Nov. 23, 1943. H. E. LINDEN 2,334,941

BALLAST DEVICE FOR ICE CUBES

Filed Feb. 20, 1942

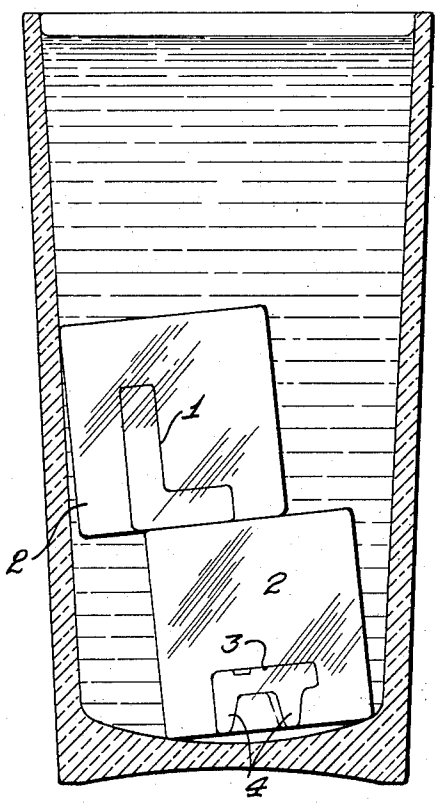


FIG. 1

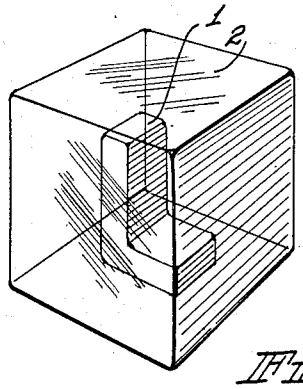


FIG. 2

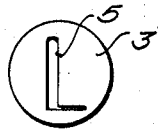


FIG. 3

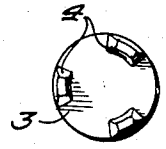


FIG. 4

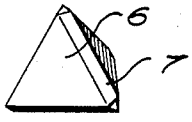


FIG. 5



FIG. 6

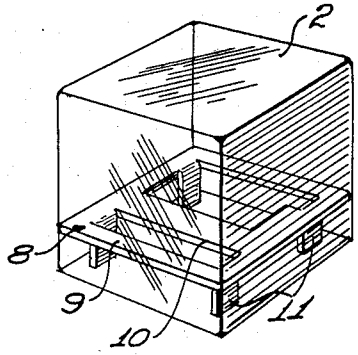


FIG. 7

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Patented Nov. 23, 1943 2,334,941

UNITED STATES PATENT OFFICE

2,334,941

BALLAST DEVICE FOR ICE CUBES

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Application February 20, 1942, Serial No. 431,730

6 Claims. (Cl. 62—1)

My invention relates to ballast devices for ice cubes, and among the objects of my invention are:

First, to provide a ballast device adapted to be molded in an ice cube for the purpose of rendering the combined density of the device and the ice cube greater than the beverage in which it is placed so that the ice cube sinks to the bottom of the container;

Second, to provide a ballast device of this class which by reason of the fact that the ice is held at the bottom of the container tends to reduce the melting rate of the ice, and a person in drinking from the container does not contact the ice with his lips;

Third, to provide a ballast device of this class which, being visible through the ice and the walls of a glass container may take various decorative forms, may serve as an advertising novelty, or be in the form of a monogram, for instance, the monogram of the host or those of his guests;

Fourth, to provide a ballast device of this class which may be made sufficiently large and of such shape that it will not readily roll to eliminate any danger that it might be swallowed; and

Fifth, to provide a ballast device which may be made of glass, ceramic material, various plastics, or of non-corrosive metal and in any event be capable of sterilization so that it may be used repeatedly.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawing, in which:

Figure 1 is a sectional view of a glass container with ice cubes therein in which has been molded two forms of my invention;

Figure 2 is a perspective view of an ice cube having a ballast device therein in the form of a block letter, similar to the ballast member shown in the uppermost ice cube in Figure 1;

Figure 3 is a plan view of a modified form of my ballast member similar to the member shown in the lower ice cube in Figure 1;

Figure 4 is a bottom view of the form shown in Figure 3;

Figure 5 is a perspective view illustrating another embodiment of my ballast member in the form of a pyramid;

Figure 6 is a perspective view of another form of my ballast member adapted to be utilized as an advertising novelty; and

Figure 7 is a perspective view of an ice cube with a further embodiment of my invention which is particularly designed to be stamped from sheet material.

My ballast device may be molded or cast or otherwise formed of glass, ceramic, non-corrosive metal, or plastic. With reference to Figure 2 it may take the form of a letter of the alphabet as indicated by 1. In this case the letter "L" is illustrated. It is preferred to so proportion the ballast device that it may be merely dropped in the ice cube compartment prior to freezing the water without taking special pains to have the device assume any particular position and yet will look attractive in the ice cube 2. Or the device may be shaped so that it readily assumes an upright position such as shown in Figure 2, that is, its center of gravity may be close to its base side. This offers the further advantage that the resulting ice cube containing the ballast member has a center of gravity below its physical center and tends to assume a position in the container with the ballast member in an upright position.

The ballast member may take different forms. As indicated in Figures 1, 3 and 4 the ballast member may be in the form of a disc 3 with legs 4 to support it away from the bottom of the ice cube 2. The upper face of the disc 3 may carry a monogram 5 of one or several letters, or carry a symbol or trade name or trade-mark.

Or, as shown in Figure 5, the ballast member may take a conventionalized form such as the pyramid 6. The edges 7 are preferably beveled so that the ballast member is locked in the ice when molded therein. Also, the sides may carry monograms or other indicia.

In place of a single letter, the ballast device may form several letters or a work, such as the word "Ritz" in Figure 6, thereby lending itself to use as an advertising novelty to be given away with the drink.

In Figure 7 a further modified form is illustrated. In this construction, the ballast member is formed from a sheet blank and comprises a plate portion 8 which may define a frame 9 and a monogram 10 or other indicia. The frame may be supported upwardly from the bottom of the ice cube 2 by suitable legs 11.

By reason of the fact that my ballast device holds the ice cube at the bottom of the container, the melting rate of the ice is reduced. This is apparently due to the fact that convection currents in the container are reduced. Also, the upper surface of the ice cube is isolated from contact with the air, and thus heat transfer directly to the air is eliminated.

Furthermore, moisture tends to condense on the bottom portion of the container rather than around the upper portion. This enables the glass to be handled without necessitating contact with the moistened portion of the container. This is also evidence of a reduced melting rate.

While a reduced melting rate indicates a higher liquid temperature, it is not great enough to be objectionable, and is more than offset by the increased length of time that the ice is available for cooling the liquid.

An important advantage by use of the ballast device is that the ice being at the bottom of the container does not contact the lips of the drinker, so that the attendant discomfort is avoided.

The ballast device need not be large, even though formed of glass or ceramic having a relatively low specific gravity. For example:

Let:
V_i=Volume of ice
D_i=Density of ice=.9
V_b=Volume of glass ballast device
D_b=Density of glass ballast device=2.7
V_l=Volume of displaced liquid=1 unit
D_l=Density of displaced liquid=1.

Then, using the general formula: Volume times density equals mass, we have the equations:

$$V_iD_i+V_bD_b=V_lD_l=1$$
$$V_i+V_b=V_l=1$$
$$V_i=(1-V_b)$$
$$(1-V_b)D_i+V_bD_b=1$$
$$D_i-D_iV_b+V_bD_b=1$$
$$D_i+V_b(D_b-D_i)-1$$
$$V_b=\frac{1-D_i}{D_bD_i}$$
$$V_b=\frac{1-.9}{2.7-.9}=\frac{1}{1.8}=.055$$

Thus, the ballast member formed of a comparatively light material such as glass need only be 5.5% of the total ice cube to equal the displaced liquid, assuming a liquid density equal to water. Actually, the ballast member is made several times this percentage or about the proportions shown in the drawing so that it is too large to be swallowed accidentally and is readily visible in the glass container. Furthermore, the total or effective density of the ice cube containing the ballast increases as the ice melts so that the force holding the ice submerged increases as it melts. The ice in melting does not separate from the ballast, but adheres thereto until it is entirely melted.

The term "ice cube" as herein used is employed in the popular sense; that is, ice blocks are popularly referred as "ice cubes" whether they are truly cubical or wether they are pyramidal or otherwise shaped, and it is intended that this term shall designate a small block of ice irrespective of its form.

Various changes and alternate arrangements may be made within the scope of the appended claims, in which it is my intention to claim all novelty inherent in the invention.

I claim:

1. A cooling device for beverages comprising: a normally liquid, frozen member, and a normally solid member molded therein having sufficient size that it will not be readily swallowed and having a specific gravity greater than the frozen member and beverage liquids whereby it weights said frozen member sufficiently to cause said frozen member to sink in said beverage liquids.

2. A cooling device for beverages comprising: a normally solid sinker member of greater density than water and of sufficient size that it will not be readily swallowed and a normally liquid frozen member molded therearound to form a unit of greater specific gravity than the normal beverage liquid whereby said unit tends to sink to the bottom, said sinker member positioned eccentrically with respect to said frozen member whereby a predetermined side tends to remain uppermost, and indicia on said sinker member visible from said predetermined side.

3. A non-buoyant cooling article for a beverage liquid, comprising: a normally liquid, frozen member, a normally solid member molded therein having a specific gravity greater than the frozen member and the beverage liquid and having a mass sufficient to cause the frozen member to sink in the beverage liquid.

4. A composite article for cooling a beverage including an ice mass and a weight member molded therein, having a specific gravity sufficiently greater than that of such beverage to cause the article to sink therein.

5. An article as set forth in claim 3 wherein the normally solid member is located eccentrically in the frozen member so that the cooling device when placed in the beverage liquid tends to assume a position with the solid at its lower side, and indicia on the normally upper face of said solid member.

6. An article as set forth in claim 4 wherein the weight member is displaced from the center of gravity in the ice mass and indicia is placed on the side of the weight member facing the center of gravity of the ice mass, whereby when the ice mass is placed in the beverage liquid it tends to assume a position in which the said side of the weight member faces upwardly.

HERBERT E. LINDEN.