W. H. MANSFIELD.
Liquid-Freezer.

No. 209,700. Patented Nov. 5, 1878.

Fig. 1

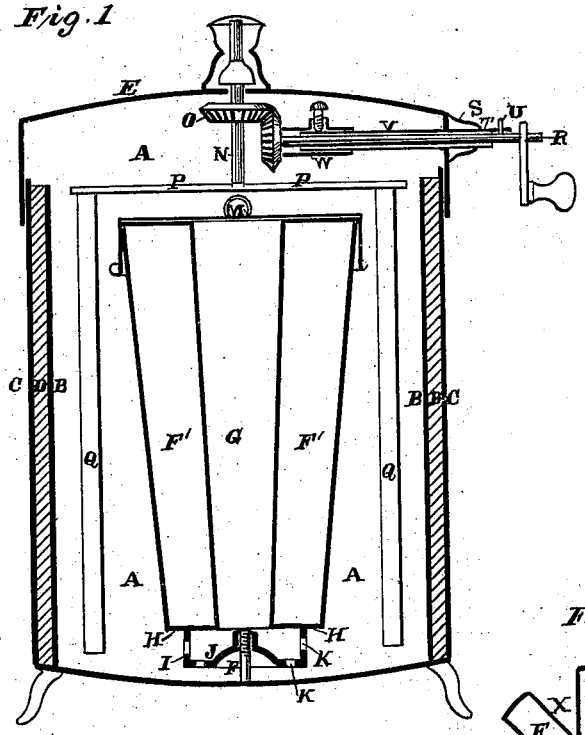


Fig. 2.

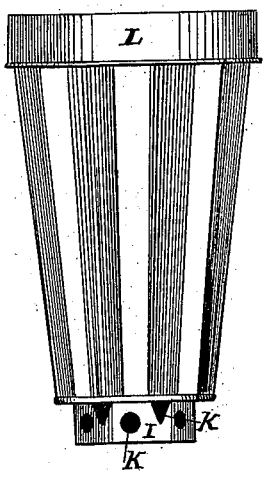


Fig. 3.

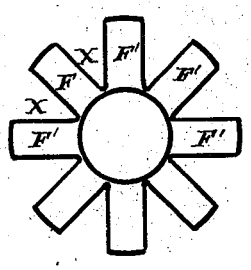
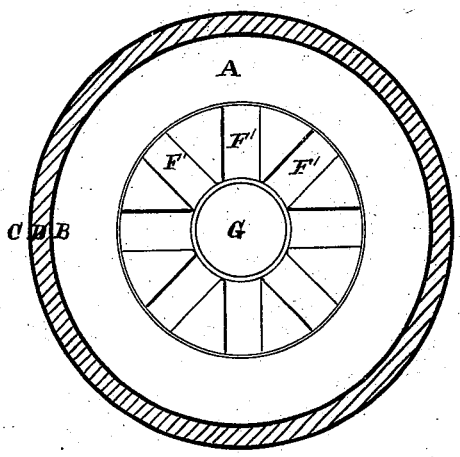


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM H. MANSFIELD, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THOMAS C. VAN NESS AND ROBERT N. WILLIAMS, OF SAME PLACE.

IMPROVEMENT IN LIQUID-FREEZERS.

Specification forming part of Letters Patent No. **209,700**, dated November 5, 1878; application filed September 7, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. MANSFIELD, of the city and county of San Francisco, and State of California, have invented an Improved Ice-Machine; and I do hereby declare the following to be a full, clear, and exact discription thereof, reference being had to the accompanying drawings.

My invention relates to that class of ice-machines which are portable, and are intended for family use where only a small amount of ice is made at a time.

My improvements consist in a novel construction of an outer inclosing vessel or tank and a series of circularly-arranged molds, having peculiar interspaces, so that the molds may be entirely surrounded by the freezing-mixture, and in combination with these semi-rotating oscillating or reciprocating stirrers.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section of my apparatus. Fig. 2 is an elevation of the molds. Fig. 3 is a horizontal section of the same. Fig. 4 is a horizontal section of the apparatus.

Let A represent the cylinder in which the freezing operation is conducted, said cylinder being mounted on legs or standards, as shown. This cylinder A is formed of three parts, the inner lining, B, being lead, and the outer, C, of heavy sheet metal, the space D between the inner and outer shells being filled with asbestus or other similar non-conducting substance.

A cap or cover, E, for closing the cylinder and sustaining the mechanism operating the stirrers, as hereinafter described, may be formed of a similar material to the cylinder itself.

In the bottom of this cylinder A is an upward-projecting bolt, F, having screw-threads formed on it, and onto which are screwed the peculiarly-arranged molds in which the ice is formed. These molds F′ are set in a vertical position, consecutively, around a hollow cylinder, G. They are made somewhat tapering, being somewhat smaller at the bottom than the top, as shown, so as to facilitate the removal of the blocks of ice which are formed therein. By their peculiar oblong shape and their arrangement side by side in a circle around the cylinder G, the refrigerative solution is enabled to reach the outer surface of each side of the mold.

When arranged as shown, there is a peculiar V-shaped space, X, between each two molds, thus enabling the refrigerative solution to touch three sides of each mold. In order that the solution may be in contact with the fourth side of the molds, which is that formed by the cylinder G, means are provided by which the solution may enter said cylinder from the bottom, so as to reach the height at which it stands outside.

Around the bottom of the cylinder G is attached an annular disk, H, which serves to close the bottom of the molds, and held there in position, but which does not close the bottom of the cylinder G. Secured to the under side of this disk H is a ring, I, having a bottom, J, said ring and bottom having holes K formed in them, as shown, so that any solution which is placed in the cylinder A may pass through these holes up into the cylinder G, and then be brought in contact with all four sides of each mold.

In the center of the bottom J of the ring I is a hole, in which is placed a nut, so that said ring and its bottom may be screwed onto the bolt F and the whole series of molds held in an upright position, as shown.

A circular plate or ring, L, is secured around the upper ends of the molds, as shown, so as to unite them firmly, and a cover, M, preferably of glass, fits down over the ring, closing the top of the molds and central cylinder, G, so that none of the solution may be splashed into the water in said molds during the process of manufacturing the ice.

In the center of the cover E of the main cylinder, on its under side, is journaled a vertical shaft, N, having a bevel-gear, O, near its upper end, and three or more horizontal arms, P, at its lower end. Attached to the ends of these arms are the dashers or stirrers Q, which extend down into the solution in the main cylinder or receptacle. A horizontal shaft, R, having a bevel-gear on its inner end to engage with the bevel-gear on the shaft N, passes through the side of the cover, and on its outer end is a handle, by which said shaft R may be turned. The box S, on the outside of the cover,

and through which the shaft R passes, has a projection, T, on its outer end, and a lug, U, on the shaft R prevents said shaft from being turned more than half-way around, it being the design to give the dashers a semi-rotary reciprocating motion by moving the handle of the shaft to and fro, thus stirring up the solution more thoroughly than by a direct rotary motion.

That portion of the shaft R which is on the inside of the cover is inclosed by a sleeve, V, which is secured to or forms part of the box S, and over this sleeve is another sleeve, W, in which is a set-screw. The sleeve W is movable, and may be slid up so that its end impinges against the back of the gear-wheel on the shaft R, and the set-screw set up tight. The shaft R cannot then slide back outwardly and separate the gears from contact with each other; but the gears are always held so that the teeth will mesh. The gears meshing as they do, the horizontal shaft supports the vertical one with the stirrers, preventing the latter from dropping down.

The operation of my device is as follows: The molds are filled with water and the cover inclosing them put in place. The refrigerative solution is then placed in the cylinder A and the cover E put on. Any of the many refrigerative solutions known may be used. The handle is then turned to and fro, and the dashers or stirrers agitate the liquid, so as to keep it in motion and keep up a circulation all around the mold. The solution may pass through the holes in the ring at the bottom of the molds, and thence up into the cylinder G, which forms one side of the molds.

By the peculiar churning motion of the dashers fresh portions of the solution are being continually brought in contact with the sides of the molds, both on their outer sides and the sides formed by the cylinder G. This process will produce the temperature necessary to form ice from the water in the molds in less than thirty minutes. When the water in the molds has become ice the cover may be lifted off, the molds taken out and reversed, when the blocks of ice formed in the molds will drop out into a suitable receptacle.

The cover *m*, I make of glass, in order that the process of freezing the water in the molds may be watched from time to time.

By lifting off the cover of the main cylinder the operator may look down through the glass cover of the molds and see whether the water has become frozen.

The object of forming the molds in the manner described is in order that small cakes of ice may be formed instead of one mass.

One or more cakes may be removed, and the others left in the molds ready for use, so that only so much as is needed at once is taken out.

Various forms of small molds arranged together may be used; but I prefer the arrangement herein described.

This machine is portable, and is intended mainly for family use, when small quantities of ice are to be made at one operation. For families residing at places where ice is difficult to procure, from one to twenty pounds of ice may be made in a few minutes with great convenience.

The machine may be made ornamental in appearance, and, as very little power is necessary to move the dashers, can be easily operated.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The radial ice-molds F′, constructed, as shown, around a central cylinder, G, which forms a part of each mold, and having the intervening angular spaces X between them, substantially as and for the purpose herein described.

2. The circularly-arranged molds F′, having one side formed of the central cylinder G, in combination with the annular disk H and perforated ring and bottom I J, inclosing a subchamber connecting with the interior cylinder, substantially as and for the purpose herein described.

3. In combination with an ice-machine and agitator, P, and shaft and bevel-wheel N O, the crank-rod R, provided with a stop, U, and sleeve V, having a portion at its end cut away, as described.

In witness whereof I have hereunto set my hand.

W. H. MANSFIELD.

Witnesses:
FRANK A. BROOKS,
WALTER C. BEATIE.