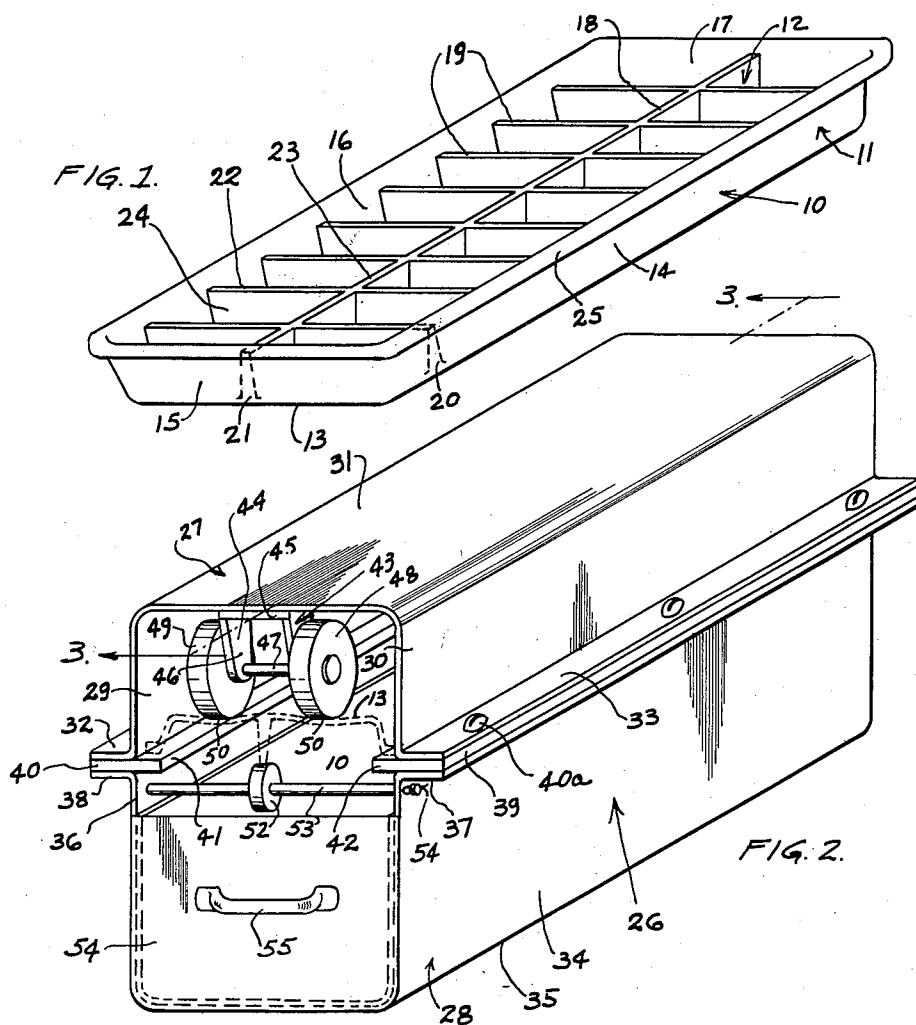
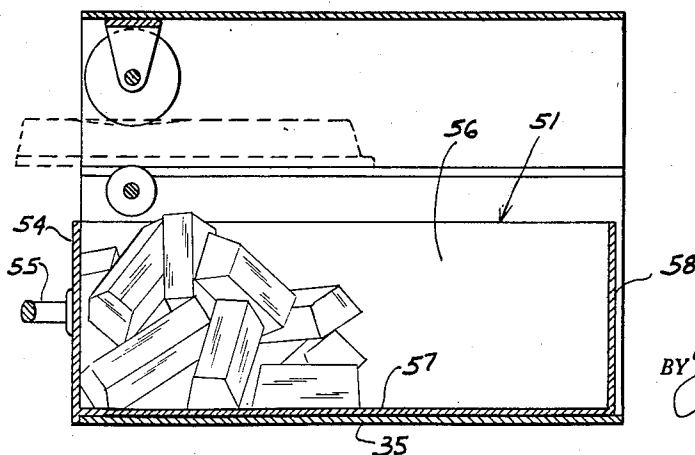


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ICE CUBE-EJECTOR MECHANISM

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ICE CUBE EJECTOR MECHANISM

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1 Claim. (Cl. 62—108.5)

The present invention relates to ice cube ejectors and is particularly concerned with the ejection of ice cubes made in a flexible ice cube tray.

One of the objects of the invention is the provision of an improved ice cube ejector mechanism which is adapted to eject the ice cubes from a flexible tray merely upon the shoving of the tray into the ejector in inverted position.

Another object of the invention is the provision of an improved ice cube ejector which is simple, capable of economical manufacture, positive in its operation, adapted to be manufactured at a low cost, and capable of being installed in any household refrigerator.

Another object of the invention is the provision of an improved ice cube ejector which keeps the cubes dry, so that they will not stick together, and can be stored without adhering to each other.

Another object of the invention is the provision of an improved ice cube ejector assembly for ice cubes of such shape that they are tapered so as to be larger at the top on all four sides and they may therefore be more easily ejected from the tray and grid.

Another object of the invention is the provision of an improved method of ejecting ice cubes which does not involve the use of heat either by electric heating elements or by hot water, thereby keeping the ice cubes dry.

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 this specification,

Fig. 1 is a view in perspective of a preferred form of ice tray and grid used with the invention;

Fig. 2 is a view in perspective of the ice cube ejector with the outline of a tray and grid shown in dotted lines;

Fig. 3 is a fragmentary side elevational view shown along the plane of the line 3—3 of Fig. 2, looking in the direction of the arrows.

Referring to Fig. 1, 10 indicates in its entirety an ice cube tray which is preferably made out of flexible, resilient rubber or plastic, and which includes a pan or tray 11 having a grid 12. The pan 11 has a flat bottom 13, which is flexible; and it has the four upwardly extending integral sides 14, 15, 16, 17.

The sides 14—17 preferably slope outwardly so that the tray or pan 11 is larger at the top and smaller at the bottom, making the ice cubes of similar shape.

The grid 12 may consist of one or more centrally located divider strips 18 and a multiplicity of transverse webs or partitions 19 integrally joined and molded with the central parting strip 18. The grid parts 18 and 19 all taper upwardly from the bottom 20 and 21, where they are integrally joined to the bottom 13 of the tray, being molded with the tray, and all tapering to a narrow edge 22 or 23 at the top.

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The depth of the grid is preferably slightly less than the depth of the tray, so that filling water may run over from one compartment or cube mold 24 to another, filling all of them in one pouring. If the water extends above the grid, the ice cubes will, nevertheless, be scored and separated almost to the top, so that they are easily broken apart.

The tray 11 preferably has an outwardly extending flange 25 extending all around the tray at the top of its sides 14—17.

The ice tray is intended to be filled and frozen in the freezing compartment of any evaporator or household refrigerator.

Referring to Fig. 2, this is a view in perspective. The ice cube ejector 26 preferably comprises a housing formed of an upper half 27 and a lower half 28. The upper half may consist of a sheet metal member having side walls 29 and 30 and a top wall 31; and the side walls have outwardly extending attaching flanges 32, 33. The housing is as long or longer than the ice tray and is wide enough so that an ice tray 10 may slide into the upper part of the housing.

The lower half 28 has a side wall 34, a bottom wall 35, and another second side wall 36; and the side walls are preferably deeper in the bottom half to provide for more ice cube storage. The bottom half also has laterally projecting attaching flanges 37 and 38.

The housing has a pair of longitudinally extending supporting strips 39 and 40 located between the attaching flanges 32, 38 and 33, 37 and secured with the same through bolts 40a which secure the halves of the housing together.

The strips 39 and 40 are wide enough to have an inwardly projecting portion 41, 42 at each side of the housing for support of an ice tray in inverted position, as shown in dotted lines at 10.

The width of the housing relative to the ice tray is such that the ice tray slides in readily except for the resistance caused by the ejecting mechanism, indicated at 43. This mechanism comprises a supporting bracket 44, which may be of U shape, having an attaching flange 45 and a pair of pivot flanges 46.

The pivot flanges have apertures for providing bearings for the roller shaft 47, which carries a pair of cylindrical rollers 48, 49. The rollers are spaced sufficiently so that each roller bears on the central portion 50 of each row of pockets in the ice tray.

The size and location of the rollers 48, 49 is such that the bottom 13 of the ice tray 10 will be deformed and bent downwardly sufficiently to break the bond of the ice cube with respect to the tray and grid and force the ice cubes out of their pockets.

The ice cubes drop into a container 51 located in the lower half 28 of the housing and tend to be distributed in the container by the user moving the container or drawer 51 back and forth as cubes are taken out.

In order that the rollers 48, 49 will not press down the whole bottom 13, but will only depress the bottom of each pocket at 50, the tray 10 is given additional support along the top edge of the divider strip 18 by a roller 52 located to engage the top edge of the divider strip 18 and hold it in the same plane as the inwardly projecting parts 41, 42 which support the edges of the tray.

Roller 52 may be mounted upon a rod or shaft 53 held in place by cotter-pins 54 at each end.

The container 51 is preferably in the form of a drawer having a front wall 54 which is large enough to engage the front edges of the walls 35 and 36. The front facing 54 carries a handle 55 and is fixedly secured to side walls 56 and a bottom wall 57, which slides on the bottom 35 of the housing.

A rear wall 58 closes the rear end of the ice cube container 51.

The operation of the present ice cube ejector is as follows:

The flexible ice tray and grid having the ice cubes frozen in it is inverted and placed on the ledges 41 and 42 and slid into the upper container 27. As each pocket comes under the rollers 48, 49 the bottom of the pocket is deformed and bent inwardly, ejecting the cubes, and thus the cubes are progressively ejected as the tray is advanced.

The amount of effort required to push the tray in is reduced because only two pockets are ejected at one time; and by the time the tray has been fully inserted, all the ice cubes have been ejected, falling into the container 51. The tray may then be removed and used for freezing additional ice cubes; and the ice cubes that have been ejected are ready for immediate use and may be stored indefinitely.

The container 26 is located in the freezing evaporator of the refrigerator.

It will thus be observed that we have invented an improved ice cube ejector which will eject the ice cubes automatically as the tray is shoved into the ejector in inverted position. The ice cubes are ejected progressively so that two or four or six cubes may be ejected and the rest kept in the tray, if desired; and the empty pockets may be refilled with water so that cubes may be frozen again in those pockets.

The present ejector ejects the cubes progressively and keeps them dry so that they will not adhere together and eliminates the necessity for using heat to melt the cubes loose.

While we have illustrated 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 claim.

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

An ice cube ejecting assembly comprising, an ice tray of resilient material having a resilient bottom, side walls

and end walls, forming a tray tapering downwardly toward the bottom on all sides, the said tray being provided with an integral, resilient grid having a central partition extending down the middle of the tray and a multiplicity of transverse partitions extending from the central partition to the side walls, both said partitions being integrally joined to the bottom and side walls and being tapered upwardly, forming ice cube compartments tapering downwardly; a separate ejector housing of substantially rectangular shape having a lower compartment provided with a drawer for receiving ice cubes and having bottom, top, and side walls, said housing supporting a pair of inwardly extending guide rails above the lower compartment and adapted to support an inverted ice tray in an upper compartment on said guide rails, a transverse shaft carried by the side walls adjacent the front end of the housing below said guide rails and above said drawer, and having a roller located with its upper edge in substantially the same plane as the top of said guide rails, said roller engaging the central partition and supporting it at the point of the roller against downward movement of the central partition, and a pair of rollers carried by a shaft and a bracket, said bracket being attached to the top wall above said first-mentioned roller, and the said shaft being of such a length that it supports the latter two rollers in position to engage approximately at the center of each of the ice cube compartments, the said latter rollers being of sufficient size to deform the bottom of each ice cube compartment engaging said latter rollers downwardly when the inverted tray is inserted, causing the successive ejection of the ice cubes from the tapered ice cube pockets into the drawer as the inverted ice tray is slid inwardly between the upper and lower rollers.

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