Nov. 25, 1969 J. P. PIETRZAK 3,480,251

TRAY AND GRID WITH GROOVES

Filed March 6, 1967

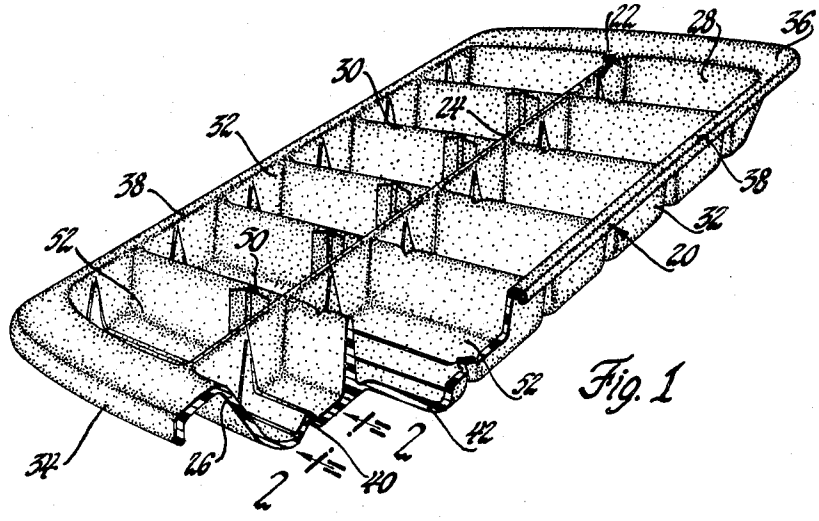


Fig. 1

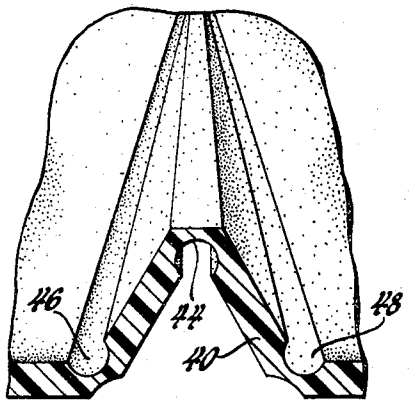


Fig. 2

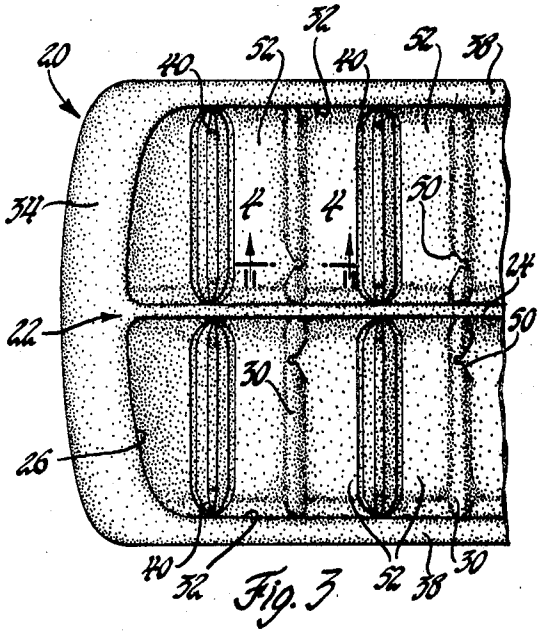


Fig. 3

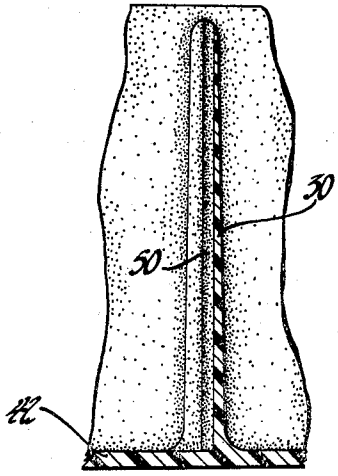


Fig. 4

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United States Patent Office 3,480,251 Patented Nov. 25, 1969

3,480,251

TRAY AND GRID WITH GROOVES

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Filed Mar. 6, 1967, Ser. No. 620,812
Int. Cl. F25c 1/24
U.S. Cl. 249—127 2 Claims

ABSTRACT OF THE DISCLOSURE

In the preferred form of resilient plastic tray, the side and bottom walls at the midde of each compartment are provided with transversely extending inverted V-shaped grooves of greater height than the thickness of the walls. Each of these grooves has an additional groove extending along the apex and also additional grooves on both sides of the base thereof thinning the material to provide a resilient hinge. The tray is also provided with a grid having upright grooves in the transverse walls adjacent their intersections with the longitudinal walls.

Many attempts have been made to provide ice trays and grids from which the ice cubes can be easiy ejected without the use of water. Mechanical ejecting arrangements have been popular but occasionally sticking is encountered.

It is an object of my invention to provide a simple flexing tray and grid without cams or levers from which the ice cubes or frozen pellets can be readily removed, one or more at a time, by a simple flexing of the tray with a minimum of force.

This and other objects are attained in the form shown in the drawings by providing a tray and grid of flexible plastic having expandible V-shaped ribs or grooves of greater height than the thickness of the walls which are readily flexible under expanding force to loosen and eject the cubes or pellets from the compartments of the tray.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

FIGURE 1 is a perspective view of a plastic tray and grid partly in section embodying one form of my invention;

FIGURE 2 is an enlarged sectional view taken substantially along the line 2—2 of FIGURE 1;

FIGURE 3 is a top view of a portion of the tray shown in FIGURE 1; and

FIGURE 4 is an enlarged sectional view taken along lines 4—4 of FIGURE 3.

Referring now more particularly to FIGURES 1 and 2, there is shown a flexing tray **20** of suitable flexible plastic such as polyethylene, polypropylene or nature or synthetic rubber. This tray is also provided with an integral grid **22** including a longitudinal partition wall **24** extending longitudinally from the front wall **26** to the rear wall **28**. The grid **22** is also provided with transversely extending partition walls **30** which intersect with the longitudinal wall **24** and extend in opposite directions to the side walls **32**. The front wall **26** is provided with a wide flanged rim **34** and the rear wall **28** is provided with a wide flanged rim **36**. The side walls **32** are provided with a narrow curled rim **38**. The ends of the longitudinal wall **24** and the transverse wall **30** may be joined to the front and rear walls **26** and **28** and to the side walls **32** as shown. However, if desired, the entire grid **22** may be separate from the tray **20** and removable therefrom.

According to this invention, substantially at the midpoint between the transverse walls **30** and also between the transverse walls **30** and the front and rear walls **28** each of the compartments **52** is provided with an upwardly extending inverted V-shaped rib or groove **40** extending substantially from the rim **38** to and across the bottom wall **42** and up the longitudinal wall **24**. To provide additional flexibility, each of the V-shaped ribs is provided with an internal groove **44** at the apex which reduces the thickness of the wall substantially below the thickness of the remaining portions of the walls of the grid **22** and the tray **20**. Preferably, these grooves may have a minimum wall thickness of between .015 inch and .025 inch. Similar grooves **46** and **48** are provided at the base of the V-shaped grooves and have a similar minimum thickness. These grooves form hinges which increase the flexibility and particularly the longitudinal stretching of the tray and grid.

In addition to the rib **40**, the transverse walls **30** are provided with the vertical grooves **50** which are adjacent to the longitudinal wall **24** and substantially parallel to the intersections of the transverse walls **30** with the longitudinal walls **24**. The grooves **50** permit the flexing of the transverse walls **30** when a twisting or bending force is applied to the tray **20**. The grooves **50** include notches of about 120° angle each having a semicircular groove at the bottom of the V. The grooves **44**, **46** and **48** likewise are semicircular. The semicircular shape of the grooves minimizes the danger of cracking the plastic at the hinge.

In use, the tray is filled with water or other liquid to be frozen to any desired height. After being left in the freezing compartment of a refrigerator for a sufficient time to freeze the water or liquid the tray may be removed and twisted or bent to loosen the ice cubes or frozen pellets from the compartments **52** of the tray. The cubes may be ejected from any one of the compartments by pressing upwardly on the bottom wall **42** beneath the compartment to eject the cube or pellet therefrom. This ejection is made easier by the location of the inverted V-shaped rib or groove extending through the midportion of the bottom and side walls of each compartment. If it is desired to remove all of the cubes or pellets, the tray may be inverted over a container and twisted and bent until the cubes fall from the tray into the container. The groves **44**, **46**, **48** and **50** form hinges which provide flexibility so that the walls can be distorted readily and the rib allows longitudinal expansion to separate the cube or pellet from the walls of the grid **22** and the tray **20**.

Since these ribs and grooves can be formed in the grid at any time the tray and grid are molded, little additional expense or cost is incurred in obtaining this additional flexibility which provides greatly increased ease of removal of the cubes or pellets from the tray.

While the embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. A freezing tray including a body of flexible plastic material characterized by a resiliency permitting flexing to free the ice having integral side and end and bottom walls and longitudinal and transverse partition walls enclosing a plurality of rows of freezing compartments wherein the improvement comprises a flexible inverted V-shaped rib extending substantially midway between said transverse partition walls transversely across the bottom wall and up the side wall of a plurality of said compartments.

2. A freezing tray as defined in claim **1** in which the V-shaped rib also extends up the longitudinal wall of a plurality of compartments.

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U.S. Cl. X.R.

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