March 7, 1944. L. L. MALLARD 2,343,565

FREEZING TRAY WITH ICE RELEASE CAM STRUCTURE

Filed Dec. 4, 1941

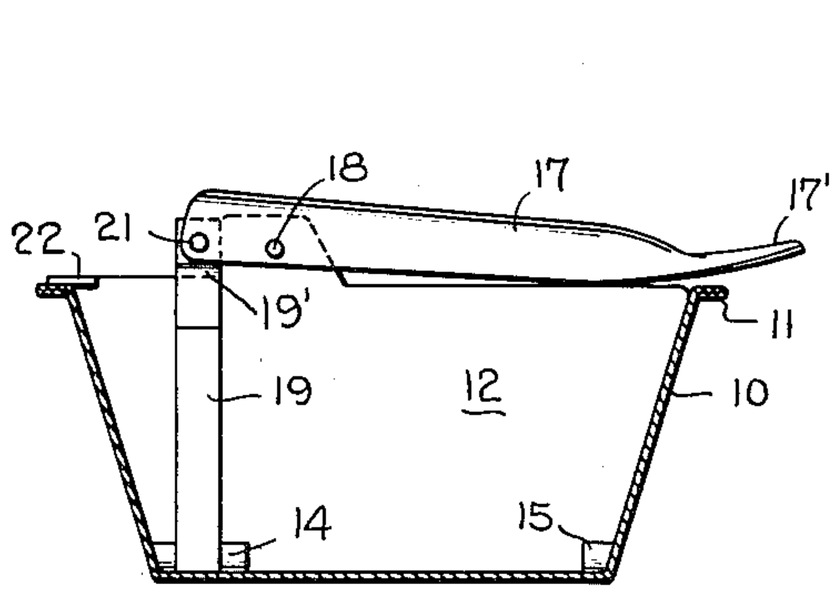


Fig. 1.

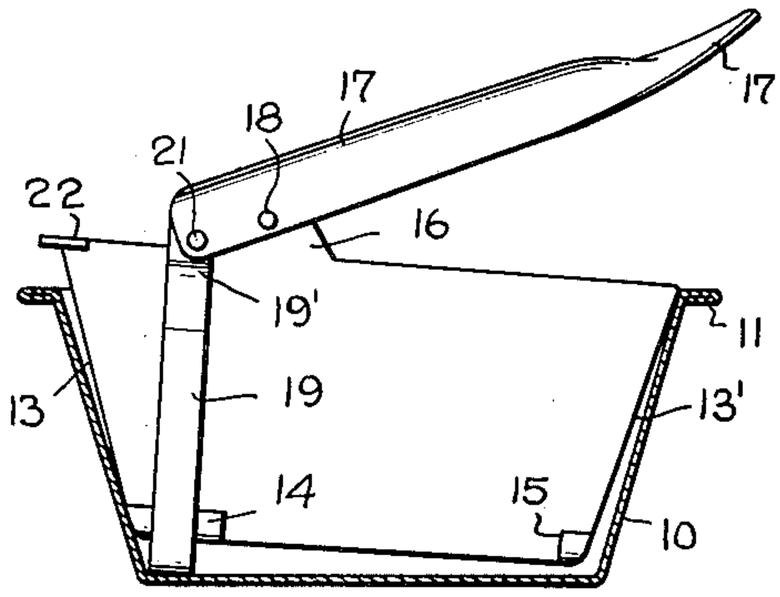
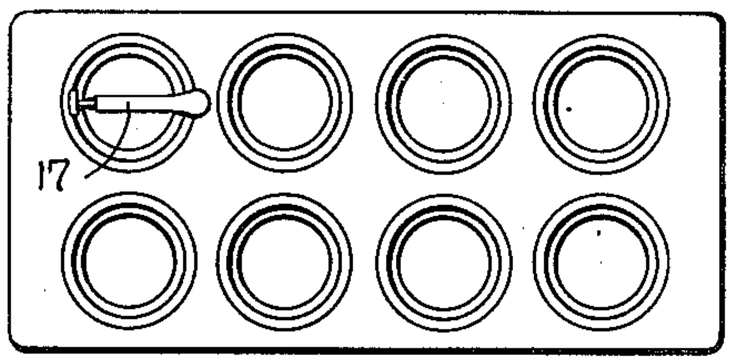


Fig. 2.

Fig. 5.



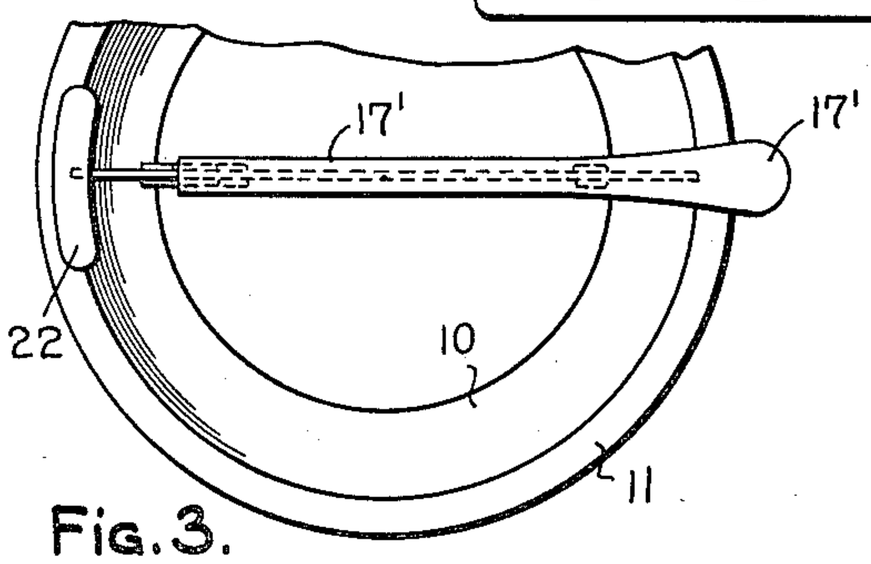


Fig. 3.

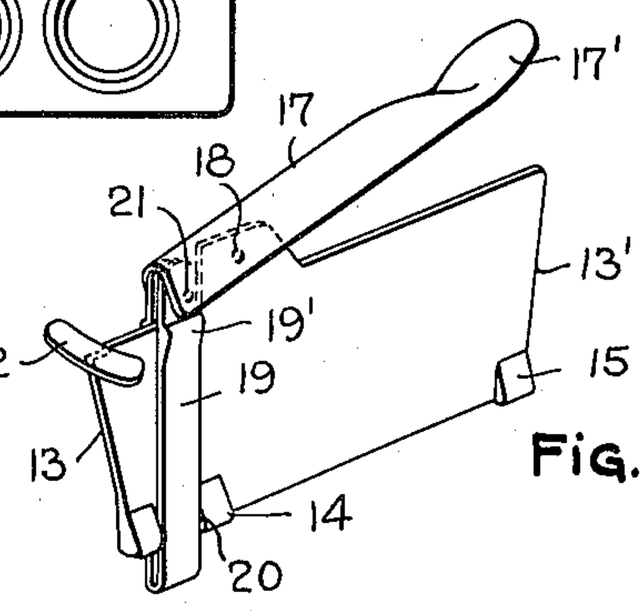


Fig. 4.

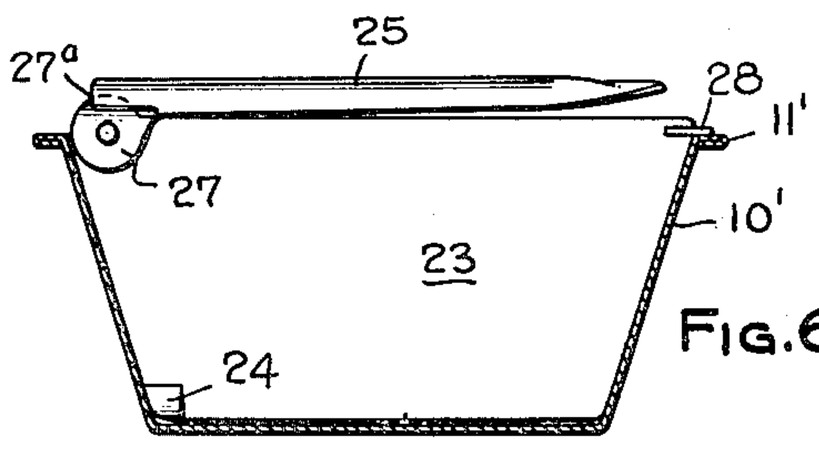


Fig. 6.

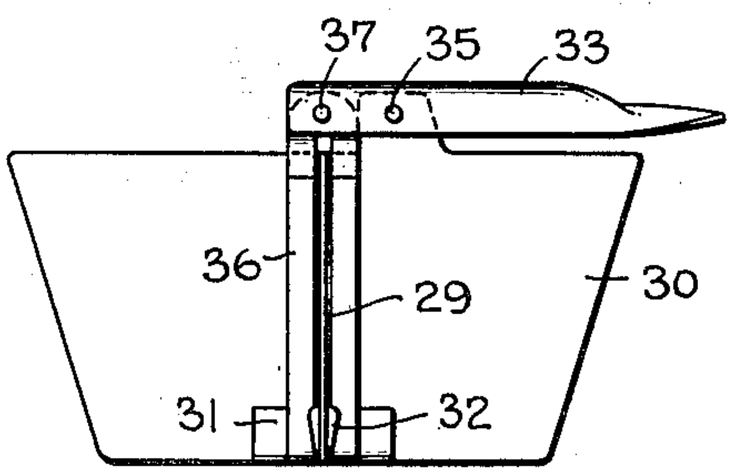


Fig. 8.

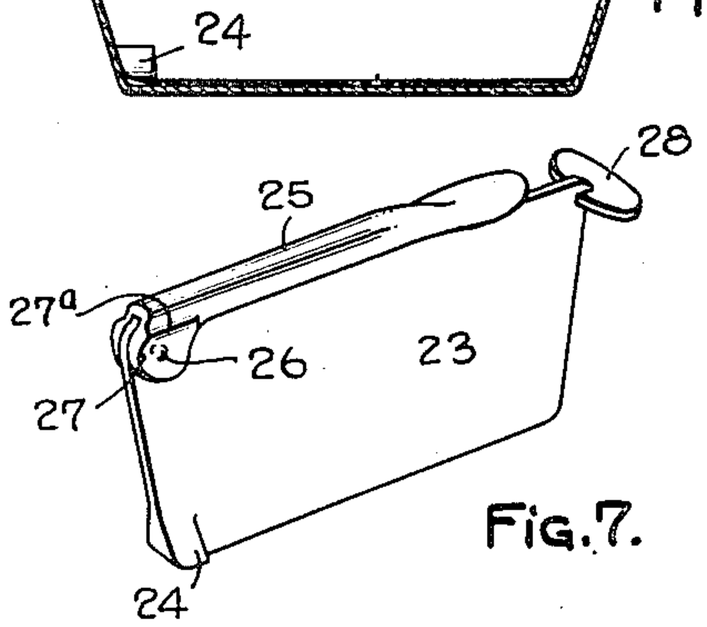


Fig. 7.

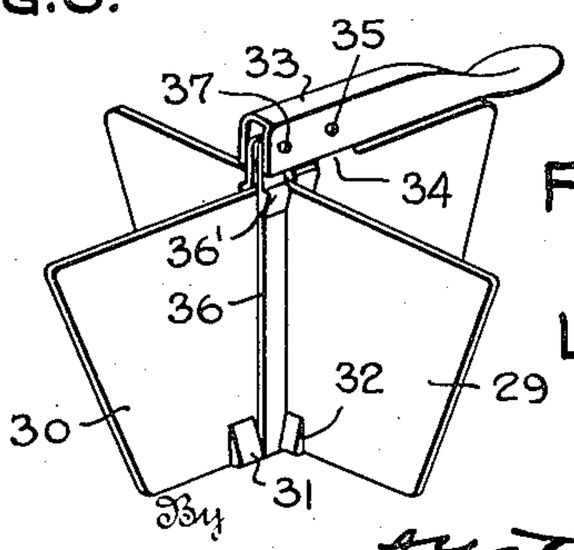


Fig. 9.

Inventor
LOGAN L. MALLARD

By
A. Yates Dowell.
Attorney

Patented Mar. 7, 1944

2,343,565

UNITED STATES PATENT OFFICE

2,343,565

FREEZING TRAY WITH ICE RELEASE CAM STRUCTURE

Logan L. Mallard, Norfolk, Va.

Application December 4, 1941, Serial No. 421,643

8 Claims. (Cl. 62—108.5)

This invention relates to ice forming apparatus and means for releasing ice from the device in which it is frozen.

The problem of removing ice adhering to a mold or pan in which the same is frozen has been attacked in many ways, but a large amount of effort has been directed to more or less mass or multiple removal. The present invention is particularly directed to removal of ice from a single cell, although a number of such cells may be nested together to form an ice tray or multiple mold.

An object of the invention is to provide ice dislodging means for use with individual cups or trays which may be manufactured at a cost so low as to bring it within the novelty range and which will also have an appeal to the purchasing public from a standpoint of utility.

Another object is to provide a highly simplified yet efficient ice dislodging means readily applicable to containers of standardized form to adapt the latter for use as freezing trays.

A further object of the invention is to provide ice dislodging means for use with individual cups or containers having side walls defining an annular freezing chamber, such for example as the conventional cup-cake or muffin tin.

The foregoing and other objects and advantages will become apparent in view of the following description taken in conjunction with the drawing, wherein:

Fig. 1 is a transverse vertical section of a container having the improved ice dislodging means operatively mounted therein;

Fig. 2 is a view similar to Fig. 1 but showing the ice dislodging means in operation;

Fig. 3 is a plan view of Fig. 1;

Fig. 4 is a perspective of the ice dislodging means removed from its container;

Fig. 5 shows the ice dislodging means applied to a tray embodying a plurality of freezing chambers or containers.

Fig. 6 is a transverse vertical section of a container having a modified form of ice dislodging means therein;

Fig. 7 is a perspective of the ice dislodging means of Fig. 6 and

Figs. 8 and 9 are views similar to Figs. 6 and 7 showing a further modification in structure.

Referring to the drawing in detail and first to Figs. 1 to 4, inclusive, an individual freezing container is indicated at 10 having a top lip or flange 11. The container 10 has synclinal side walls, and while this increases the efficiency of the improved ice dislodging means, it is not a necessary adjunct. However, most individual containers of the type under consideration are circular and have their side walls sloping outwardly from the bottom to the top of the container. These individual containers may be the conventionally cup-cake pan or muffin tin.

The ice dislodging means comprises a partition 12 which may be made out of thin sheet metal or other suitable material with its opposite end edges following the contour of the pan as indicated at 13 and 13'. The lower edge of the partition is formed with front and rear lateral projections defining wedges 14 and 15 which are preferably made integral with the partition and are embedded in the ice when the fluid is frozen. The top edge of the partition is formed with a projection 16 to which is pivoted a lever 17, which also may be made of sheet metal bent to form a channel which receives the projection 16 and a pivot 18. The one end of the lever is shaped as a handle 17'. The operating end of the lever has pivoted thereto a push rod or link 19 which may be a metal strap bent to form a loop which is inserted over the lower front edge of the partition 12 and engages in a recess 20 formed between the projections 14, note Fig. 4. The upper end of the link is pivoted to the end of the lever 17 at 21. It will be noted that when the lever 17 is actuated the partition 12 is caused to reciprocate vertically within the link 19. The upper extremity of the link 19 is formed with lateral projections defining wedges 19' inclined counter to the wedges 14 and 15 and coacting with the latter to dislodge the ice blocks.

At one of its upper corners, the partition 12 is preferably provided with a flat nib 22 which is adapted to contact the flange 11 of the container and steady the partition as well as center it within the container. The lower edge of the partition may have a slight clearance with respect to the bottom of the container so that the partition is partly suspended from the nib.

Figs. 1, 2 and 4 show the operation of the ice dislodging means. The lever 17 when in idle position is down as indicated in Fig. 1, the partition 12 at this time resting adjacent or on the bottom of the container. After the water or other material has frozen and it is desired to release same, the lever 17 is raised as shown in Fig. 2, thereby forcing the bottom of the link 19 against the bottom of the container or pan and at the same time prying upwardly on the partition 12 causing the latter to rise and elevate the ice and at the same time separate the latter from the container as well as the side walls of the partition, due to the

wedge-shaped or anticlinal contour of the projections 14 and 15 and 19'. Since the lever 17 has a fulcrum action it may be caused to exert a relatively strong pull on the partition 12 with a minimum of manual effort.

Fig. 5 shows a freezing tray 22 formed with a plurality of cells or containers each provided with an individual ice dislodging means. This figure also illustrates how an ordinary cake pan may be converted into an ice cube tray, the ice dislodging mechanism being readily applied to effect the transition and permitting selective removal of ice cubes from the tray. It will be understood that the tray 22 may be of a size such as will adapt it to the conventional evaporator shelf.

Figs. 6 and 7 show a modified type of ice dislodging means. In this instance the container is similar to that shown in Figs. 1, 2 and 3 and is given similar reference numerals with the exception that a prime has been added. The partition in this instance is indicated at 23 and at its lower edge is provided with lateral wedge-shaped projections 24 which function in a manner similar to the projections 14 and 15 of Figs. 1 to 4, inclusive. A lever 25 is provided and has its one end pivotally connected to the upper front edge of the partition 23 as at 26, the said lever at its operating end being formed with a cam portion 27 adapted to engage the ice block or mass when the lever is raised or swung upwardly to raised position. The cam portion 27 is preferably cammed laterally or is wedge-shaped, as indicated at 27*a*, so as to not only cam downwardly against the ice but to also split or divide the latter when cam 27 is rotated. The opposite edge of the partiton 23 is provided with a nib 28 which functions in a manner similar to the member 22 of Figs. 1 to 4, inclusive.

To effect release of ice with the mechanism shown in Figs. 6 and 7, it is only necessary to raise the lever 25 and rotate the cam 27 in the ice block, whereupon the partition 23 is raised and at the same time separating action is exerted on the cubes by portion 27*a* of cam 27 and projections 24.

Figs. 8 and 9 illustrate the ice dislodging means provided with a plurality of grid sections or partitions and whereby a single container may be separated into four separate freezing compartments, said partitions being indicated at 29 and 30. The lower edges of the partitions are provided with lateral wedge shaped projections 31 and 32. A lever 33 is pivoted to a projection 34 formed on the upper edge of the partition 30 as at 35. A link or strap 36 is pivoted at 37 to the front or operating end of the lever and extends downwardly and straddles the partitions 29 and 30 between the projections 31 and 32, the latter being so interconnected as to resist separation when an upward pull is exerted thereon. The upper extremity of link 36 is provided with lateral projections 36' defining wedges which coact with projections 31 and 36 to separate the ice mass or block.

The operation of this form of mechanism is substantially similar to that first described. When the lever is raised, the lower end of the link or strap 36 is jammed against the bottom of the pan, whereupon the partitions are elevated, freeing the cubes from the sides of the pan and at the same time dislodging the ice from the partitions.

It will be seen that the improved cube dislodging mechanism herein described permits an ordinary cake or muffin tin to be converted into an ice freezing tray or container with the advantages of cube formation and free removal. The ice dislodging unit may be manufactured at a cost sufficiently low to permit its use as an advertising medium or as a favor or prize in the sale of merchandise, while at the same time it is remarkably effective in performing its function.

It will be understood that certain limited changes in construction and design may be adopted without departing from the spirit or scope of the invention as defined by the appended claims.

What is claimed is:

1. Means for dislodging ice from a container having annular inner synclinal walls defining a chamber in which water or other fluid is frozen, comprising a partition adapted to span said chamber and be submerged in the fluid during freezing, said partition having anticlinal projections on the lower edge thereof to be embedded in the ice adjacent the bottom of the container, a lever pivoted to the upper edge of the partition and having a handle portion adapted to overlie said edge when the lever is in idle position, and means connected to the operating end of the lever adapted to cam against the ice mass when the lever is raised and thereby force the partition upwardly and dislodge the ice from the container and center the partition in the container.

2. As an article of manufacture, mechanism adapted for removable placement in an annular chamber in which water or other fluid is frozen, comprising a thin partition having lateral projections adjacent the lower edge thereof to be embedded in the ice adjacent the bottom of the container, a lever pivoted to the upper edge of the partition and having a handle portion adapted to align with and overlie the said edge when the lever is in idle position, the operating end of the lever having means connected thereto adapted to press against a wall of the container when the lever is raised and force the partition upwardly to thereby dislodge the ice from the container and partition, one of the upper corners of said partition being provided with a centering member adapted to overlie the upper edge of the container when the partition reaches its lowermost position in said container.

3. Means for dislodging ice from a container in which water or other material is frozen, comprising a partition adapted to span the interior of the container and be submerged in the fluid during freezing, said partition having oppositely projecting members on its lower edge to be embedded in the ice adjacent the bottom of the container, a lever pivoted to and overlying the upper edge of the partition, and a link pivotally connected to the operating end of the lever and extending down for contact with the bottom wall of the container whereby when the lever is raised said member is pressed against the bottom of the container to force the partition upwardly and dislodge ice from the container.

4. Means for dislodging ice from a container having an annular chamber with synclinal walls in which water or other fluid is frozen, comprising a relatively thin partition adapted to span the interior of the container and be submerged in the fluid during freezing, said partition having anticlinal wedge-shaped projections on the lower edge thereof to be embedded in the ice adjacent the bottom of the container, a lever pivoted to the upper edge of the partition, and a link pivotally connected to the operating

end of the lever and looped around the lower edge of the partition with its lower end adapted for abutting engagement with the bottom of the container adjacent said projections, said lever when raised forcing said link downwardly against the bottom of the container and lifting said partition to effect dislodgment of the ice from the container.

5. Means for dislodging ice from a container having a chamber in which water or other fluid is frozen, comprising a partition adapted to span the interior of the container and be submerged in the fluid during freezing, said partition having projections on its lower edge to be embedded in the ice adjacent the bottom of the container, and a lever pivoted to the upper edge of the partition, the operating end of the lever being formed with a cam portion to engage the ice mass when the lever is raised to thereby force the partition upwardly and dislodge ice from the container.

6. Means for dislodging ice from a container having a chamber in which water or other fluid is frozen, comprising a partition adapted to span the interior of the container and be submerged in the fluid during freezing, said partition having projections on its lower edge to be embedded in the ice adjacent the bottom of the container, and a lever pivoted to the upper edge of the partition, the operating end of the lever being formed with a cam portion to engage the ice mass when the lever is raised to thereby force the partition upwardly and dislodge ice from the container, said cam portion being shaped to also exert opposed lateral pressures on the ice mass at opposite sides of the partition.

7. In combination with a container having walls defining a chamber in which water or other fluid may be frozen, a partition spanning said chamber and dividing the latter into a plurality of freezing compartments, said partition having wedge-shaped projections on opposite sides thereof to be imbedded in the ice during freezing of the fluid, a lever pivoted to the partition and adapted to overlie the latter when in idle position, and a link connected to the operating end of the lever and extending downwardly adjacent said partition to abut the bottom of the container when the lever is raised and force the partition upwardly and dislodge ice from said chamber, said link having lateral wedge-shaped projections operating counter to said first-named projections.

8. Means for dislodging ice from a container in which water or other material is frozen, comprising a partition adapted to span the interior of the container and be submerged in the fluid during freezing, a lever pivoted to and overlying the upper edge of the partition, and a link pivoted to the operating end of the lever and extending down for contact with the bottom wall of the container whereby when the lever is raised said link is urged against said wall to raise the partition and dislodge ice from the container, said link having wedge-shaped projections adapted to facilitate separation of the ice from the partition upon downward movement of the link.

LOGAN L. MALLARD.