March 26, 1968 G. J. SALLADE 3,374,982

ICE CUBE TRAY

Filed Nov. 24, 1965

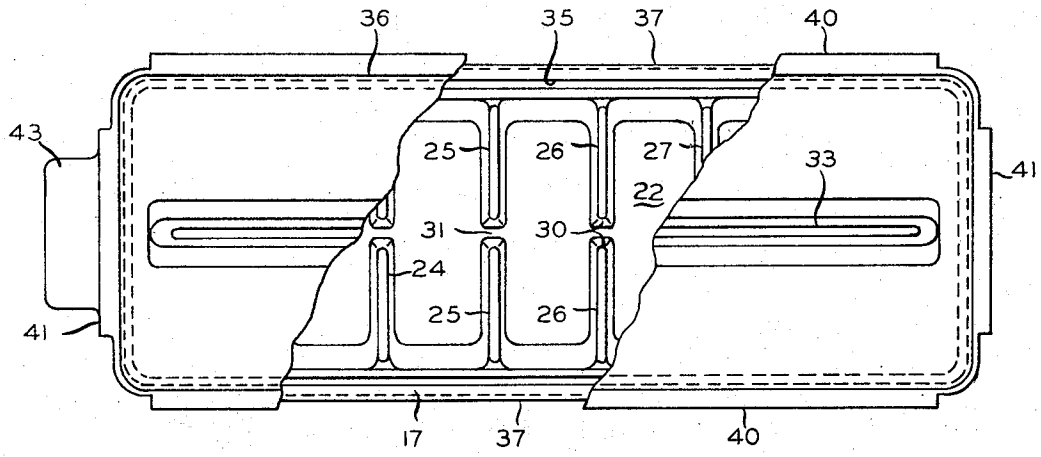


FIG. 1.

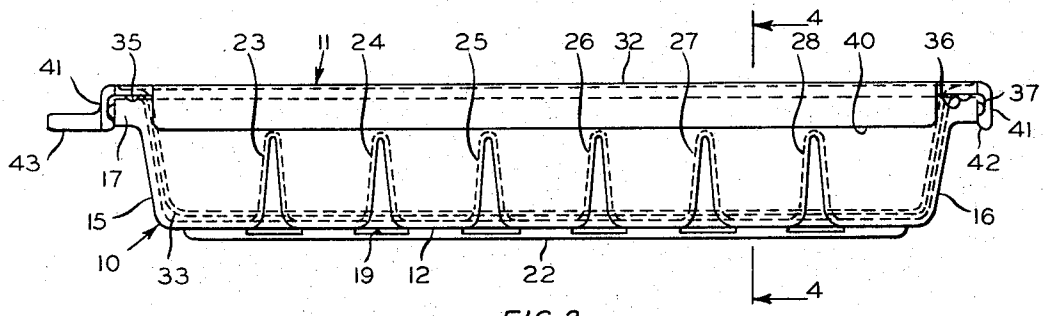


FIG. 2.

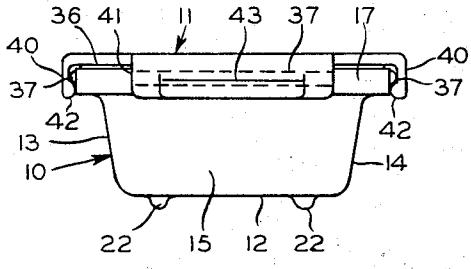


FIG. 3.

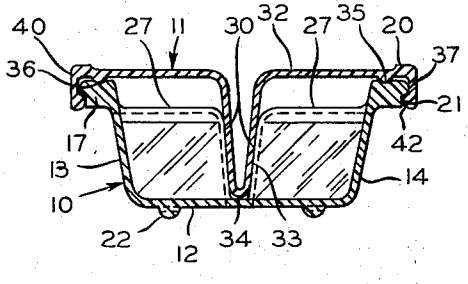


FIG. 4.

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ICE CUBE TRAY

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This invention relates generally to improvements in an ice cube tray, and more particularly to an improved item of this type that is odor-proof and spill-proof.

An important objective is achieved by the provision of a plurality of spaced partitions in adjacent side by side rows in an ice cube tray, the partitions of one row being spaced laterally from the partitions of the adjacent row to provide an intervening recess, and by the provision of a lid attached to and disposed over the tray, the lid including a depending rib interfitting the recess and cooperating with the partitions to form freezing compartments.

Another important objective is attained in that each partition extends inwardly of the tray from the bottom wall and one side wall, and that each partition is hollow, opening through the bottom wall and associated side wall, and in that the rib of the lid is hollow, opening through the lid, whereby all the walls defining the freezing compartments are exposed directly to the ambient medium.

Yet another important object is afforded by the structural arrangement in which the partitions of adjacent rows have inner margins defining the sides of the intervening recess, and in which the depending rib of the lid interfits the recess and extends closely adjacent the bottom wall of the tray and the inner margins of the partitions.

An important object is realized by the structural arrangement in which the partitions of one row are transversely aligned with, yet spaced laterally from the partitions of the other row to provide the intervening recess that is occupied by the depending lid rib upon closure of the tray by the lid for more effective insertion of the lid rib between the partitions.

Another important objective is provided by constructing the partitions of adjacent rows in the tray with opposed inner margins that are inwardly divergent from the bottom wall, the inner partition margins defining the intervening recess, and by tapering the depending lid rib to conform to and engage the inner partition margins upon placement of the lid on the tray, whereby to effect easy separation of the rib from ice cubes formed in the freezing compartment upon removal of the lid.

Still another important objective is achieved by constructing the tray so that the ice cubes are readily removable from their freezing compartments. This advantageous result is provided by constructing each partition with opposed compartment walls that taper inwardly from the bottom wall, and by constructing the tray with opposed side walls that are divergent from the bottom wall.

An important objective is attained by providing an effective sealing connection between the lid and the tray which prevents the contents of the tray from spilling and which precludes odor from contaminating such contents. This sealing connection is provided by the provision of a peripheral groove on either the peripheral tray rim or on the underside of the associated lid, and by the provision of an interfitting and coacting peripheral tongue on the other part. A fastening means selectively interconnects the lid and tray and holds the tongue sealingly in the groove.

Another important objective is afforded by the provision and structural cooperation of the component parts comprising the fastening means interconnecting the lid and tray, whereby to provide an effective tray closure and seal. Specifically, the lid includes laterally resilient,

depending flanges having inwardly extending lock abutments that snap under and against laterally projecting, lock shoulders provided on the tray rim, whereby to interconnect the lid and tray and to hold the tongue sealingly in the groove.

Other important advantages are realized in that the lock shoulders and flange abutments have interconnecting cam surfaces holding the tongue sealingly in the groove and fastening the lid to the tray under inward pressure of the resilient flanges.

It is an important object to provide an ice cube tray that is simple and durable in construction, economical to manufacture, efficient in operation and which can be utilized by any one with little or no instruction.

The foregoing and numerous other objects and advantages of the invention will more clearly appear from the following detailed description of a preferred embodiment, particularly when considered in connection with the accompanying drawing, in which:

FIG. 1 is a top plan view of the ice cube tray with the lid partially cut away to show the interior construction clearly;

FIG. 2 is a side elevational view;

FIG. 3 is an end elevational view as seen from the left of FIG. 2, and

FIG. 4 is a cross-sectional view taken on line 4—4 of FIG. 2.

Referring now by characters of reference to the drawing, it will be understood that the present device consists of a tray generally indicated at **10**, and a lid referred to at **11** constituting a closure for the tray **10**.

The elongate tray **10** includes a bottom wall **12**, a pair of integral, opposed side walls **13** and **14** extending divergently from the bottom wall **12**, and a second pair of side walls **15** and **16** constituting the ends of the tray, formed integral with and extending divergently from the bottom wall **12**.

Extending laterally outward from the two pair of opposed walls **13–14** and **15–16** is a peripheral rim **17**. The rim **17** includes a top face **20** and a side margin **21**.

Formed integrally with and depending from the underside of bottom wall **12** are a pair of longitudinally disposed, parallel ribs **22**, of substantially hemispherical cross section, on which the tray **10** seats to prevent sticking of the tray **10** in the refrigerator.

A plurality of partitions **23–28** inclusive are arranged in horizontally spaced, parallel relation, and are arranged in adjacent side-by-side rows. The corresponding partitions **23–28** of adjacent rows are transversely aligned. The partitions **23–28** of one row extend inwardly of the tray **10** from the bottom wall **12** and one side wall **13**, while the partitions **23–28** of the other row extend inwardly of the tray **10** from the bottom of wall **12** and the opposite side wall **14**.

It will be understood that these partitions **23–28** are hollow, opening through the bottom walls and the associated side walls **13** and **14** respectively, thereby exposing all internal wall portions of the partitions **23–28** to the outside, ambient air.

A small rectangular notch **29** is provided in each bottom rib **22** at each partition **23–28** to facilitate molding inserts (not shown) used to form such partitions **23–28**.

The partitions **23–28** of adjacent rows have opposed, inner margins **30** that are laterally spaced to define a longitudinal, intermediate recess **31**. Specifically, the inner partition margins **30** of adjacent rows are inwardly divergent from the bottom wall **12** for reasons which will later appear upon more detailed description of parts. This intermediate recess **31** extends longitudinally the length of the tray **10** between the tray walls **15** and **16**.

The lid **11** includes an elongate, closure panel **32** of

sufficient size to cover the top opening provided by tray **10**. Formed integrally with and depending from the center of the lid panel **32** is a longitudinal rib **33**. The rib **33** is tapered to conform to and engage the inner margins **30** of the partitions **23–28** when inserted into the intermediate recess **31** upon closure of the tray **10** by the lid **11**. The rib **33** is of sufficient depth so that its extremity **34** lies closely adjacent to the bottom wall **12** of tray **10**. When the lid rib **33** is interfitted in the recess **31**, the rib **33** cooperates with the partitions **23–28** of adjacent rows to form separate freezing compartments.

As is best seen in FIG. 4, the lid rib **33** is hollow, opening through the panel **32** to expose the tapered walls defining the rib **33** directly to the ambient air. It will be importantly noted that all of the walls defining the freezing compartment are relatively thin and are exposed directly to the ambient air, thereby providing a faster freezing action on the water contained in the compartments.

A sealing connection is provided between the tray **10** and the lid **11** to prevent the contents of the tray **10** from spilling and to prevent outside odors from contaminating the tray contents. This sealing connection includes a peripheral groove **35** formed in the top face **20** of the tray rim **17**. Disposed and interfitted in the groove **35** is a compatible and coacting peripheral tongue **36** formed integrally with and depending from the underside of the closure panel **32** of lid **11**. The groove **35** is slightly smaller than the coacting tongue **36** so as to provide a seal between the tongue **36** and rim **17** when the tongue **36** is pressed into the groove **35** against the rim **17**.

A fastening means is provided to interconnect the lid **11** to the tray **10** selectively. This fastening means includes laterally projecting, lock shoulders **37** on the peripheral side margin **21** of rim **17**. Preferably, the lock shoulders **37** are rounded to form a cam surface.

The lid **11** is provided with integral and depending, opposed side flanges **40**, and with corresponding, opposed end flanges **41**. The flanges **40** and **41** are laterally resilient, tending to assume an inwardly inclined position. Each of these depending flanges **40** and **41** have an inwardly extending lock abutment **42** adapted to fit under and engage a cooperating lock shoulder **37** provided on the tray rim **17**. The lock abutments **42** are rounded to form cam surfaces coacting with and engaging under pressure the compatible cam surfaces formed by the lock shoulders **37**.

The lid **11** is placed over the tray **10** with the lock abutments **42** sitting on the lock shoulders **37**. As the lid **11** is pressed on the tray, the coacting cam surfaces of the lock shoulders **37** and lock abutments **42** cause the lid flanges **40** and **41** to spread outwardly against the resilient force of such flanges **40** and **41**. When the lid is fully closed, the resiliency of the lid flanges **40** and **41** causes the lock abutments **42** to snap under and against the lock shoulders **37**, thereby interconnecting the lid **11** and tray **10** and holding the peripheral tongue **36** sealingly in the peripheral groove **35** under pressure exerted by the resilient flanges **40** and **41**.

Extending horizontally outwardly from one of the end flanges **41** is an integral handle **43** adapted to be gripped to lift the lid **11** from the tray **10**. Upon exerting a lifting force to the handle **43**, the interengagement of the rounded cam surfaces of the lock abutments **42** on flanges **40** and **41** and the lock shoulders **37** on the tray rim **17** causes the side and end flanges **40** and **41** to spread outwardly until operatively disconnected.

The side and end flanges **40** and **41** of lid **11** are relieved at the corners to prevent any stretching or tearing action of the lid material as the flanges are resiliently flexed laterally incident to attachment and detachment of the lid **11** to the tray **10**.

It is thought that the functional advantages of the ice cube tray have become fully apparent from the foregoing detailed description of parts, but for completeness of disclosure, the usage of the tray will be briefly described. It will be assumed that initially the tray **10** is empty and that the lid **11** is detached.

First, the tray **10** is filled with water to a level below and within ¼ inch of the top of partitions **23–28**. In addition to filling the freezing compartments, the intervening recess **31** is filled also to the same level.

Then, the lid **11** is placed over the top of tray **10** with the lock abutments **42** of the lid flanges **40–41** seating on the lock shoulders **37** formed on the tray rim **17**. The lid **11** is pressed on the tray **10**, causing the interengagement of the camming surfaces of the rounded lock shoulders **37** and lock abutments **42** to spread the lid flanges **40–41** against their resilient loading, and thereby allowing the lid to be moved to a fully closed position. When the lid **11** is fully closed, the resilient characteristic of the lid flanges **40–41** causes the lock abutments **42** of such flanges to bear against and under the lock shoulders **37**, thereby holding the lid **11** under pressure on the tray **10** and urging the lid tongue **36** tightly against the top rim face **20** in sealing relation under pressure while located in the cooperating peripheral groove **35**.

It will be noted that the centers of the radii of rounded lock abutments **42** on the lid flanges **40–41** are located slightly below the centers of the radii of the rounded lock shoulders **37** on tray **10**, when the lid is attached. When the tray **10** is closed by the lid **11**, the lid flanges **40–41** are still slightly spread so that the resilient loading of such flanges **40–41** urges the associated lock abutment **42** against the lock shoulders **37** under pressure. This interengagement of the rounded camming surfaces tends to press the lid tongue **36** sealingly into the cooperating peripheral groove **35** and against the top face **20** of rim **17**.

As the lid **11** is placed over the tray **10**, incident to attachment, the lid rib **33** moves into the intermediate recess **31** and displaces the water in such recess **31** laterally in to the adjacent rows of freezing compartments. This displacement action of the lid rib **33** causes the level of water to rise in the freezing compartments, yet such level, is maintained below the upper edges of partitions **23–28**. When the lid **11** is attached to the tray **10**, as described previously, the lid rib **33** lies closely adjacent to or engages the inner margins **30** of partitions **23–28**, and lies closely adjacent to or engages that portion of the bottom wall **12** of the tray **10** defining the intermediate recess **31**. It will be understood that the water is now contained in the separate freezing compartments.

Because all of these walls defining the freezing compartment are relatively thin and full exposed directly to the cold temperature of the ambient air in a refrigerator, the water is quickly frozen into ice cubes.

To remove the ice cubes in a dry state for storage, the flat closure panel **32** of the lid **11** is slapped against a counter top. The large radii at all corners within the tray **10**, the taper of the opposite walls of the partitions **23–28**, the divergent inclination of the tray walls **13–16**, and the taper of the dividing lid rib **33**, all cooperate to enable quick and easy release of the ice cubes. These cubes will stay in the tray **10** because the lid **11** is still attached. Then, the tray **10** is turned right side up, and the lid **11** is removed by pulling the handle **43**.

If the ice cubes are desired to be used immediately, warm water is flowed briefly over the tray **10**, and the lid **11** removed as previously described. Importantly, the ice cubes will be released and will stay in their individual freezing compartments for easy access, and will not fall into the sink or on the floor as is often the case with present day trays. The present design enables easier release of the ice cubes without loss.

Although the invention has been described by making detailed reference to a preferred embodiment, such detail is to be understood in an instructive, rather than in any restrictive sense, many variants being possible within the scope of the claims hereunto appended.

I claim as my invention:

1. In an ice cube tray:
(a) a tray including a plurality of spaced partitions arranged in adjacent side by side rows,
(b) the partitions of one row being spaced laterally from the partitions of the adjacent row to provide an intervening recess, and
(c) a lid attached to and disposed over the tray,
(d) the lid including a depending rib interfitting the recess and co-operating with the partitions to form freezing compartments.

2. An ice cube tray as defined in claim 1, in which,
(e) the tray includes a bottom wall and opposed side walls,
(f) each partition extends inwardly of the tray from the bottom wall and one side wall, and
(g) each partition is hollow, opening through the bottom wall and associated side wall, and the rib is hollow, opening through the lid, whereby thin walls define the compartments and are exposed directly to the ambient medium.

3. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a bottom wall and opposed side walls,
(f) each partition extends inwardly from the bottom wall and extends inwardly from the associated side wall,
(g) the partitions of one row are transversely aligned with, yet spaced laterally from the partitions of the other row to provide the intervening recess, and
(h) the rib on the lid interfits the recess and engages the partitions to form the freezing compartments.

4. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a bottom wall and opposed side walls,
(f) each partition extends inwardly from the bottom wall,
(g) the partitions of adjacent rows have opposed, inner margins inwardly divergent from the bottom wall to provide the intervening recess, and
(h) the rib of the lid is tapered to conform to and lie closely adjacent the inner margins of the partitions when inserted into the recess.

5. An ice cube tray as defined in claim 4, in which:
(i) each partition has opposed compartment walls inwardly tapered from the bottom wall, and
(j) the opposed side walls of the tray are divergent from the bottom wall.

6. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a bottom wall and opposed side walls,
(f) each partition extends inwardly of the tray from the bottom wall and one side wall,
(g) the partitions of adjacent rows have inner margins defining the sides of the intervening recess, and
(h) the rib of the lid interfits the recess and extends closely adjacent the bottom wall and the inner margins of the partitions.

7. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a bottom wall and opposed side walls,
(f) each partition extends inwardly from the bottom wall and extends inwardly from the associated side wall,

(g) the partitions of one row are transversely aligned with, yet spaced laterally from the partitions of the other row, to provide the intervening recess,
(h) the partitions of adjacent rows have opposed, inner margins inwardly divergent from the bottom wall,
(i) each partition has opposed compartment walls inwardly tapered from the bottom wall,
(j) the opposed side walls of the tray are divergent from the bottom wall,
(k) the rib of the lid is tapered to conform to and engage the inner margins of the partitions to form the freezing compartments, and
(l) each partition is hollow, opening through the bottom wall and associated side wall, and the rib is hollow, opening through the lid, whereby thin walls define the freezing compartments and are exposed directly to the ambient medium.

8. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a peripheral rim,
(f) a sealing connection between the lid and rim includes a peripheral groove on one and an interfitting peripheral tongue on the other, and
(g) fastening means selectively interconnects the lid and tray and holds the tongue sealingly in the groove.

9. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a peripheral rim,
(f) a sealing connection between the lid and rim includes a peripheral groove on one and an interfitting peripheral tongue on the other,
(g) the rim includes laterally projecting and opposed lock shoulders and,
(h) the lid includes laterally resilient, depending flanges having inwardly extending lock abutments selectively snapped under and against the lock shoulders by the resilient flanges to interconnect the lid and tray and to hold the tongue sealing in the groove.

10. An ice cube tray as defined in claim 1, in which:
(e) the tray includes a peripheral rim extending laterally outward, the rim having a top face and a lateral margin,
(f) the top face of the rim is provided with a peripheral groove,
(g) the lid includes a depending, peripheral tongue interfitting the groove and engaging the rim sealingly,
(h) the rim margin includes laterally projecting and opposed lock shoulders,
(i) the lid includes opposed and depending, laterally resilient flanges having inwardly projecting abutments snapped under and against the lock shoulders, and flange abutments have interengaging cam surfaces holding the tongue sealingly in the groove and fastening the lid to the tray under pressure of the resilient flanges.

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