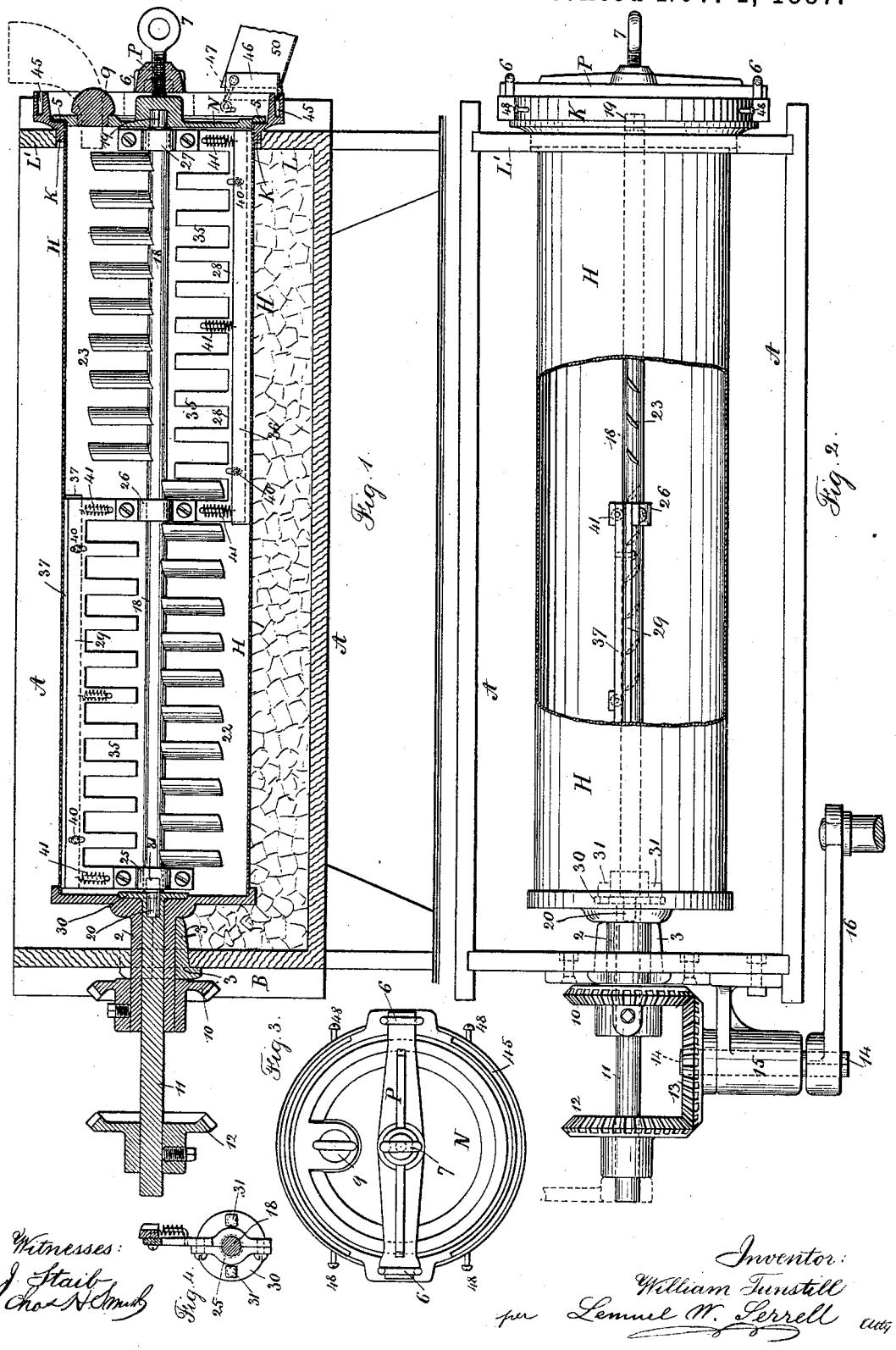
(No Model.)

W. TUNSTILL.

ICE CREAM FREEZER.

No. 372,393. Patented Nov. 1, 1887.



Witnesses:
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N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM TUNSTILL, OF BROOKLYN, NEW YORK.

ICE-CREAM FREEZER.

SPECIFICATION forming part of Letters Patent No. 372,393, dated November 1, 1887.

Application filed February 21, 1887. Serial No. 228,320. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM TUNSTILL, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Ice-Cream Freezers, of which the following is a specification.

This invention is an improvement upon that for which Letters Patent were granted to me October 21, 1884, No. 307,075. In this patent the holder for the cream occupies a horizontal position, and the stirrers or beaters are rotated in one direction and the cylinder in the opposite direction by bevel-gearing; but as the gearing is in front of the removable head difficulty has been experienced in emptying the cream from the freezer without the same becoming soiled or injured by particles of oil or dirt in the gearing.

The object of my invention is to facilitate the introduction and removal of the cream from the horizontal cylinder by placing the driving-gearing at the back end of the cylinder, so that access is given for easily opening or closing the removable head, and the cylinder itself can remain within the ice-box, so that no time is lost in filling the freezer or in discharging the frozen cream.

In the drawings, Figure 1 is a vertical section of the freezer complete, the beaters or stirrers being in elevation. Fig. 2 is a plan with part of the cylinder broken open. Fig. 3 is an elevation of the end of the cylinder and the head, and Fig. 4 is a section through the stirrer and an elevation of the end of the driving-shaft.

The ice-box A is of any desired size, and it has a stationary head, B, at one end and a head, L, at the other end, in which is a semicircular opening that receives the ring K upon the cylinder H of the freezer; and there is a movable gate, L′, with a semicircular opening in the under part, so that the two parts will close around the ring K of the cylinder to retain the ice within the box A and around the cylinder H. These parts are similar to those shown in my aforesaid patent, except that the head B is perforated for the passage of the tubular shaft 2 at the back end of the cylinder H, and this tubular shaft 2 rests in a bearing, 3, that is fastened to the back head, B, of the ice-box; and it is preferable to make this back head in two parts, the upper part being movable, so that it can be slipped down into place after the cylinder H and its shaft 2 have been placed in the ice-box.

The cylinder H may be tapering, as in my aforesaid patent; but I have shown it of the same diameter throughout. The ring K is soldered fast to the exterior of the cylinder H, and the movable head N is circular and provided with a washer at 5, and the cross-bar P is entered at its ends beneath the loops 6 upon said ring K after the head has been put in place, and then the clamp screw 7 is turned to fasten the head tightly to the end of the cylinder, the washer 5 rendering the parts watertight; and when the cylinder is to be opened the screw 7 is loosened, the cross-bar P slipped out from the loop 6, and then the head can be taken off for removing the contents of the cylinder.

One peculiarity of my present invention relates to the screw-plug 9, that is inserted into a hole in the head N, so that by removing this screw-plug and turning the cylinder so that the opening for such screw-plug is in the upper part of the head, the milk, cream, or other materials to be beaten or frozen can be poured into the cylinder H while such cylinder remains in a horizontal position, there being a funnel with a bent or horizontal delivery-tube (shown by dotted lines in Fig. 1) applied at the opening, so that such materials run freely into the cylinder, while the head remains firmly clamped to close the end of said cylinder, and after such materials have been introduced and the funnel removed the screw-plug is inserted to close the hole in the head.

Upon the tubular axis 2 of the cylinder H is a gear-wheel, 10, and through the tubular axis is the shaft 11, upon which is the bevel gear-wheel 12, and the intermediate bevel gear-wheel, 13, is upon a shaft, 14, that is supported by a bracket, 15, screwed upon the head B of the ice-box, and a crank, 16, is applied either to the end of the shaft 14 or to the end of the shaft 11, so that by turning this crank the shaft 11 will be rotated in one direction and the tubular shaft 2 and cylinder H will be rotated in the other direction through the intervention of the bevel or miter gearing.

The beaters or stirrers within the freezer are

to be of any desired character; but it is preferable to make use of the compound beater represented, in which the shaft 18 is provided with a square, 19, at one end, that enters a polygonal recess in the center of the head N, and the other end, 20, of said shaft 18 is reduced in size and enters a socket in the end of the shaft 11, and there are rows of fingers 22 and 23 projecting laterally at opposite sides of the shaft 18, and these fingers are preferably in the form of narrow plates or blades placed diagonally, as seen in Fig. 2.

It will now be apparent that the shaft 18 revolves with the cylinder A, in consequence of the square 19 entering a corresponding recess in the head N, said head being clamped to and revolving with the cylinder, but the shaft 11, with the socket that receives the end 20 of the shaft 18, is revolving in the opposite direction, and I make use of this shaft 11 to give motion to the frame of scrapers or beaters composed of the bearings 25 26 27 and the longitudinal bars 28 and 29, the bearings 25, 26, and 27 being supported by but revolving around the shaft 18 in the opposite direction; and to connect the shaft 11 with the frame I provide at the end of said shaft 11 a disk, 30, with lugs 31 projecting from its face, as seen in Fig. 4, which lugs come in contact with the bearing 25, and thereby revolve the same and the other parts, 29, 26, 28, and 27, that are connected with the said bearing 25; and from the bars 28 and 29 there are inwardly-projecting fingers or stirrers 35, that pass between the fingers 22 and 23, respectively, as the parts are revolved in the opposite direction, as aforesaid, thus thoroughly mixing up or stirring the contents of the cylinder H; and in order to scrape the frozen cream from the interior of the cylinder H, I apply the slats 36 and 37 upon the bars 28 and 29, respectively, there being screws at 40, passing through slots and holding the slats in place upon the bars, and springs 41 to press the slats outwardly and cause their edges to scrape the interior surface of the cylinder H. Yielding slats have been used upon ice-cream freezers, and these scrapers may be of any desired character.

It will now be apparent that the cracked ice and salt that are packed into the box A and around the cylinder H do not interfere with the revolution of the said cylinder, and all the driving mechanism is at the back end of the cylinder, and does not interfere with the opening or closing of the cylinder-head, and there is nothing to soil the cream and the beaters or stirrers, and the shaft 18 can be easily taken out for removing the cream from the surface of the same, or replaced and connected to the head by the square, as before mentioned.

The rim of the ring K projects sufficiently beyond the end L of the ice-box for the cream to be drawn out into a holder or suitable vessel placed beneath such rim; but as an additional precaution, and to aid in rapidly discharging the cream, I form in the rim of the ring K the deep segmental grooves 45 and introduce into the segmental groove, which is at the bottom when the cylinder-head is opened, a segmental strip of metal, 46, forming a discharge-lip that projects any desired distance, and down which the frozen cream or other material flows or is drawn by a spoon as it is delivered from the cylinder H.

It is preferable to connect upon this lip-piece 46 hooks at 47, to hook over the studs 48 upon the outer edges of the ring K, so as to hold such delivery-lip in place; and in large freezers it is preferable to hinge upon the delivery-lip 46 a swinging spout, 50, that may be inclined more or less, and placed with its lower end into the vessel that receives the frozen cream or other material.

I have shown in the drawings a machine that is adapted to being driven by hand-power; but with larger machines that are driven by steam-power it is preferable to employ an iron frame with legs for supporting the ice-box, and with a shaft and driving-pulley for a belt to give the necessary power for rotating the gearing and the respective shafts.

I claim as my invention—

1. The combination, in an ice-cream freezer, of a box to hold the ice, a hollow cylinder with its open end projecting through one end of the ice-box, and a movable head and clamping device for this end of the cylinder, a tubular shaft connected to the other end of the cylinder and projecting through the back end of the ice-box, a shaft, 11, within the tubular shaft, a stirrer within the cylinder and connected with the shaft 11, and mechanism, substantially as specified, for rotating the respective parts, substantially as set forth.

2. The combination, in an ice-cream freezer, of a cylinder having one end open and the other closed, an ice-box for receiving such cylinder, having an end through which the open end of the cylinder projects, and a movable head cross-bar and clamping-screw for closing the open end of the cylinder, and a shaft at the closed end of the cylinder, permanently connected therewith, and a bearing through which the shaft projects and to which the power for revolving the cylinder is applied, substantially as set forth.

3. In an ice-cream freezer, a ring around the open end having a rim with a deep segmental groove, in combination with a removable lip adapted to be inserted into the segmental groove, substantially as set forth.

4. In an ice-cream freezer, a cylinder and a removable head at one end and a tubular shaft forming a bearing at the other end, in combination with a stirrer or beater introduced into the freezer, and a shaft passing through the tubular shaft of the freezer and connected with the stirrer or beater, so as to revolve the same within the freezer, substantially as set forth.

5. The combination, with the cylinder and

removable head in a freezer, of a tubular shaft at the opposite end of the freezer to the head, a shaft within the freezer, mechanism, substantially as set forth, for rotating the respective parts, a beater-shaft within the freezer, connected at one end with the removable head, and a stirrer or beater frame with bearings upon the said shaft and revoluble around the same by a connection to the shaft that is within the tubular shaft of the cylinder, substantially as set forth.

Signed by me this 16th day of February, 1887.

WILLIAM TUNSTILL.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.