Feb. 6, 1951 H. B. BENNETT 2,540,566

METHOD AND APPARATUS FOR PRODUCING ICE CUBES

Filed Jan. 23, 1947

Fig. 1.

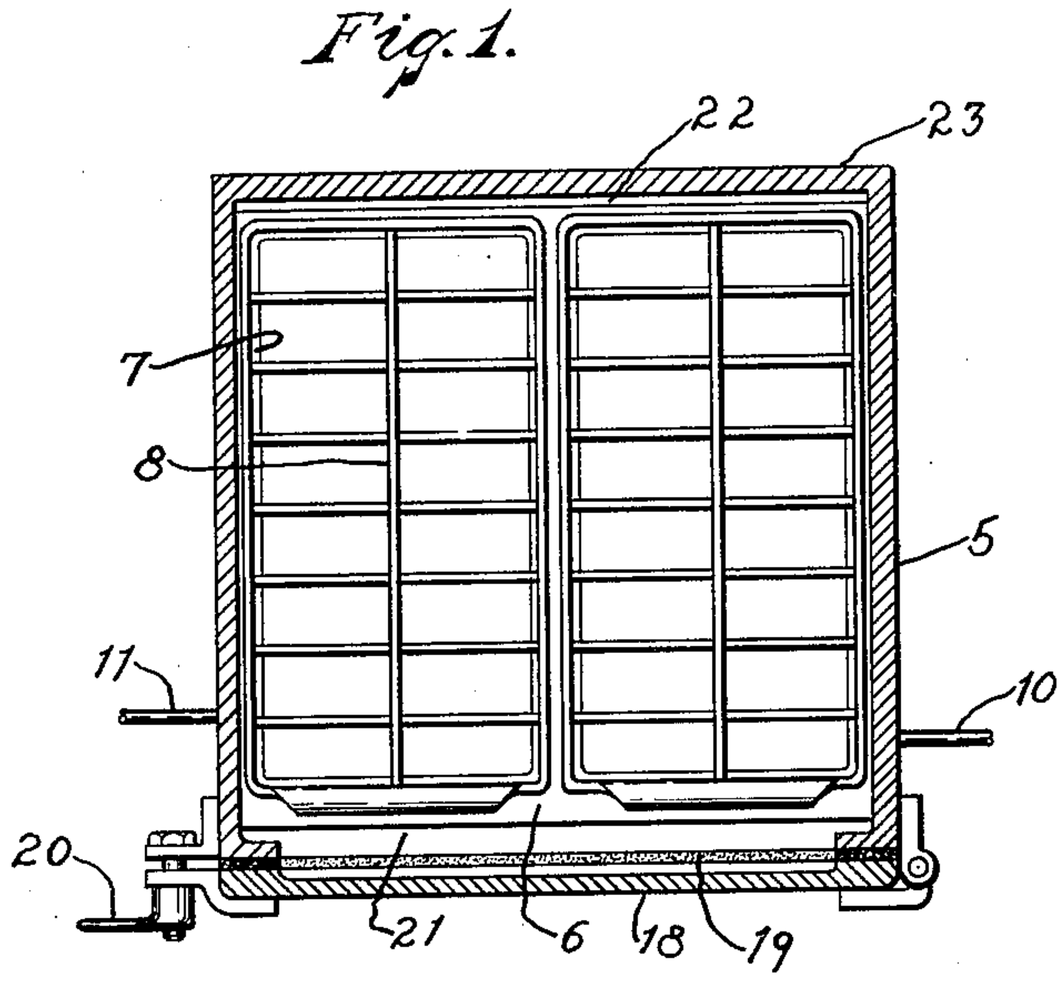


Fig. 2.

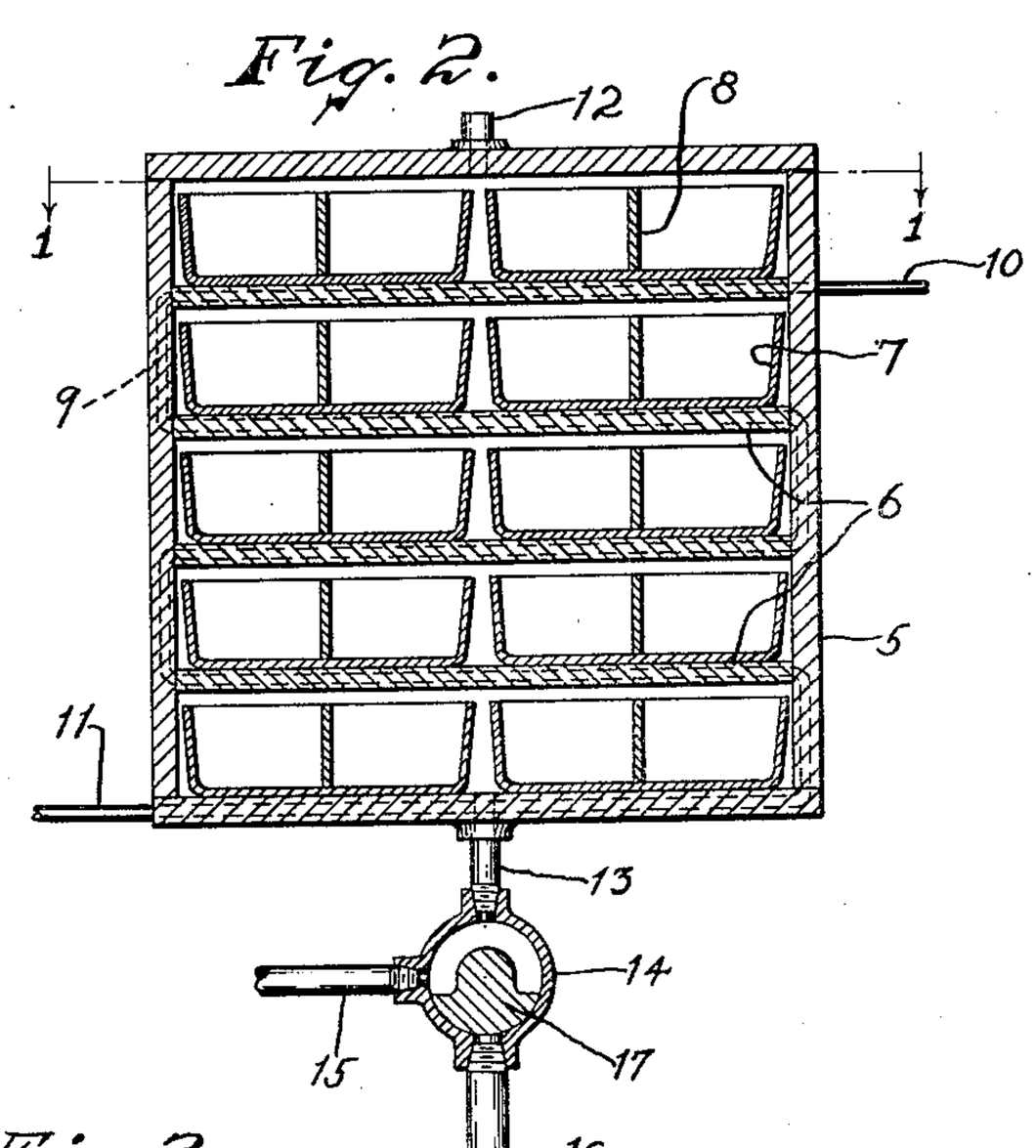
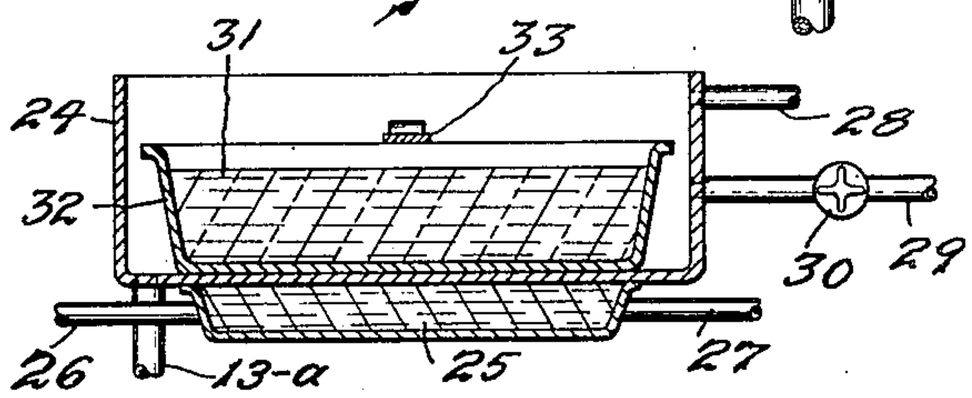


Fig. 3.



INVENTOR.
HALEN B. BENNETT
BY Louis V. Lucia
ATTORNEY.

Patented Feb. 6, 1951 2,540,566

UNITED STATES PATENT OFFICE

2,540,566

METHOD AND APPARATUS FOR PRODUCING ICE CUBES

Hazen B. Bennett, West Hartford, Conn.

Application January 23, 1947, Serial No. 723,790

5 Claims. (Cl. 62—106)

1

This invention relates to a method and apparatus for producing ice cubes and more generally to a method for freezing liquids into different desired forms.

The primary object of the invention is to provide an apparatus for producing quantities of ice cubes by freezing water or other liquids in suitable molds such as trays containing partitions.

A further object of this invention is to provide an apparatus in which a number of ice cube trays may be filled with liquid, then permitted to freeze, and then subjected to a bath of liquid to loosen the ice cubes from the trays.

Further objects and advantages of this invention will be more clearly understood from the following description and from the accompanying drawings in which—

Fig. 1 is a plan view, in section on line 1—1 of Fig. 2.

Fig. 2 is a front view in central vertical section.

Fig. 3 is a sectional front view illustrating a modified form of apparatus which may be used in connection with my invention.

As shown in the drawings, apparatus to be used in connection with my invention may include a freezing unit preferably in the form of a cabinet 5 having therein a freezing compartment with a plurality of shelves 6 extending across said compartment to support a plurality of trays 7 having partitions 8 therein of conventional form, such as used in ice cube trays of refrigerators. The walls of the said cabinet 5 may be insulated, if desired, for providing higher efficiency of the freezing unit.

The said shelves 6 may contain a refrigerating coil as indicated in dotted lines at 9, which extends through each of the shelves and has an inlet pipe 10 and an outlet pipe 11 for supplying a suitable refrigerant through said coil.

At the top of the cabinet 5, there is provided a vent tube 12 and at the bottom thereof a liquid supply pipe 13 which may be connected to a suitable two-way valve 14 between the said pipe 13 and a supply pipe 15 and a drain pipe 16; there being a plug 17 rotatable in said valve for selectively directing the flow of liquid through said pipes as desired.

At the front of the said cabinet, there is provided a door 18 which may be sealed against leakage by a suitable packing 19 and locked by means of a locking mechanism such as indicated at 20. It will be noted that there is a space at 21, between the edge of the shelves and the door 18 when closed and another space at 22 between the rear of the shelves 6 and the rear wall 23 of the cabinet.

2

In the use of the said apparatus for producing ice cubes by my improved method, the trays 7 are first placed within the cabinet 5 upon the shelves 6. The door 18 is then closed and locked into sealed position by means of the mechanism 20.

The valve plug 17 is then rotated so as to direct a flow of water from the pipe 15 through the said valve and pipe 13 into the cabinet 5. The water will then rise and fill the entire cabinet; the air at the top of the water escaping through the vent pipe 12. As the said cabinet is filled, the water will overflow into and fill each of the trays 7.

When the cabinet has been completely filled, the water supply is shut off by rotating the plug 17 a quarter of a revolution in clockwise direction. The surplus water which has not entered the trays will then be permitted to drain back through the pipe 13 and out through the pipe 16.

The refrigerant is then permitted to flow through the refrigerating coil 9 and the apparatus is allowed to remain in operation for a suitable length of time until all the liquid in the trays is frozen.

When it is desired to remove the frozen cubes from the trays, the refrigerant is first shut off. The plug 17 is then rotated to permit water to again flow into and fill the cabinet 5.

After the water has been permitted to remain for the required period of time to loosen the cubes from the walls of the tray and partitions, it is again drained from said case by rotating the plug 17 to the draining position. The door 18 may then be opened and the trays removed therefrom for emptying them of the frozen ice cubes.

It will be clearly understood, from the above description, that my invention provides a novel and efficient method for producing ice cubes and causing them to be released from their molds without difficulty by the simple operation of manipulating a valve.

In the modified form of apparatus illustrated in Fig. 3, there may be provided a suitable container in the form of a tank 24 having a refrigerant coil 25 secured to the bottom thereof and which is connected to refrigerant supply inlet and outlet pipes 26 and 27.

The said container is also provided with an upper overflow pipe 28 and a lower overflow pipe 29 which may be opened or closed by means of a valve 30.

Water is supplied to, or drained from, the said container by means of a pipe 13—*a* which is connected to a valve similar to the valve 14 illustrated in Fig. 2.

The said apparatus of modified form may be used in freezing liquids, such as for dessert or the

like, into cubes or other shapes by placing the said liquids, as indicated at 31, into a suitable tray 32, and then placing the said tray within a container 24 and locking it in position by means of a suitable clamping bar 33. In the case of a dessert, after it has been frozen in the tray 32 and it is desired to remove the said dessert from the tray; the valve 30 is first opened and water is then permitted to enter into the container 24 through the pipe 13—*a*. This water will rise only to the level of the pipe 29, at which level it will overflow through said pipe and will not be permitted to enter into the tray 32.

After the water has remained within the container 24 for a suitable period of time to loosen the frozen dessert 31 from the tray 32, it may be drained therefrom by opening the valve connected to the pipe 13—*a*. The tray 32 may then be lifted from the container by removing the clamping bar 33.

When it is desired to produce ice cubes in this modified form of apparatus, the tray 32 may be placed within a container 24 and locked in position by the bar 33. The valve 30 is then closed and water is permitted to enter into the container 24 to a level with the overflow pipe 28 which will permit the water to fill the tray 32. The water may then be drained from the container leaving the tray 32 filled.

After the water in the tray has frozen, the valve 30 is opened and water is again permitted to enter the container 24 to the level of the overflow pipe 29 to thus loosen the ice cubes within the tray 32, after which, the bar 33 is removed and the tray is lifted from the container 24 for emptying it of the ice cubes.

I claim:

1. An ice cube producing apparatus of the character described comprising a cabinet having a plurality of shelves therein, a plurality of containers on said shelves, a door for said cabinet, means for sealing said door against leakage of liquid from the interior of said cabinet, a liquid supply entering said cabinet through a wall thereof for filling said cabinet with liquid and causing it to overflow into said containers, a vent for said cabinet, means for draining excess liquid from said cabinet after the containers have been filled, refrigerating means within said cabinet for freezing the liquid within said containers to form ice therein, and a valve for controlling the flow of liquid into said cabinet.

2. An ice cube producing apparatus of the character described comprising a cabinet having a plurality of shelves therein, a door on said cabinet, means for sealing said door against leakage of liquid from the cabinet, a vent at the top of the cabinet, a liquid supply entering the cabinet at the lower portion thereof, a plurality of

ice cube trays mounted on said shelves; the shelves being spaced from the rear wall of said cabinet to permit liquid entering the cabinet from said supply to rise within the cabinet and fill all of the trays therein, and means for draining the excess liquid from the cabinet.

3. An ice cube producing apparatus of the character described comprising a cabinet having shelves therein arranged to provide a plurality of superimposed compartments in communication with each other, a door on said cabinet, sealing means between said door and cabinet to prevent leakage of liquid from the cabinet, a plurality of ice cube trays positioned on said shelves, a liquid supply pipe entering the cabinet at the lower portion thereof, and a valve attached to said pipe; the said valve being adapted to both supply liquid to said compartment and permit drainage of said liquid therefrom through said pipe.

4. An ice cube producing apparatus of the character described comprising in combination a cabinet having shelves therein arranged to provide a plurality of superimposed compartments, a door on said cabinet, a sealing gasket between said door and cabinet, a liquid supply pipe entering the lower portion of said cabinet, and a plurality of ice cube trays positioned on said shelves; the said shelves being spaced from the said door, when closed, and the rear wall of said cabinet to provide communication therebetween for passage of the liquid into each of said compartments from the said liquid supply pipe, a vent at the top of said cabinet to permit the said liquid to rise upwardly therein and fill the said trays, and a valve attached to said liquid supply pipe and adapted, when in one position, to direct the liquid from a separate pipe into said cabinet through said supply pipe and, when in another position, to allow drainage of said liquid therefrom through said supply pipe.

5. An ice cube producing apparatus as set forth in claim 4 wherein each of the said shelves is spaced substantially close to the top of the ice cube tray thereunder in order to prevent the ice cubes in said tray from floating therefrom when the cabinet is filled with liquid and the said liquid melts the ice cubes and releases them from the said tray.

HAZEN B. BENNETT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
529,343	Church	Nov. 13, 1894
2,077,820	Arp	Apr. 20, 1937