June 24, 1941. L. G. HENNING 2,247,018

ICE FREEZING MOLD

Filed May 22, 1939

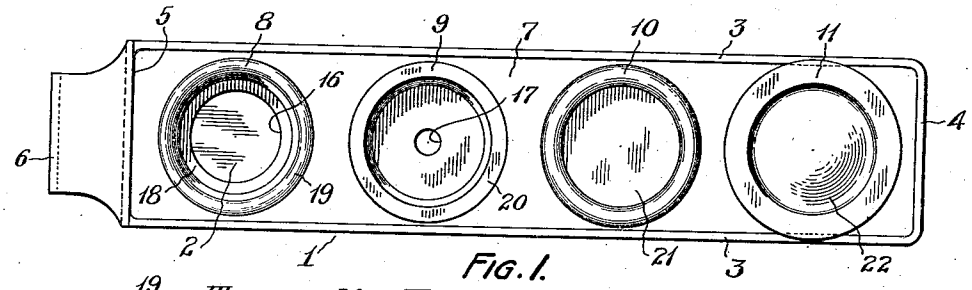

FIG. 1.

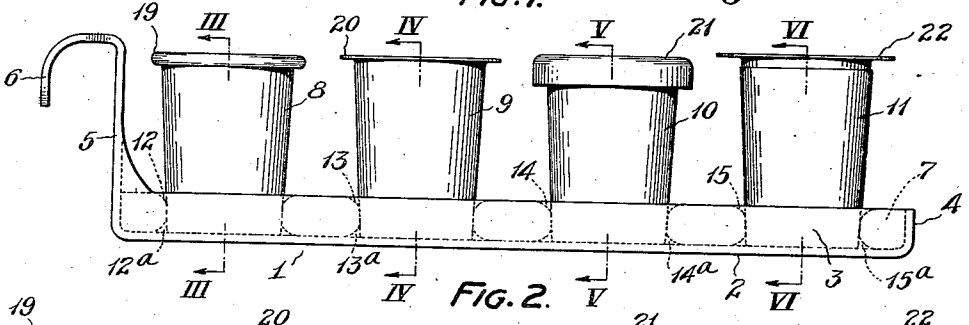

FIG. 2.

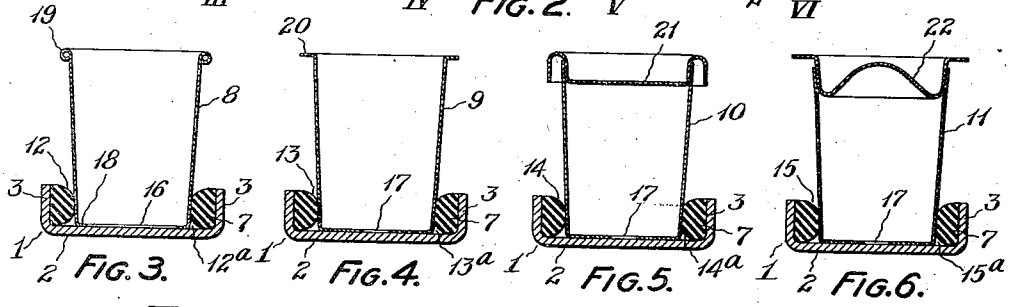

FIG. 3. FIG. 4. FIG. 5. FIG. 6.

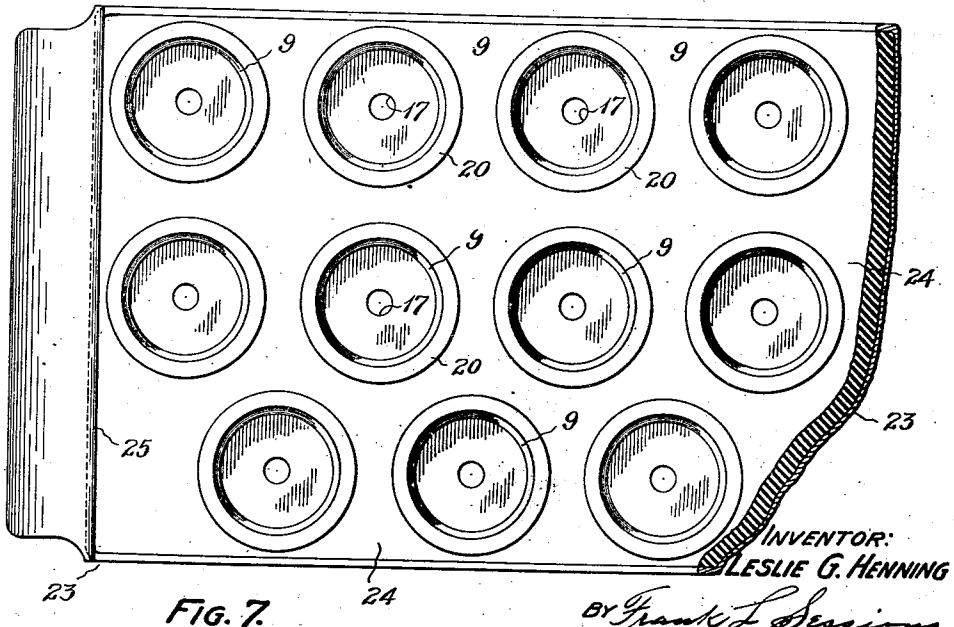

FIG. 7.

INVENTOR:
LESLIE G. HENNING
BY Frank L. Sessions
ATTORNEY

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ICE FREEZING MOLD

Leslie G. Henning, Cleveland, Ohio, assignor to Frank L. Sessions, Lakewood, Ohio

Application May 22, 1939, Serial No. 275,116

9 Claims. (Cl. 62—108.5)

My invention relates to ice freezing molds such as are used for freezing small cakes of ice, commonly called "cubes," in mechanical refrigerators. Broadly, my invention relates to receptacles in which liquids may be congealed by cooling.

I am filing on even date herewith two other applications, Serial No. 275,115 and Serial No. 275,117 covering related subject matter, and it is possible that certain features shown but not claimed in one application are claimed in one of the copending applications.

In application Serial No. 275,115 I have shown and described an ice mold which has an ice exit at one end to permit ice which may be frozen in the mold cavity to pass out of it, a removable imperforate closure for said exit, and another opening or perforation through the wall of the mold cavity opposite the ice exit to admit air to prevent the formation of a vacuum behind the ice, which would resist its removal from the mold. In that application I have shown a plurality of molds telescoped together to form a stack of molds with a single imperforate closure for the ice exit of the last mold of the stack. A connected series of ice cakes may be simultaneously frozen in such a stack, the individual molds of which may be separated one by one and the ice removed therefrom without disturbing the other molds of the stack. Preferably the stack of such molds is supported with its axis horizontal in the refrigerator, the opening opposite the ice exit of the first mold of the stack being small enough to prevent the water from leaking out of the otherwise closed stack of molds.

In my present invention, instead of telescoping a plurality of molds together in a stack as shown and described in my said application Serial No. 275,115, I mount the individual molds in separate, socket-members, the molds having their ice exits uppermost.

A portion of each socket member is preferably made of yielding, elastic material such as rubber, encircling and making a snug fit upon the outer surface of the mold. The base of the socket member is preferably made of heat-conducting metal. It will be apparent to those skilled in the art that relatively nonelastic material such as metal or molded plastic material properly fitting the inserted mold may be used instead of yielding, elastic material.

A plurality of such socket-members may be secured to the bottom of a metal tray, or, preferably, mold receiving apertures may be formed in a single pad of elastic material such as rubber, which pad may be secured to the bottom of a tray or support which is adapted to be inserted into the customary ice freezing tray compartments of well known household, mechanical refrigerators. The axis of each mold is vertical, instead of being horizontal as shown in my said application Serial No. 275,115. Because the molds are separately supported it is possible to remove from its socket in the tray a single mold with the ice it contains, without handling the other molds which may be in the tray. It is also possible to immediately replace the empty mold in its socket in the tray, refill it with water and replace the tray in the refrigerator without displacing the other molds carried by the tray.

Among the objects of my invention are:

The provision of an ice mold having an opening at its top adapted to permit the frozen ice to pass out of it, and an opening in its bottom to admit air to prevent the formation of a vacuum behind the ice which would tend to prevent the ice from leaving the mold; and the provision of an ice mold from which the ice may be removed readily without the use of mechanical aids; the provision of a plurality of individual molds so constructed and assembled that the ice from a single mold may be removed without disturbing that in the other molds.

Further objects of my invention are the provision of a mold that can be quickly and easily filled with water; the provision of an individual mold having an aperture for the admission of air behind the ice to prevent the formation of a vacuum, and by this means to permit the free release of the ice from the mold without undue melting of the ice to admit air from the front of the mold; the provision of a mold from which the ice may be removed without the ice being touched by the hands; the provision of a metal ice mold adapted for freezing water readily because of the good heat conductivity which is provided between the mold and the freezing unit of the refrigerator; and the provision of an ice mold whose shape does not have to be altered or distorted in the removal of the ice from it.

If desired socket bases, each embodying a mold receiving socket may be separately used for carrying individual molds or cups, and one or more of such combined molds and socket bases, may be placed separately in the ice freezing compartment or tray of the refrigerator.

These and other advantageous features of my invention will be apparent from the following specification and the accompanying drawing in which:

Fig. 1 is a plan and Fig. 2 is a side elevation of

a tray embodying an elastic pad having four mold sockets, each encircling an individual mold or cup, each of the molds being of slightly different form;

Figs. 3, 4, 5 and 6 are axial sections on lines III—III, IV—IV, V—V and VI—VI respectively of the four different forms of molds shown in Figs. 1 and 2; and

Fig. 7 is a plan view of a tray embodying an elastic pad provided with a plurality of rows of sockets for holding a larger number of molds than are in the tray shown in Figs. 1 and 2.

Referring to the drawing:

In Figs. 1 and 2 there are shown a plan and side elevation respectively, of a tray 1, having a flat bottom 2, side walls 3, and end walls 4 and 5. A handle 6 is provided for convenience in handling the tray.

In the bottom of the tray there is secured in any suitable manner, such as by vulcanizing or cementing to the tray, an elastic pad 7 constituting a multiple socket member, preferably of rubber, provided with sockets for receiving the lower ends of ice molds or cups 8, 9, 10 and 11. The sockets in the pad are preferably made smaller in diameter than the diameters of the molds or cups which are set in them and the walls of the sockets may be rounded as shown at 12, 13, 14, 15, in Figs. 2, 3, 4, 5 and 6 to facilitate the entering of the molds into the sockets, and further to provide spaces such as 12*a*, 13*a*, 14*a*, and 15*a*, around the bottom edges of the molds, into which spaces the rubber which is displaced by the molds entering the sockets may expand and so decrease the space in which air might be entrapped in the sockets. The yielding elastic walls of the sockets serve to yieldingly support the molds upright and also to make air tight joints with their outside surfaces. This is important, since the molds 8, 9, 10 and 11, like those shown in my said application Serial No. 275,115 are each provided with an aperture or perforation at the bottom end to admit air behind the ice to release it from the mold when the ice is to be used.

The molds 8, 9, 10 and 11 differ from each other in detail. Molds 8 and 9 do not have closures for their ice exits which are the open ends at the tops of the molds. Mold 8 has a hole 16, nearly as large as its bottom end while molds 9, 10 and 11 have small holes 17. A small inturned flange 18 surrounds the hole 16 to strengthen the bottom rim of mold 8 and to make heat-conducting contact with the metal 2, of tray 1. A strengthening bead 19, is formed around the ice exit at the top of mold 8, while a flat strengthening flange 20 surrounds the ice exit of mold 9. Molds 8 and 9 may be filled from the top after they are seated in the sockets in tray 1.

It is important to have good heat-conducting contact or paths between the water which is to be frozen, and the cold metal of the refrigerating unit. It will be seen that the bottom ends of molds 8, 9, 10 and 11 are adapted to rest directly upon the bottom 2 of tray 1, which is supported directly upon and is adapted to make broad, heat-conducting contact with the metal bottom of the ice freezing compartment of a refrigerator. The holes 16, 17, in the bottoms of the molds permit the water in them to have direct contact with the bottom 2 of tray 1. If there be a film of water between the flat metal bottom of a mold and the tray, it freezes very quickly and does not appreciably affect the time required to freeze the water in the mold.

Molds 10 and 11 are provided with removable, imperforate closures 21 and 22, for their respective ice exits at the tops of the molds. Closure 21, of mold 10, has a flat surface exposed above the top of the water in the mold while closure 22, of mold 11 is outwardly convex to provide a concave pocket above the water for impounding air and to make space into which the last-freezing ice in the mold may expand.

In Fig. 7 there is shown a tray or support 23, embodying an elastic pad 24 having a plurality of sockets adapted to accommodate a larger number of molds than tray 1, shown in Figs. 1 and 2, will accommodate. For convenience all of the molds shown in Fig. 7 are of the type shown at 9, in Fig. 4. Any of the other types shown in the drawing, or other suitable types of molds may be used.

Preferably tray 23 is made to dimensions which will fit the ordinary ice tray receiving compartment of a household refrigerator. The front wall 25 of tray 23, should be made high enough to form an air shield to obstruct the entrance of air into the tray receiving compartment. Similarly, the front wall 5, of tray 1, should be made high, so that when two or more trays are placed side by side in a tray receiving compartment their high front walls will keep out the surrounding air.

The cross sections shown in Figs. 3, 4, 5 and 6, may be taken to represent cross sections of individual socket bases, elastic socket members, and mold cups, which may be of circular, square, or other geometric configuration in plan view.

One or more of such individual combinations of molds and supports may be placed either directly in the ice freezing compartment or in the ordinary ice cube forming tray which fits such compartment of the ordinary household mechanical refrigerator.

To fill the cups with water they are first placed in the elastic sockets with their bottoms resting upon the metal socket bases and held under a faucet.

To remove the ice from any one of the molds the ice filled cup is removed from its socket and held in the hand with the ice exit of the mold downward. The warmth of the hand quickly breaks the bond between the ice and the mold and the ice drops out by gravity. Before removing the ice from molds such as 10 and 11, the closures 21, 22 should be removed from the ice exits.

I do not limit my invention to the specific apparatus shown and described herein, but claim as my invention all embodiments thereof coming within the scope of the appended claims.

I claim:

1. In refrigerating apparatus an ice freezing mold having an ice exit in its top end and an opening in its bottom end, and a closure for said bottom end comprising a base for supporting said mold having a socket removably receiving said mold and making a substantially air-tight fit with its outer surface.

2. The structure defined by claim 1 in which the socket is made of elastic material.

3. The structure defined in claim 1, combined with an imperforate, removable closure for the ice exit.

4. In refrigerating apparatus an ice freezing mold comprising a cup having an ice exit in its top end and an aperture in its bottom end for admitting air behind ice frozen in said cup and a base removably supporting said cup and preventing leakage of water therefrom.

5. In refrigerating apparatus an ice freezing

mold comprising a cup having an ice exit at its top end and an opening in its bottom end, a closure for said bottom end having a base for supporting said cup and an elastic socket member secured to said base, said socket-member removably receiving said cup and making yielding pressure upon its outer surface adjacent said bottom end.

6. In refrigerating apparatus, the combination with a plurality of ice molds, each comprising a cup having an ice exit at its top end and an opening in its bottom end of a tray having a plurality of spaced, upwardly presented sockets each removably receiving one of said cups and making a substantially air-tight fit upon its outer surface adjacent said bottom end.

7. In refrigerating apparatus, the combination with a plurality of individual ice molds, each comprising a cup having an ice exit in its top end and an opening in its bottom end, of a tray having a plurality of spaced, upwardly-opening, cup-receiving sockets, each removably supporting one of said cups and making a substantially leak-proof fit therewith.

8. The structure defined by claim 1, in which the base embodies heat-conducting material contacting with and conducting heat away from the mold.

9. In refrigerating apparatus an ice freezing mold comprising a cup having an opening at its top end and an opening in its bottom end, a closure for said bottom end having a base for supporting said cup and an elastic socket member secured to said base, said socket-member removably receiving said cup and making yielding pressure upon its outer surface adjacent said bottom end.

LESLIE G. HENNING.