

(No Model.)

E. M. THOMPSON.
ICE CREAM FREEZER.

No. 491,930.

Patented Feb. 14, 1893.

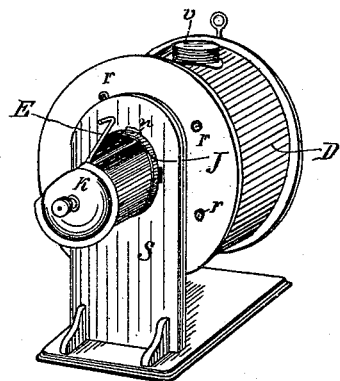


Fig. 1

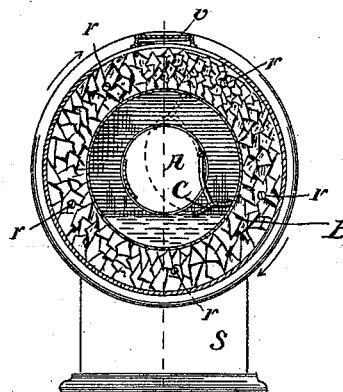


Fig. 2

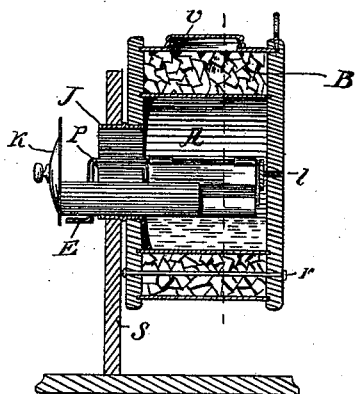


Fig. 3.

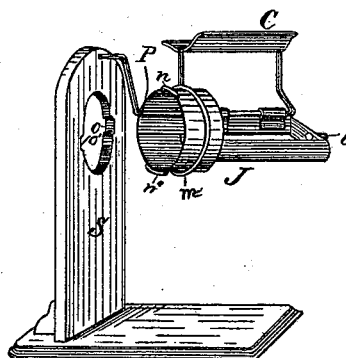


Fig. 4.

Witnesses

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ICE-CREAM FREEZER.

SPECIFICATION forming part of Letters Patent No. 491,930, dated February 14, 1893.

Application filed August 6, 1892. Serial No. 442,322. (No model.)

To all whom it may concern:

Be it known that I, EVERT M. THOMPSON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Freezing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for freezing cream, custards, ices, drinks &c. and consists in a novel arrangement of parts, wherein appear first a freezing drum composed of an inner and an outer cylinder affording, in addition to the freezing chamber within the inner cylinder, an annular chamber between the two cylinders for the reception of the freezing mixture; second a fixed arm supported horizontally by a stand, whereon the freezing drum is supported and may be revolved; third a scraper pivoted eccentrically to the arm, so it may scrape off the inner surface of the inner cylinder when operated by means of a crank exterior to the arm, the radius of this scraper being less than the diameter of the arm; fourth a scoop that may enter the tubular arm axially so that whatever is scraped off the inner surface of the freezing chamber above the scoop, will fall into it, and may thereby be removed from the freezing chamber.

Figure 1, is a perspective of my machine. Fig. 2, is a cross-section of the machine through the line y, y , Fig. 3, and at right angle to the axis; showing the ice chamber B; and freezing chamber A. Fig. 3, a cross-section through the line $x-x$ Fig. 2 and the axis of the machine; showing ice chamber B and freezing chamber A. Fig. 4, the stand that supports horizontally the journal, upon which the freezing drum revolves, and the axle or arm J, showing the scraper pivoted eccentrically to one of its sides, with the scraper crank E, exterior to the arm.

The stand, S, has in its vertical part, an opening or socket, with notches, o, o' , which permit the insertion of the arm J, on which are the lugs, n, n' , and the shoulder ring, m . When the crank, E, and scraper C, are turned

so their radius falls within the diameter of the arm J, the arm may be inserted into the socket of the stand, up as far as the shoulder ring m , then by turning the arm in its socket the lugs n, n' , and the shoulder ring, m , hold it rigidly in the vertical frame board. Now by holding the radius of the scraper within the diameter of the arm, the drum may be slipped on the journal and be supported thereon, centrally, by the periphery of the opening in the head of the drum, and the small journal, l , in the journal bearing, or hole, in the center of the bottom of the drum, all in such a way that the drum may be revolved on the arm J. Now with the drum thus supported centrally on the arm, it is apparent that by means of the crank, E, the scraper may be pressed against either the upper or lower inner surface of the inner cylinder, at will, and the scoop K inserted or removed at will.

A prime object of my invention is to reduce the time and labor heretofore required in congealing liquids with the ordinary machines. First, by expediting the contact of salt particles with ice particles, thereby intensifying the absorption of heat. This I accomplish by revolving the drum. It is plain that the rods r, r', r^2, r^3, r^4 , which hold the two opposite heads of the drum, also serve the additional purpose of clogs, to prevent the ice and salt from laying in the lower space of the drum as it revolves. These clogs carry the ice with them as the drum revolves, with the result that the water and salt rush through the interstices of the crushed ice thereby perfecting the rapid contact of the salt with the ice particles. Second, by employing every practical means for enhancing the easy transit of heat units from the substance being congealed to the absorbing freezing mixture, for which reason (a) I employ metals of the highest conductivity for the material of the inner cylinder; (b) and keep the frozen material scraped clean from the freezing surface, because this is itself a great obstruction to the passage of heat units from the liquid being frozen to the freezing mixture. How I accomplish this, and in addition avoid the laborious turning of the crank of the ordinary freezer for ten minutes to an hour in order

to congeal a quart or two of cream, is made apparent from the following description of the operation of my machine.

Preparatory to freezing any custard, ice, drink or cream I place the arm J, in its place within the drum, D, and lifting them together, I insert the arm J, in its socket in the frame, as described. Then I fill the annular chamber between the two cylinders with ice and salt, through the screw capped opening, v, and replace the cap. Then I withdraw the scoop, K, partly out, as shown in Figs. 1 and 3 and pour into it the cream. By gravity it flows into the lower space of the freezing chamber. No more cream should be poured in at one time than will fill the chamber up to the opening in the head. Now by means of a knob, pin, screw-eye or any simple point of resistance fixed in the head of the drum D, I turn the drum as shown by the arrows in Fig. 2, and while turning I press the scraper against the inner surface of the freezing chamber, as shown in Fig. 2 by pressing on the crank, E, see Fig. 3.

It is apparent that the liquid cream will lay in the lower part of the freezing chamber, excepting such as will adhere to the freezing surface. This film will become firmly congealed by the time it reaches the scraper, when it will be scraped off, and pass over the scraper into the mass of remaining liquid. A few minutes turning of the drum will suffice to thus congeal the entire quantity of the liquid contained in the freezing chamber, whereupon I withdraw the scoop, K, entirely, and by means of the crank, E, press the scraper against the upper inner surface of the freezing chamber, as shown in Fig. 2 by the dotted lines. Now I replace the scoop, and turn the drum in the reverse direction from that indicated by the arrows, Fig. 2 with the result that the congealed cream adheres to the freezing surface, is scraped off and falls into the scoop, and is thereby removed. Again I pour in cream as before, and again freeze and remove it as described and renew the ice and salt in the cylinder as required. Thus the machine is continuous in its operation, a small machine having any capacity desired.

To prevent the absorbtion of heat from the outside through the outer cylinder I cover the circumference of the drum with any non-conductor, preferably wood.

The machine may be entirely made of metal

but I prefer the construction shown, as the wood heads are rendered waterproof with shellac, and the ice chamber being pitched within, excepting the exterior of the inner cylinder, answers quite perfectly the non-conducting properties that the machine requires.

Now what I claim as new, and for which I desire Letters Patent, is—

1. The stand S, supporting horizontally the fixed tubular arm J which supports and upon which revolves the drum D composed of the cylindrical freezing-chamber A and freezing-mixture chamber B, in combination with the scraper C adapted to scrape from the inner surface of the freezing chamber A the frozen substance, so that it will fall by force of gravity into a receptacle within the area of the fixed tubular arm J, substantially as and for the purpose set forth.

2. The tubular arm J, having the scraper C pivoted eccentrally to it, the radius of the scraper C being less than the diameter of the tubular axle J, in combination with the freezing drum, D, substantially as set forth.

3. The tubular arm J, having the scraper C attached with its crank E exterior to the axle J, in combination with the freezing drum D, substantially as described.

4. The tubular arm J, the scraper C, pivoted to the axle J, the freezing drum D, and the scoop K, in combination with the stand S, substantially as described.

5. The stand S, the tubular arm J rigidly attached thereto, the scraper C adapted to scrape either the upper or lower inner surface of the freezing chamber of the drum D, revolving on the arm J in combination with the scoop K substantially as and for the purpose set forth.

6. The revoluble freezing drum D, composed of two concentric cylinders and two opposite heads drawn against the ends of the concentric cylinders by bolts adapted to also agitate the refrigerant within the annular space between the cylinders when the drum D revolves, in combination with the fixed horizontal arm J supported at one end by the stand S, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EVERT M. THOMPSON.

Witnesses:

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WINNIE MCCABE.