

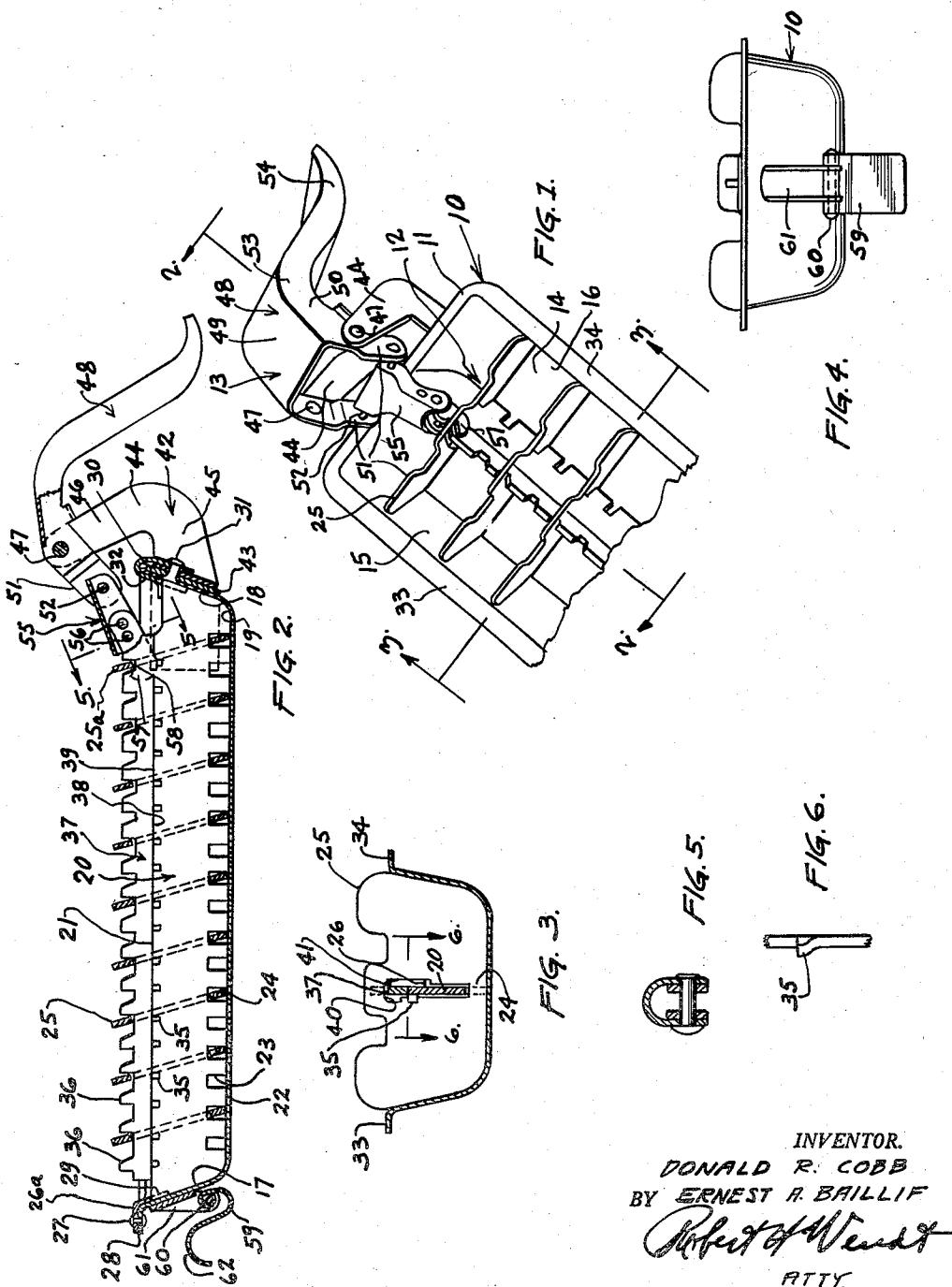
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ICE CUBE EJECTOR MECHANISMS

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ICE CUBE EJECTOR MECHANISMS

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1 Claim. (Cl. 62—365)

The present invention relates to ice cube ejector mechanism and is particularly concerned with the provision of an improved ice cube ejector mechanism adapted to facilitate the ejection of ice cubes by the manipulation of a handle which is accessible from the forward end of the ice cube tray at all times.

One of the objects of the invention is the provision of an improved ice cube ejector mechanism in which the ice cubes are frozen in a tray having a movable grid that is permanently secured in the tray so that the tray may be inverted and the ejector mechanism actuated to cause the cubes to fall into an ice cube bin without dropping the grid.

Another object of the invention is the provision of an improved ice cube ejector mechanism in which the ice tray is provided with a grid having a longitudinal divider plate secured in the tray and a multiplicity of transverse webs forming molded recesses for forming ice cubes and a longitudinally extending connecting rod strip which actuates all of the webs from an inclined position toward a vertical position to break the bond between the ice cubes and the walls of the tray and grid, and to release the cubes from the tray and grid.

Another object of the invention is the provision of an improved ice cube tray and grid of class described having movable grid parts which loosen the ice cubes and having a longitudinally protruding lever which extends outwardly from the front of the ice tray in position to be accessible to the user when the tray is located in the evaporator or in a shucking position, so that the lever may actuate the movable parts of the grid to release the ice cubes into an ice cube bin.

Another object of the invention is the provision of an improved lever actuated shucking mechanism including a lever mounted upon an upwardly extending bracket and connected by one or more connecting links to the grid webs which, in turn, are connected to each other by an elongated actuating strip, the webs being moved to shucking position when the lever is moved upward in upright position so that a downward force may be used on the lever to discharge the cubes when the tray is in the inverted position.

Another object of the invention is the provision of an improved ice cube ejector mechanism including a grid having a longitudinal divider plate and a multiplicity of transverse webs in which the divider plate is provided with laterally projecting portions for supporting the webs in an inclined position and in which an elongated actuating strip is provided with actuating shoulders, each of which is spaced a slightly greater distance from its web

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so that the webs are not actuated simultaneously but successively to loosen ice cubes from the grid and to discharge them one after another into the ice cube bin.

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 single sheet of drawings accompanying the specification,

10 Fig. 1 is a fragmentary view in perspective of an ice cube ejector tray embodying the invention;

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

15 Fig. 3 is a fragmentary sectional view taken on the plane of the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is an end elevational view taken from the left end of Fig. 2;

20 Fig. 5 is a fragmentary sectional view taken on the plane of the line 5—5 of Fig. 2, looking in the direction of the arrows;

Fig. 6 is a fragmentary sectional view taken on the plane of the line 6—6 of Fig. 3, looking in the direction of the arrows.

25 Referring to Figs. 1 and 2, 10 indicates in its entirety the ice cube ejector tray and mechanism which preferably includes an aluminum ice tray 11, a grid assembly 12 and an actuating mechanism assembly 13.

30 The tray 11 has a rectangular bottom 14 and outwardly diverging side walls 15 and 16, and outwardly diverging end walls 17 and 18. The walls are joined to the bottom by an easy bend 19 in each case. This structure facilitates the discharge of the ice formed in the tray because of the 35 fact that the ice will taper to a smaller size at the bottom of the tray.

The grid assembly 12 preferably includes a longitudinally extending division plate 20 of aluminum and of a shape complementary to the longitudinal inside section 40 of the tray but narrower than the depth of the tray having its upper edge at 21.

The division plate 20 is preferably provided along its lower edge 22 with a multiplicity of rectangular slots 23, large enough to receive the lower portion 24 of each web 45 25, which is left after forming the through aperture 26. In each web, the divider plate 20, which happens to be shown in Fig. 2, may be used with double the number of webs employed in Fig. 2, if it is desired to make narrower ice cubes.

50 The divider plate 20 is preferably secured in the tray 11 by a metal clip 26a at the left end which has an attaching flange that is riveted at 27 to the end flange 28 of the tray.

Clip 26a is forked and has each of its legs 29 located 55 on one side of the division plate 20 holding the division plate downward, and preventing its lateral movement.

At the other end the division plate 20 is also held downward by a second U shaped clip 30 secured by a rivet 31 to the end wall 18 and having a slot to provide 60 two legs 32 that engage the division plate 20 to hold it down and prevent lateral movement.

The tray 11 preferably provided on the upper edges of its side walls 15, 16 with the laterally projecting flanges 33, 34 adapted to rest on suitable guides of an ice cube bin with the tray inverted so that the ice cubes may be

shucked or ejected with the tray in the inverted position.

The division plate 20 is provided with a multiplicity of outwardly pinched tongues 35, Fig. 6, one for each transverse web 25 to give the webs support in the position shown in Fig. 2 which they assume during the freezing of cubes. Were it not for these lugs 35, the webs might tilt even farther since they are not supported against tilting by upwardly extending lugs 36 on the actuator strip 37 for a reason further to be described.

The actuator strip 37 comprises a narrow strip of the same thickness as the division plate 20, having a multiplicity of upwardly extending lugs 36 for engaging the webs 25. It happens that the actuating strip 37, as shown, has twice the number of lugs 36 needed, permitting the use of twice as many webs, if desired.

The lower edge 38 of the actuating strip 37 slides on the upper edge 39 of the divider plate 20 and both strips are located in the apertures 26 of all of the webs 25.

In order that the actuator strip 37 may be placed beside the divider plate 20 during the assembly to cause the lugs 36 to clear the upper edge 40 of apertures 26, these apertures 26 are made wider at 41 over an area sufficient to receive the actuator strip 37 plus its lugs.

The ice tray 11 is provided with a bracket 42 at its right end which may be said to be of U shape, since it has a yoke 43 that is riveted at 31 to the end wall 18 and it has two upwardly extending legs, 44 which extend outwardly from the pan at 45 and upwardly at 46.

This locates the pivot end of the bracket legs 44 above the edge of wall 18 for supporting the pivot rivets 47. The actuating mechanism 13 includes a handle 48 which is substantially U shaped in cross section, having a body 49 and side flanges 50 which increase its strength.

The side flanges 50 are pivoted with rivets 47 to the legs 44 of bracket 42. The handle 48 has a pair of bell crank extensions 51 that extend below the pivot 47 and are provided with a transverse riveted pin 52.

The outer end of handle 48 is bent downward at 53 and is curved outward again at 54 to dispose of the required length of the handle for the desired leverage without making the assembly too long.

Pin 52 on handle 48 supports a connecting link 55 which is U shaped in cross section and has its depending flanges provided with apertures for pin 52. The link 55 may have a pair of transverse rivets 56 passing through registering apertures in a pair of hooks 57.

Hooks 57 comprise short metal plates located on opposite sides of the actuating strip 37 in an enlarged or wider aperture 58 for the end web 25a. The hooks extend upwardly at their end portions 58, so that they cannot get out of the apertures 58 when properly located and riveted to the link 55.

59 indicates a short prying lever mounted on a rivet 60 carried by bracket 61 on the other end of the tray, so that the user may push it down on curved portion 62 to pry the tray loose.

With the present mechanism the pry need not be employed, since the handle itself is large enough to permit the breaking of the tray from the surrounding ice on the evaporator. The method of operation of the present ice cube ejector tray is as follows.

The parts are arranged in the position of Fig. 2. The tray is filled with a measured supply of water from a spout controlling the water supply so that there will be no spilling.

The evaporator is preferably maintained about a temperature of 0° F., so that the water is quickly frozen into cubes. The tray is then lifted from the evaporator by means of the handle 48. It is inverted and placed on an ice cube bin having upper side walls for engaging the flanges 33, 34 on the tray, or having suitable guides for this purpose.

The handle is then pushed downward with the tray in the inverted position causing the legs 51 of the handle to move to the right in Fig. 2, pulling on the link 55

and the hooks 57. The hooks 57 actuate the first transverse web 25a which pulls on the actuating strip 37.

The first web pivots from diagonal position toward a vertical position tending to break the bond with the ice cube located in advance of this web and tending to squeeze the ice cubes upwardly.

Since the legs 36 are successively located farther to the left of each web on the actuating strip 37, this actuating strip has its lugs 36 successively brought into engagement with the webs 25 beginning on the right hand side and breaking out the cubes in succession, one after another.

The advantage of this is that it requires less force to loosen one cube. The present mechanism is, therefore, adapted to loosen the cubes one after another using a minimum amount of force. If some of the cubes still remain in the tray, the handle may be moved back and forth a few times which will certainly release them all.

Then the mechanism is moved back to the position of Fig. 2 where the lugs 35 and the lower slots 23 hold the transverse webs 25 all at the same angular tilted position. The tray may then be placed right side up in the evaporator and filled again. The cubes may be harvested as they become frozen.

It will, thus, be observed that we have invented an improved ice cube tray and shucker mechanism which only requires the inversion of the tray over an ice cube bin and the forcing down of the actuating lever. This draws all of the dividing webs from a diagonal position to a vertical position, accomplishing this successively, so that only one web has its cube broken loose at once.

A minimum amount of force is required as distinguished from the levers for releasing ice cubes in the prior art, where the levers are customarily folded over the grid.

The present actuating mechanism projects from the front of the tray and is accessible to the user for shucking the ice cubes, even when the tray itself has been inserted upside down into a recess above a bin.

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

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

An ice cube tray of the ejecting type adapted to be actuated by a lever extending forwardly out of an evaporator, comprising a metal tray having a bottom, side walls, and end walls, the walls being shaped to slope upward and outward, a metal grid permanently mounted in said tray, and comprising a longitudinally extending partition, a metal clip riveted to one end wall of the tray, and having a split retaining flange in the tray, engaging both sides of the partition to secure the partition at this end, a U shaped clip at the other end of the tray embracing the end wall and riveted thereto, and split into legs inside the tray, engaging both sides of the partition to secure it at the other end, a plurality of apertured cross plates receiving said partition in their apertures and tiltable thereon to form a grid with movable cross plates, an actuating strip above said partition and located in the same apertures in the cross plates, and having lugs for engaging and tilting the cross plates, a U bracket carried by the other end of the tray, on the outside of its end wall, and secured by said U shaped clip and rivet, said U bracket having an upwardly and inwardly extending pair of pivot flanges located above the rear end wall of the tray, a wide lever having depending pivot flanges pivoted on said pair of pivot flanges of said bracket, said lever having its inner end pivotally connected to said actuating strip by a link and a hook, and said lever having a wide, flat actuating end, extend-

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ing outwardly from said tray to be accessible for ejecting cubes when the tray is inverted and housed in an evaporator, said lever being adapted to exert a pull on the actuating strip to tilt the cross plates to loosen and eject the ice cubes.

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