Dec. 2, 1952 P. EZBA 2,619,807

ICE TRAY CUBE LIFTER

Filed Nov. 20, 1950

Fig. 1.

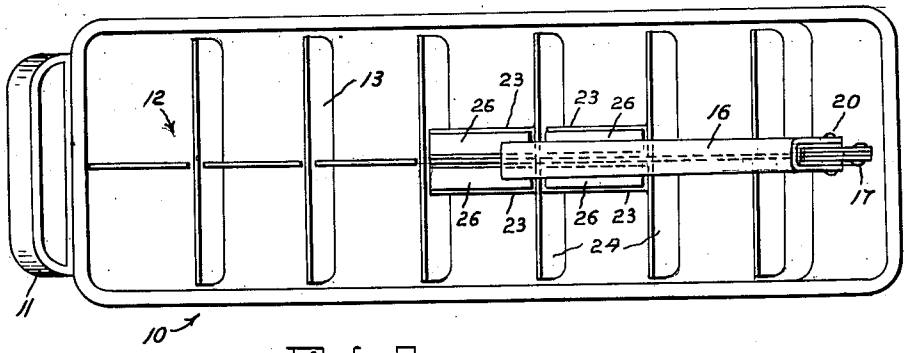


Fig. 2.

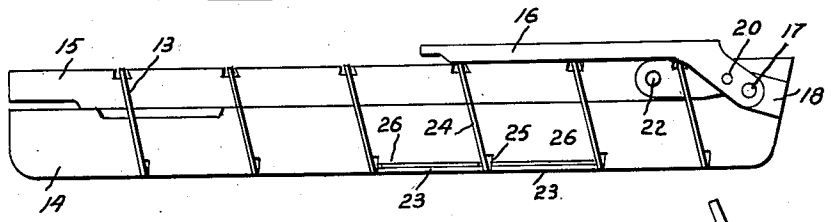


Fig. 3.

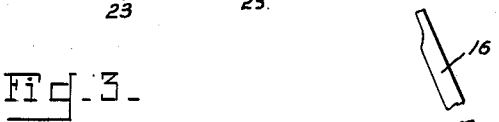


Fig. 4.

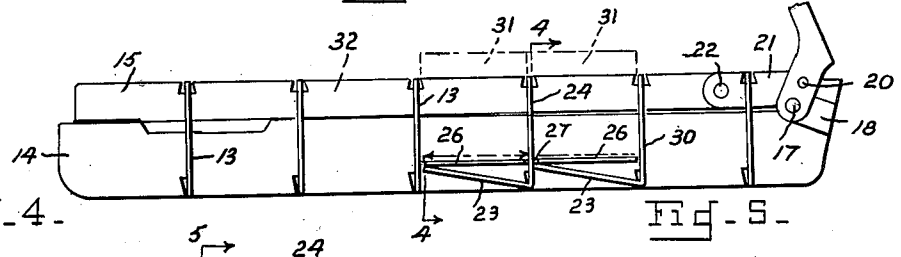
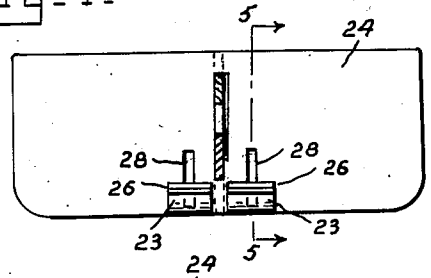
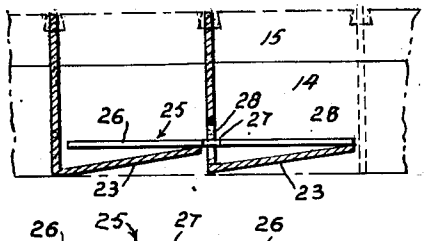


Fig. 5.





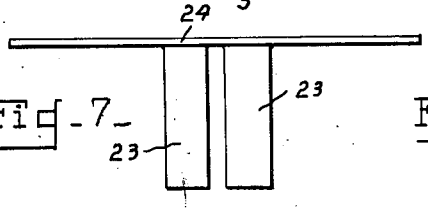


Fig. 7.

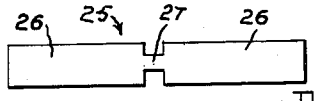


Fig. 6.

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ICE TRAY CUBE LIFTER

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2 Claims. (Cl. 62—108.5)

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This invention relates to an ice tray cube lifter and has for an object to provide an improved cube filter particularly intended for use in ice cube trays of the type conventionally used in mechanical refrigerators in the home.

Another object of this invention is to provide an improved means of lifting the ice cubes of a mechanical refrigerator ice cube tray partly above the level of the top of the tray, so as to make such lifted cubes readily available for removal therefrom without disturbing the remaining cubes, whereby the remaining cubes can be replaced in the refrigerator while in the tray for future use.

A further object of this invention is to provide an improved means for lifting a selected few or at least less than all the ice cubes in an ice cube tray, which lifting means is operated simultaneously with and by the same mechanism that releases or separates the ice cubes from the tray and ice cube grid in the tray.

A further object of this invention is to raise ice cubes partially out of the ice cube tray of a mechanical refrigerator whenever the release handle is pulled up. Sometimes it is desirable to have a few cubes readily available without using the whole trayful of cubes, and it is difficult to do so unless the separating grids are removed from the tray. Then, it is impractical to replace the separators if the remaining ice cubes are not to be likewise removed.

With this invention, ice cube ejectors or lifters are provided for, say, four ice cubes for automatically lifting such four ice cubes above the level of the remaining cubes, when the release handle is pulled up, thus making it possible to readily remove one or more of the four ice cubes and leaving the remaining ice cubes in position within the grid, so that when the handle is moved to the down position, the tray with the remaining cubes may be placed back in the refrigerator for future use.

A further object of this invention is to provide a means for lifting any selected number of ice cubes partially above the sides of the ice cube tray, making such lifted cubes readily available for easy removal while leaving the unused cubes, even those on the lifting means of this invention, in a position to remain in the tray when the release handle is dropped downwardly, so that such ice cube tray may be placed back in the refrigerator with the remaining cubes.

A further object of this invention is to provide an ice cube lifter which may be used for lifting all or less than all of the ice cubes partially from

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the tray and which will lift the cubes vertically without tilting during the raising cycle and, as such, is an improvement over U. S. Patent Number 2,386,064.

Still, a further object of this invention is to provide mechanism for raising or lifting ice cubes from the ice cube tray of the type used in domestic refrigerators in such a manner that the ice cubes will rise vertically from the tray and be easily accessible for removal therefrom, and, if not removed, will drop back into the tray when the release handle which was lifted to operate the mechanism is placed down again.

With the foregoing and other objects in view, as will hereinafter become apparent, this invention comprises the combinations, constructions, and arrangement of parts hereinafter set forth, disclosed, claimed and illustrated in the accompanying drawings, wherein:

Fig. 1 is a top plan view of an ice cube tray and ice cube grid releasing mechanism to which the ice cube lifting mechanism of this invention has been added;

Fig. 2 is a side plan view of the ice cube separator grid and operating mechanism with this invention added in the "down" position;

Fig. 3 is a view similar to Fig. 2 in the ice cube released and lifted position;

Fig. 4 is a sectional view on line 4—4 of Fig. 3;

Fig. 5 is a sectional view on line 5—5 of Fig. 4;

Fig. 6 is a top plan view of a lifter plate; and

Fig. 7 is a top plan view of a grid separator, to which the lifting extensions of this invention have been added.

There is shown at 10 an ice cube tray of conventional tray handle at one end thereof. Within the tray 10 there is provided a grid 12 consisting of the usual transverse separators 13 provided with the usual vertically extending central slots through which extend the lower center dividing bar 14 and the upper sliding center dividing bar 15 in a conventional manner, a release handle 16 being pivoted at 17 through one end of the lower center dividing bar 14 and through a reinforcing strap 18, the release handle 16 being also provided with a second pivot 20 which extends through a double link 21, in turn pivoted at 22 to the upper sliding center dividing bar, such link 21 extending through the slot of the nearest separator 13 to provide the proper leverage for operating the upper sliding center dividing bar when the handle 16 is raised and thus move such upper bar and correspondingly move the separators 13 from the angular position shown in Fig. 2 to the substantially vertical position shown in Fig. 3, thus

breaking the ice cubes free from the grid and from the tray, all in the conventional manner, the mechanism thus far described all being conventional and, while not forming part of this invention, are utilized in the operation of this invention.

In the conventional manner, raising the release handle 16 from the low position shown in Fig. 2 or Fig. 1, to the raised position shown in Fig. 3, conventionally breaks the ice cubes free from the tray and the grid but does not facilitate the removal of the cubes from the tray except by turning the tray upside down or by completely lifting the grid and permitting the cubes to be spilled from the tray. This is satisfactory when all the ice cubes are to be used at once, but if only a few ice cubes are needed the remaining ice cubes are usually wasted as it is very difficult to place the remaining cubes back in the grid within the tray. With this invention, however, a selected number of cubes are lifted above the level of the tray in a vertical position without tilting and such vertically lifted cubes may be readily removed either with one's fingers or with a small pair of ice tongs, leaving the remaining cubes in position within the tray and back on the bottom of the tray again when the handle 16 is moved to the down position, so that such remaining cubes in the tray may be placed back in the refrigerator for future use.

As hereinafter shown, this invention has been arranged for lifting four ice cubes from the bottom of the tray but obviously may be made in different sizes so as to lift a greater or a lesser number of ice cubes from the bottom of the tray. The ice cube lifting mechanism of this invention includes a pair of extension plates 23 integrally secured at such an angle to a grid separator plate 24, that the extension plates 23 will be horizontal while the grid separator plates 13 and 24 are in the usual somewhat angular position shown in Figs. 1 and 2, with the release handle 16 in the down position. As shown in Fig. 7, these extension plates 23 are closely spaced from the center line of the grid separator 24 but obviously may be symmetrically placed a further distance from the center line if desired. Lifting plates 25 are provided consisting of plate portions 26 of substantially the same size as the extension plates 23, the lifting plates 26 being connected together in pairs by a linking neck 27 substantially narrower than the plates 26. The separator plate 24 is provided with a pair of vertically extending slots having a width equal to the width of the plate neck 27 and having a height at least equal to the width of the plate portions 26, as a result of which the lifting plates 25 are assembled by merely being placed through the vertical slots 28 in separator plate 24 until the neck 27 is in such slot, whereupon the lifting plate 25 is rotated to the horizontal position and drops down on top of the extension plates 23. When only four ice cubes are to be lifted, only one of the grid separators 24 is provided with the vertical slot 28, the same grid separator 24 also having the integral plate extensions 23 secured at the bottom, and such plate extensions 23 are likewise secured in a symmetrical position on the next adjacent grid separator 30. Obviously, if six cubes are desired to be released instead of four, it may be made in a six cube size by merely adding another link neck 27 and another plate portion 26, and providing another grid separator and extension plate identical with the grid separator 24 and its extension plate. Both the extension plates 23 and lifting plates 25 must be made of a suitable material, but it will usually be found that the extension plates integral with the grid separator 24 or 30 may be made of the same material as such grid separator, while the lifting plates 24 may be made of a somewhat stronger material, such as stainless steel, the grid separators being conventionally made of aluminum.

In operation, when the release handle 16 is in the down position, as shown in Figs. 1 and 2, the angle of the plate extensions 23 is such to the grid separator that the extension plates 23 lie horizontal against the bottom of the tray, and in this position the lifting plates 25 likewise remain at the bottom of the vertical slots 28 flat against the top of the extension plates 23. When the handle 16 is lifted from the down position of Figs. 1 and 2 to the release position of Fig. 3, the free ends of the extension plates 23 will rise up to the position shown in Figs. 3 and 5, elevating the lifting plate 25 simultaneously to the raised position as shown, the link 27 rising up vertically in the slot 28 which guides it. With the plate 25 thus being supported and lifted at at least two points of contact thereon and guided by the slot 28, it rises vertically, thus lifting the ice cube 31 in such compartments in which the lifting mechanism is located above the level of the tray and above the remaining ice cubes 32 in the remaining compartments which do not have this lifting mechanism. As thus lifted, the ice cubes 31 may be readily removed from the tray by one's fingers or by a small pair of ice tongs, and then when the handle 16 is placed in the down position again, the ice cubes 32, never having been removed from either the grid or the tray, may thus remain in the tray and be placed back in the refrigerator for future use. Likewise, if only one or two of the lifted ice cubes 31 are removed, the remaining lifted ice cubes will descend again when the handle 16 is placed in down position and may be saved for future use, thus the same release handle 16 that operates the dividing bars 14 and 15 and moves the separator grid plate 13 from the angular to the vertical position, to thus break the ice cubes free from the tray, likewise serves to simultaneously operate the ice cube lifting mechanism of this invention in such compartments as this ice cube lifting mechanism is present, making such lifted ice cubes readily accessible. The lifted ice cubes will usually extend about one half inch above the position of the remaining ice cubes and tray and are horizontal in lifted position and not tilted, and hence are readily accessible both for removal from the tray or for dropping back into the bottom of the tray when the handle is placed down again.

While the device has been shown and the structure described in detail, it is obvious that this invention is not to be considered as being limited to the exact form disclosed, and that changes in detail and construction may be made therein within the scope of what is claimed, without departing from the spirit of this invention.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. In combination with an ice cube tray and ice cube releasing grid having a lower center dividing bar and an upper sliding dividing bar extending through transversely extending grid plates and a release handle pivoted to both center dividing bars for releasing all the ice cubes by

moving said center dividing bars relative to each other and simultaneously changing the angle of the transversely extending grid plates, an ice cube lifting mechanism for less than all the ice cubes comprising an extension plate integrally secured to the bottom edges of less than all of said transverse grid plates, said extension plate extending horizontally when the transverse grid plate is in its normal ice freezing position with the release handle in down position, and an ice cube lifting plate extending through a vertical slot in one less than all the transverse grid plates having the integral extension plate and guided by the vertical slot for vertical movement when the end of each said integral extension plate is raised vertically by the angular movement of the transverse grid plate to which it is attached as it is operated by the center dividing bars and operating handle, said lifting plate comprising at least a pair of enlarged plate portions connected by a reduced connecting neck extending through said vertical guide slot in the transverse grid, and an integral extension plate similarly mounted on the transverse grid of the adjacent compartment, thereby providing at least two lifting points at the ends of the integral extension plates beneath the ice cube lifting plate.

2. In combination with an ice cube tray, grid releasing mechanism including transverse grid members movable in a tilting motion to release all the ice cubes, at least a pair of extension plates, each extension plate being integrally secured to the bottom edges of less than all the transverse

grids and extending into the grid compartment at a horizontal angle when the grid is in the ice cube forming position, and an ice cube lifting plate extending through a vertical guide slot in at least one of said transverse grid plates having the integral extension plates and over said integrally secured extension plates whereby tilting movement of the transverse grid plates during the ice cube releasing operation causes the free ends of said integrally secured extension plates to rise up under the bottom of said ice cube lifting plate, thereby lifting said ice cube lifting plate vertically in its guide slot to elevate the ice cube in such compartment, said ice cube lifting plate comprising a pair of enlarged plate portions connected together by a reduced neck, said enlarged plate portions being of a size to fit within an ice cube compartment, said connecting neck being of a reduced size to be vertically guided in the vertical slot in the transverse grid.

PETER EZBA.

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