

(No Model.)

2 Sheets—Sheet 1.

H. W. ATWATER.
ICE CREAM FREEZER.

No. 511,319.

Patented Dec. 26, 1893.

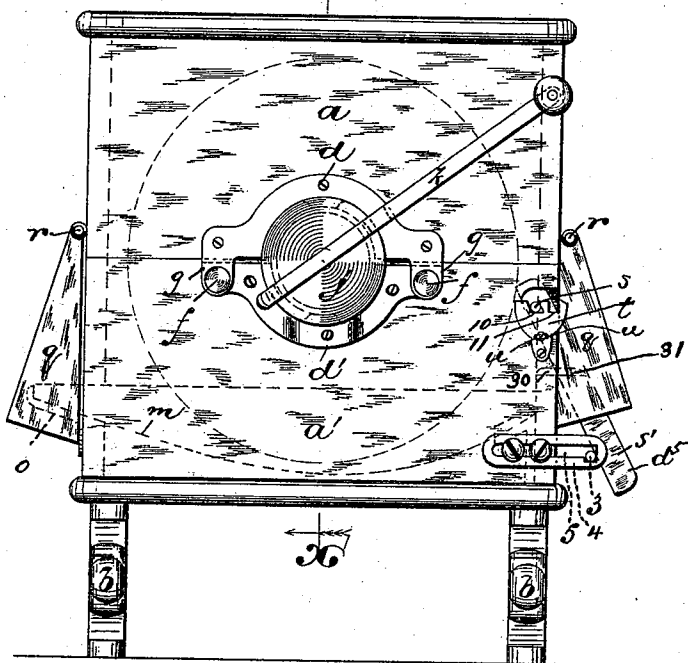


Fig. 1

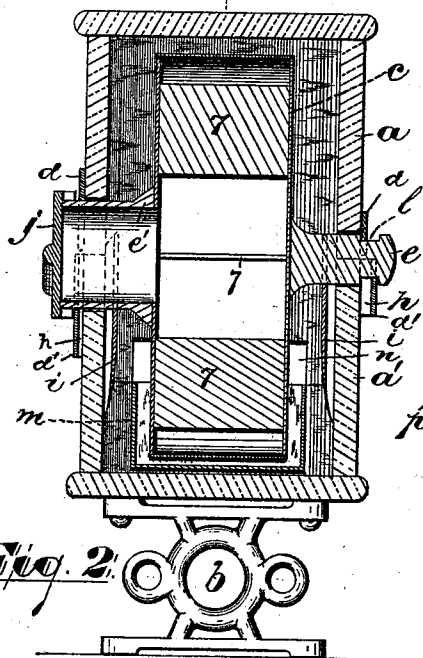


Fig. 2

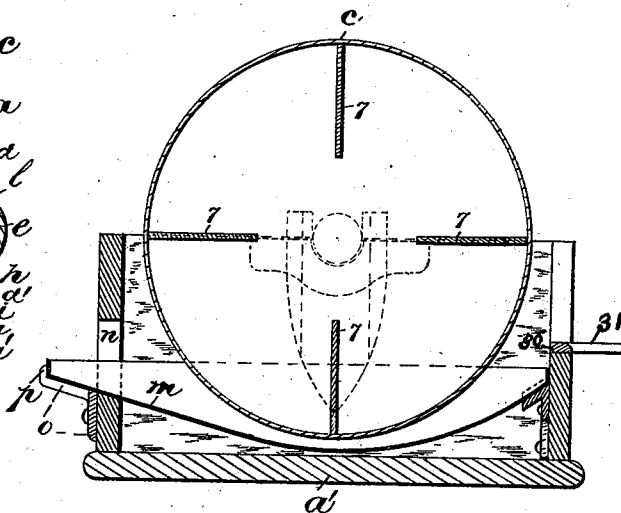


Fig. 3

Witnesses

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UNITED STATES PATENT OFFICE.

HENRY W. ATWATER, OF EAST ORANGE, NEW JERSEY.

ICE-CREAM FREEZER.

SPECIFICATION forming part of Letters Patent No. 511,319, dated December 26, 1893.

Application filed July 12, 1892. Serial No. 439,746. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. ATWATER, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Freezers for Ice-Cream, Water-Ices, &c.; 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, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of freezers for making ice cream, water ices, sherbets, and the like, illustrated by the device shown in my cotemporaneous application, Serial No. 395,417, filed June 6, 1891, the objects of the present improvements being to simplify the construction and reduce the cost of manufacture, to insure freedom from impurities in the product, coming from the introduction of dust or other extraneous matter during the working of the machine, to render the manufacturing more convenient, to facilitate the operations, and to secure other advantages and results, some of which will be referred to in connection with the description of the working parts.

The invention consists in the improved freezer or refrigerator and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth and finally embodied in the clauses of the claim.

Referring to the accompanying drawings in which like letters indicate corresponding parts in each of the several views, Figure 1 is a side elevation of the improved device. Fig. 2 is a central vertical section of the same taken through line *x*, and Fig. 3 is another vertical section taken on line *y*, Fig. 2, through the freezing cylinder and lower part of the case. Fig. 4 is an end view of the machine showing one of the hoods lifted. Fig. 5 is a detail showing a certain bearing plate for a chute rod, and Figs. 6 and 7 are inner and outer views of journal bearing plates.

In said drawings, *a, a*, are respectively the upper and lower sections of the case of the machine, which are separable one from the

other to admit access to the interior, the lower section being preferably provided with legs *b, b*. At the joint between the upper and lower sections, the case provides bearings, at its opposite sides, for the journals of a freezing cylinder, *c*, arranged to revolve within said case. The said journal bearings are of peculiar construction and serve, in addition to the function of holding the journals in proper position, as fastening means for holding the sections *a, a'*, together and as dowels and guides for bringing said sections into proper relative position with facility and ease. The said journal bearings consist of plates *d, d'*, screwed or otherwise secured to the outer sides of the sections at the meeting edges thereof, and are provided with semi-annular recesses which together form the openings or passages for the journals *e, e'*, the opening for the hollow journal, *e'*, being larger than the one for the opposite journal as will be understood. In each pair of bearing plates, one is provided, preferably the upper one, at its opposite ends with lips *g, g*, which overlaps the co-operating plate as shown in Fig. 1. These lips, *g*, one on each side of the case, are provided with fastening screws *f, f*, which pass through said lips and enter recesses or screw holes (not shown) in the inner co-operating plate and thus the said plates and the case sections to which they are fastened are firmly and rigidly held together.

The lips, *g, g*, are in pairs, one lying on each side of the journal recess, instead of a single lip at one side of the said recess as in my former application, and thus there is no danger of the upper section of the case skewing when being placed in position, and the said section is given greater firmness and security.

The inner sides of the lower plates, *d'*, are recessed, as at *h*, and when said plates are set up against the sides of the case, a vertical dust passage will be formed between the journal bearing (at which the particles are formed by the journal, which is ordinarily of cast iron covered with tin or zinc and more or less rough on the surface, grinding on the more or less rough bearing) and the cream pan. The said dust passage, *h*, beneath the journal, conducts the particles of metal, &c., from the cream pan so that they will not im-

pair the quality of the cream. Additional shields or guides, *i*, to prevent the said dust or other matter from the journal bearings, may be employed as in the drawings, the same being castings fastened against the inner sides of the case. These extend upward about half way around the journals within the case, and downward below the upper edges of the cream pan, so that the dust or dirt will fall outside of said pan. The said shields may be used in lieu of the plate having passages *h*, but ordinarily, the last said plate will be employed alone.

The hollow journal, *e'*, through which the ice and salt, or other refrigerating mixture, is introduced to the freezing cylinder, is of the ordinary construction or as heretofore employed by me, and is provided with a cap, *j*, and the latter with a crank or lever *k*, for turning the cylinder.

The cream pan, *m*, is of peculiar construction and arrangement. It is made longer than the interior of the case and projects through the opening, *n*, at the end of said case and thus forms a convenient outside receptacle for the cream. By this construction and arrangement, I dispense with an independent funnel and appliances and simplify the construction of the device. The cream pan is vertically movable when in position beneath the cylinder, so that the cream when about exhausted from the pan may be brought into contact with the cylinder and wholly taken thereby. The raising of the pan, so that the lowest point in its concavity, having the tailings of the liquid cream, is brought up against the cylinder, is facilitated by the pan extending outward beyond the walls of the case where it may be easily grasped by the hand. The ability to raise the pan also serves a good purpose in applying the ice crystals to the cylinder prior to freezing the cream. I prefer to keep the water in the pan away from the cylinder until I am ready to turn the cylinder and the hands are free to operate. I thus pour the water into the pan in limited quantity so that it will not touch the cylinder and at once begin to freeze while said cylinder is at rest; then, after freeing the hands so that they may manipulate the pan and cylinder together, I place one hand on the crank and the other on the outwardly projecting end of the pan and simultaneously raise said pan against the cylinder and turn the latter and, as a result, an even and regular and very thin coating of ice is formed on the periphery of the cylinder which will not materially produce a non-conducting coating such as will prevent the transmission of the cold, resulting from the action of the freezing mixture, to the cream. A bracket, *o*, secured to the outer side of the end of the case serves as a support for the projecting end of the pan. Said bracket is provided with a lip, or lips, *p*, which engage the extremity of said pan and prevent the latter from working

longitudinally outward, as will be understood upon examination of Fig. 3. From the projecting end, the bottom of the pan is inclined so that the fluid cream is led into contact with the freezing cylinder within the case.

The opening, *n*, and projecting pan, *m*, are covered by a pivoted and removable hood, *q*, which is hung on a hook and an eye, *r*, above the said opening. The hood serves to protect the exposed pan and to keep the cool air within the case. By raising the hood or by removing the same, access to the pan to feed the cream or examine the same is readily attainable. A similar hood, *q'*, is employed at the opposite end of the case to cover the scraper and its opening.

The scraper or chute shown in this case, differs from the one heretofore employed by me in some details of construction and arrangement, and is the one preferred in ordinary practice, in that it enables the scraper to be more nicely adjusted in its relation to the cylinder and a greater and more certain pressure is obtainable in scraping. The said scraper or chute, *d'*, herein shown consists of a piece of sheet tin having its sides, *s'*, bent up to form the chute as indicated. Said sides are perforated and through the perforations is forced a separator rod, *s*, which serves also as a pivotal support for the chute enabling it to be turned either into or from contact or scraping engagement with the cylinder. The rod, *s*, extending through the upturned sides of the chute and across the channel formed therebetween, forms a dam or brake for the frozen cream scraped from the cylinder so that said cream, instead of gravitating freely downward and out into the warmer outer air of the room, or normal atmosphere, is piled up at the scraper and kept cool because of its adjacency to the cylinder. The pile of cream thus formed on the cutting or scraping edge serves to keep said edge cold, so that it will not melt the thin, protecting layer of ice and strip it from the cylinder. After a pile is formed on said edge, the subsequent scrapings are free to gravitate to the receptacle. The said rod has its end bearings in plates *t*, *t*, fastened at the sides of the case, the said plates, preferably at their upper edges, being provided with recesses, 10, 11, to receive the opposite ends of the rod, and hold the same either so as to hold the chute into scraping engagement with the cylinder or from such engagement. The said plates may be slotted as at, *u*, to allow the adjustment of the same so that the scraping pressure of the edge of the chute may be increased or diminished. The lower end of the chute is supported by another rod, 3, which is a straight rod similar to the first referred to. It is carried at its opposite ends by adjustable plates, 4, secured to the sides of the case. The said rod lies in slots 5, 5, and is movable, when loosened, toward and from the end of the case so as to throw the scraping edge of the chute to or from engagement or to increase or di-

minish the pressure if the chute be already in engagement. A recess, 9, serves to prevent the rod from moving lengthwise of the slot, as will be understood.

5 To prevent the scraper from working laterally out of proper coincidence with the cylinder when operated by the hand, or, to guide it into such proper coincidence, I have provided a guide and stay, 30, Figs. 1, 3 and 4.
10 This consists, preferably, of a plate fastened upon the upper edge of the end plate of the case, at the bottom of the chute opening, and at its ends having fingers or stay projections, 31, which extend outward from the end of the
15 case and engage the opposite sides of the chute, so as to prevent lateral movement of said chute, as will be understood.

The operation of the machine is similar to the one heretofore described. Water is first
20 poured into the cream pan, after the freezing mixture is inserted in the cylinder, and the said cylinder is turned, so that a thin and hard film or layer of ice is frozen on the cylinder. When this water is taken up, the liquid
25 cream is inserted in the pan and, by still turning the cylinder, is frozen outside of said ice. This is afterward scraped off by the scraper, and is immediately ready for use. By means of the ice-coating on the cylinder
30 and the guards employed to prevent extraneous matter entering the cream, the latter is provided in the greatest purity.

Having thus described the invention, what I claim as new is—

35 1. The improved freezer herein described, in which are combined, case sections *a*, *a'*, a freezing cylinder having journals, one of which is hollow to allow the insertion of freezing mixture, and a scraper, and journal
40 plates, *d* and *d'*, having recesses, and overlapping lips on opposite sides of said recesses, and set screws, or similar setting devices, substantially as set forth.

2. In combination with a sectional case and
45 a freezing cylinder, journal bearing plates having recesses for the cylinder journals, and having at their inner sides recesses, *h*, forming dust or dirt passages, substantially as set forth.

50 3. In combination with the casing having an opening at one end, a freezing cylinder and means for turning the same, a cream pan located under the cylinder and extending through said opening so as to be manipulated
55 during the freezing operation without opening the casing, and having at the central portion greater depth than at the extremities, said pan being free to be moved to the cylinder, substantially as and for the purposes set
60 forth.

4. In combination with the sectional case, freezing cylinder, cream pan, a guard arranged between the journal bearing and the cream pan and adapted to guide the particles
65 of dust from said bearing to a point below the upper edge of the cream pan, substantially as set forth.

5. In combination with the case, freezing cylinder, and cream pan, plates *t*, *t'* secured upon said case and having rod bearings, a
70 rod, *s*, arranged on said plates and a chute, carried by said rod and an adjustable rod 3, at the lower end of said chute and supporting the same.

6. In combination with the case, freezing
75 cylinder, chute and upper support for said chute, a rod, 3, for holding the lower end of the chute in position and forcing the scraping extremity of the chute against the periphery of the cylinder.
80

7. In combination with the case, freezing cylinder, chute and upper support for said chute, and means, 3, at the lower end of said chute and holding said lower end in place
85 and pressing the upper end of said chute into scraping contact with the periphery of the cylinder, the said means having a limited elasticity providing for inequalities in the cylinder, substantially as set forth.

8. In combination with the case and freez-
90 ing cylinder, a chute and scraper combined in one, and a straight rod supporting said chute and scraper and removable therefrom, and a second rod for throwing said chute or scraper into contact with the cylinder with greater
95 force, substantially as set forth.

9. In an ice-cream freezer, the combination with the case, freezing cylinder, and cream pan, a chute and scraper having a break or dam in its channel to interrupt, in a degree,
100 the gravitation of the frozen cream and hold it within the cold interior of the case, substantially as set forth.

10. In combination with the cylinder of an ice cream freezer, a scraper engaging said cyl-
105 inder to scrape the frozen cream therefrom, and a break or dam arranged in close adjacency to said scraper to obstruct the gravitation of the frozen cream and cause it to fill up at and near the scraping edge and thus
110 keep cool and more hard, substantially as set forth.

11. In combination with the cylinder of an ice cream freezer, a chute having a scraping edge and a chute carrying rod extending
115 across the channel or passage of the chute and forming a break or dam for the cream.

12. In combination with the cylinder of an ice cream freezer a chute of sheet metal having its lateral edges upturned and having a
120 rod extend across the channel formed by said lateral edges, back from the upper or inner edge of said chute, to obstruct the flow or passage of frozen matter.

13. In combination with the case having an
125 open end to receive a scraper, and having, adjacent to said open end, rod bearings, a scraper and chute having lateral upturned edges and a rod extending across the upper side of said chute to form a dam or break and
130 having end bearings in said case, substantially as described.

14. In combination with the case, freezing cylinder, chute and carrying rod, plates *t*, *t'*,

secured to the sides of the case and providing bearings for said rod, said bearings being movable to or from the cylinder, substantially as set forth.

5 15. In combination with the case, freezing cylinder, chute and rod, plates *t, t*, slotted to allow of adjustment on the case and provided at the upper part with recessed bearings for said rod, substantially as set forth.

10 16. The combination with the case, freezing cylinder and scraper, the last being adjust-

able in its relation to the cylinder, of a guide secured to the case and having fingers or stay projections to engage the opposite sides of the scraper.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of July, 1892.

HENRY W. ATWATER.

Witnesses:

CHARLES H. PELL,
OSCAR A. MICHEL.