the rim 22 to locate the tray accurately within the box.

At its rear end, that is, the right end in Fig. 1, the housing 11 has a stop member 27, comprising a strip of sheet metal having a curved portion 28, a backward bend 29, a horizontal portion 30, and a downwardly extending portion 31.

Stop 27 is secured in the housing by soldering or welding at its top and bottom at 32 and 33, and the horizontal portion 30 is located to engage above the inner end of the ice tray, that is, above the rim carried by end wall 21.

Horizontal portion 30 of stop 27 prevents the tray from lifting at this end, while the vertical portion 31 prevents the tray from sliding farther inward.

The curved portion 28 defines a path for the grid when it is lifted and permits the stop 27 to be secured to the top wall 13 of the housing 11.

In order to locate the tray laterally in the housing 11 at its inner end, the stop 27 also supports a metal guide 34, comprising a horizontal strip which is welded at its central portion 35 to the vertical portion 31 of stop 27, and extends horizontally beyond each side of the tray.

The end portions of the guide 34 are curved 90°, and the end portions 36, 37 are located on the opposite sides of the tray to aid in the location of the tray centrally between the side walls at this end.

The tray 12 is provided with a grid, indicated in its entirety by the numeral 38, Fig. 2. The grid preferably includes a plurality of longitudinally extending partitions 39, 40, and a multiplicity of transversely extending partitions 41—45.

The ends of the longitudinal partitions 39 and 40 are beveled downwardly to fit the end walls 20 and 21, and the ends of the transverse partitions 41—45 are beveled inwardly to fit the side walls 18 and 19, and, therefore, the end and lateral pockets are all beveled downwardly, and taper on at least one side for convenient removal of the grid and cubes.

The longitudinal partitions 39 and 40 are each provided with a multiplicity of bottom-open, V-shaped slots 46—50, each of which receives a transverse bottom portion of a transverse partition 41—45.

Each transverse partition 41—45 is provided with a pair of vertically extending slots 51 and 52 extending from the lower portion of the partition that is located in the grooves 46—50 to upper ends 53 and 54 respectively of each slot.

The slots 51, 52 are long enough vertically to receive the longitudinally extending partitions 39 and 40 fully therein and also to receive a longitudinally extending actuating member 55, which is located above each of partitions 39 and 40.

The actuating members 55 comprise strips of metal of the same thickness as the longitudinal partitions, and

these actuating strips are provided with a multiplicity of upwardly extending lugs 56, for engaging the transverse partitions 41-45, and causing them to tilt to break the bond between the grid and the ice cubes.

The grid 38 is preferably supported within the housing by a pair of pivoted levers 57, 58, each of which has the form of a U-shaped bail, with outwardly turned end portions 59 and 60 that pass through apertures 61, 62 in the side walls, wherein the U-shaped levers are pivoted.

The legs 63, 64 of each bail extend downwardly to a transverse yoke 65, whereby each of the bail-shaped levers 57 and 58 is pivotally attached to the grid 36.

Various forms of pivotal attachment may be employed, such as, for example, the lever 58 is attached to the grid by a transverse bar 66, which has a slot 67 receiving the upper edge of the last transverse partition 45.

This transverse partition 45 is attached to the bar 66 by through screw bolts 68, Fig. 5, and the yoke 65 of this lever 58 passes through an aperture 69, extending longitudinally of the bar 66.

The bail-shaped lever 57 is attached to the grid 36 by means of a pair of vertical brackets 70, each of which is attached to the actuating strip by means of a through bolt 71, and each of which has an aperture 72 for receiving the yoke 65 of lever 57. Thus ends of the grid are supported by levers 57, 58.

By means of the levers 57 and 58 and their pivotal mounting on the side walls of the housing, the grid 36 is adapted to be moved from the position of Fig. 1 to that of Fig. 3; and the housing preferably supports an actuating mechanism for this purpose.

This actuating mechanism may include a pair of bell crank levers 73, 74 which are mounted on respectively pivot studs 75 and 76 intermediate their ends, the pivot studs being fixedly mounted on the side walls 15 and 16.

The bell crank levers 73, 74 are located outside of the side walls of the tray and are each provided with an upwardly extending portion 77 and with a downwardly extending portion 78.

The downwardly extending portions 78 each have an elongated slot 79, and this elongated slot in each case receives the yoke 65 of the lever 58.

The slots 79 of the two bell cranks 73 and 74 are adapted to guide the bail yoke 65 of lever 58 laterally and upwardly as the bell cranks 73 and 74 rotate from the position of Fig. 1 to that of Fig. 3. This lifts the right end of the grid in Fig. 3, and the grid itself acts like a connecting rod, pivoting the lever 57 at the other end and causing the other or left end (as seen in Figs. 1 and 3) of the grid to follow a similar path to the elevated position of Fig. 3.

In order to actuate the bell cranks 73, 74, the upper portion 77 in each case is connected to the right end, Fig. 1, of connecting rods 80 and 81, as seen in Fig. 2.

Connecting rods 80, 81 have inwardly turned ends 82 and 83, which are pivotally mounted in apertures 84 in the upper portion 77 of each bell crank 73, 74.

The other end of each connecting rod 80, 81 has an inwardly turned end 85, Fig. 2, pivotally mounted in an aperture 86 in each of the side legs 87, 88 of a bail-shaped handle 89.

The side legs 87, 88 are pivotally mounted at their lower ends by studs 90 and 91 respectively on each of the side walls 15, 16, near the bottom thereof, and the side legs of the actuating lever 89 are joined at their upper ends by a transverse handle 92.

The top 13 may be provided with a pair of slots 93 for receiving the legs 87, 88 of the actuating handle 89.

The operation of the present ice cube chucking mechanism is as follows:

With the grid 36 in the position of Fig. 3, the tray 12 may be inserted in the housing by sliding it under the grid 36 and under the guide studs 23, 24 until its inner end is located under the horizontal portion 30 of stop 27.

The tray is then in position to receive the grid, and the actuating lever 89 may be lifted, causing the bell cranks 73, 74 to pivot clockwise to lower the grid into the ice tray.

The grid may then be filled with water to a suitable level and placed in an evaporator or in a freezing chamber, where the ice cubes will be quickly frozen.

When it is desired to shuck or release the ice cubes the actuating lever 89 may be pulled downward, moving counterclockwise in Fig. 1, until it reaches the position of Fig. 3.

The initial movement of the bell cranks 73, 74 tends to cause the actuating strips 55 to tilt the transverse portions 41-45 from the nearly vertical position of Fig. 1 to the more angular position of Fig. 3. This breaks the bond between the grid, ice cubes, and tray and loosens the ice cubes.

The continued motion of the actuating lever 89 causes the grid 36 to be lifted out of the ice tray to the position of Fig. 3, and the loosened ice cubes fall back in the ice tray. Thereafter the ice tray may be slid forward as desired to remove the ice cubes, and when it is desired to refill the ice tray with water it may be slid back under the grid, as is being done in Fig. 3.

The grid may be again lowered into the ice tray by lifting the actuating lever 89, and the taper of the grid combined with the taper of the ice tray will cause the ice tray to center itself about the grid. The ice tray is ready then to be filled with water to be frozen into a new supply of ice cubes.

It will thus be observed that we have invented an improved ice cube shucker, in which the elements of the grid are first tilted to loosen the ice cubes and then the grid is lifted out of the tray, letting the ice cubes fall back into the tray or to remain in the tray.

The present mechanism is simple in construction, sturdy, capable of economical manufacture, and adapted to be used to shuck the ice cubes while the unit is in the evaporator or after the unit has been removed from the evaporator.

While we have illustrated and described a preferred embodiment of our invention, many modifications may be made without departing from the spirit of the invention, and we do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of all changes within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. An ice cube shucker comprising: a support for holding an ice cube tray in an upwardly opening disposition; a grid for dividing the ice cube tray into a plurality of spaces, said grid comprising a plurality of movably associated partitions; a pair of levers associated with the support for pivoting about spaced parallel axes and connected to said grid; and means forcibly swinging said levers to move said grid upward from a disposition within the ice cube tray held in the support to a disposition immediately above the top of the tray permitting removal of the tray from the support, said means moving said partitions prior to movement of the grid from the disposition within the tray proper to break the grid loose from ice in the tray and permit free movement of the grid to the disposition above the tray, said support including means retaining the tray against movement during such movement of the grid.

2. The ice cube shucker of claim 1 wherein said axes are horizontally aligned and the levers are connected to the grid generally equidistantly relative to their respective axes, thereby maintaining the grid generally horizontal at all times.

3. An ice cube shucker comprising: a support for holding an ice cube tray in an upwardly opening disposition; a grid for dividing the ice cube tray into a plu-

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ality of spaces, said grid comprising a plurality of movably associated partitions; a first lever pivotally mounted on the support and connected to said grid; and means operating said lever to move said grid between a disposition within the ice cube tray held in the support and a disposition spaced from the tray permitting removal of the tray from the support, said means including a second lever pivotally mounted on the support and having a slot extending radially of the axis of pivoting of the second lever, said first lever having a portion slidable in said slot for transferring movement of said second lever to said first lever.

4. The ice cube shucker of claim 3 wherein the axes of the levers and disposition of said first lever portion are correlated to cause a maximum mechanical advantage of force from said second lever to said first lever portion to occur when the grid is disposed in the tray.

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5. The ice cube shucker of claim 4 wherein the axis of pivoting of the second lever is between the axis of pivoting of said first lever and said first lever portion and said portion moves through said slot away from the second lever axis during movement of the grid from the disposition within the tray thereby to provide an effectively maximized force during the initial portion of such movement.

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