No. 816,652. PATENTED APR. 3, 1906.

J. E. DUNNE & C. A. FLETCHER.

ICE CREAM FREEZER.

APPLICATION FILED FEB. 21, 1905.

2 SHEETS—SHEET 1.

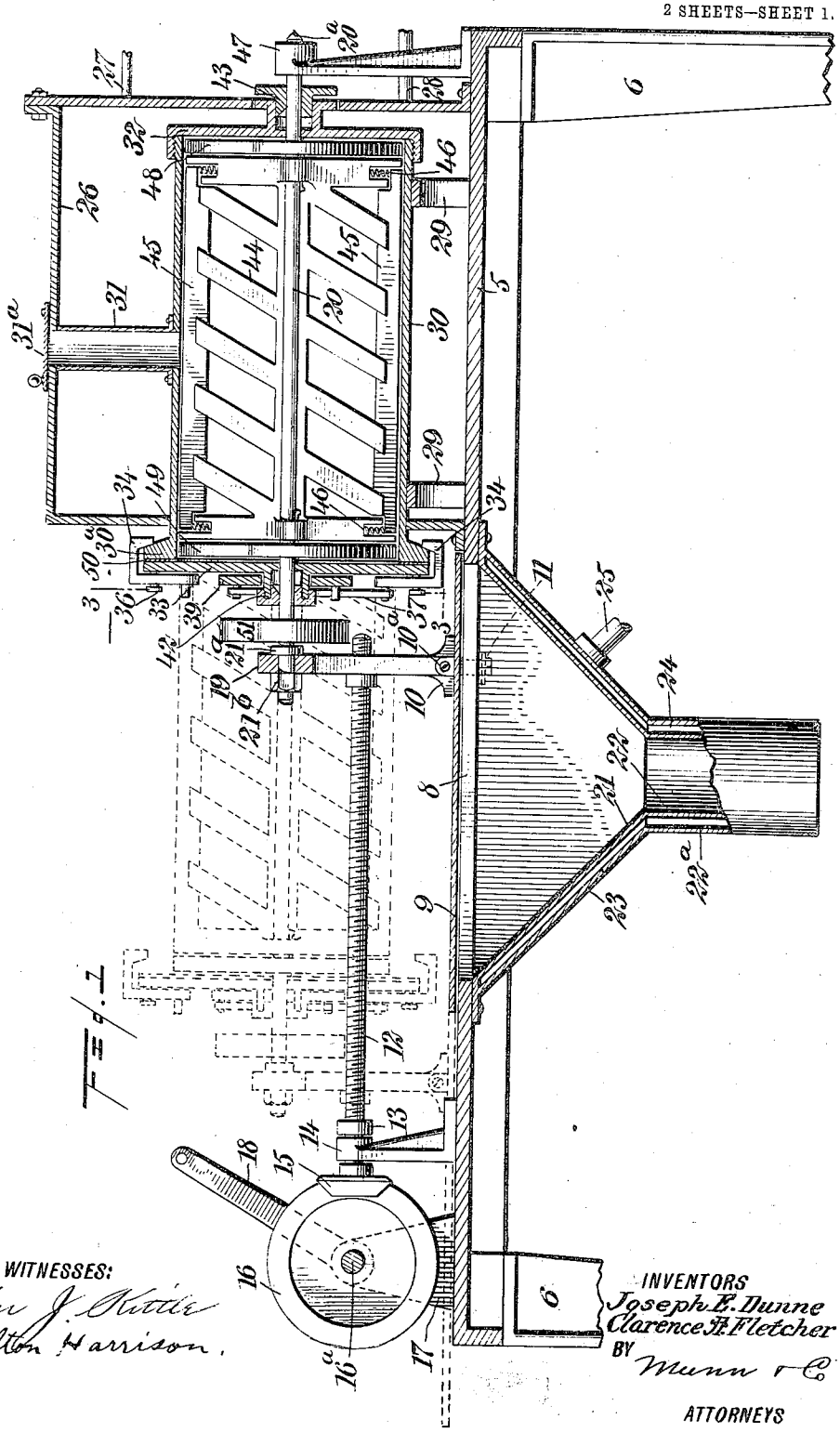


FIG. 1.

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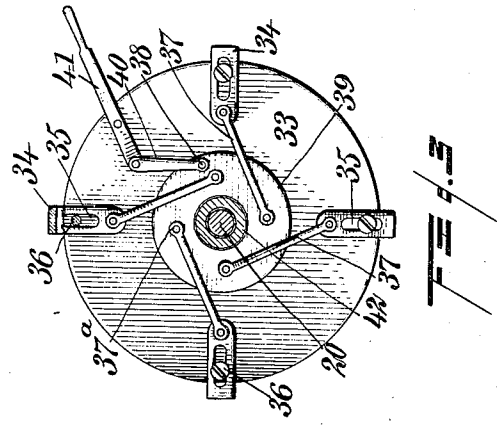


Fig. 3.

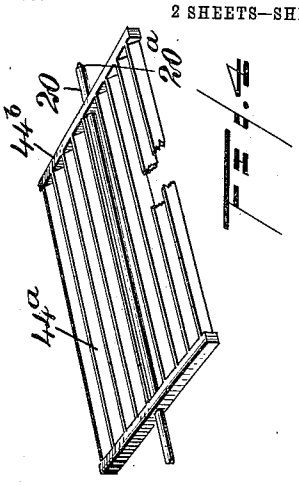


Fig. 4.

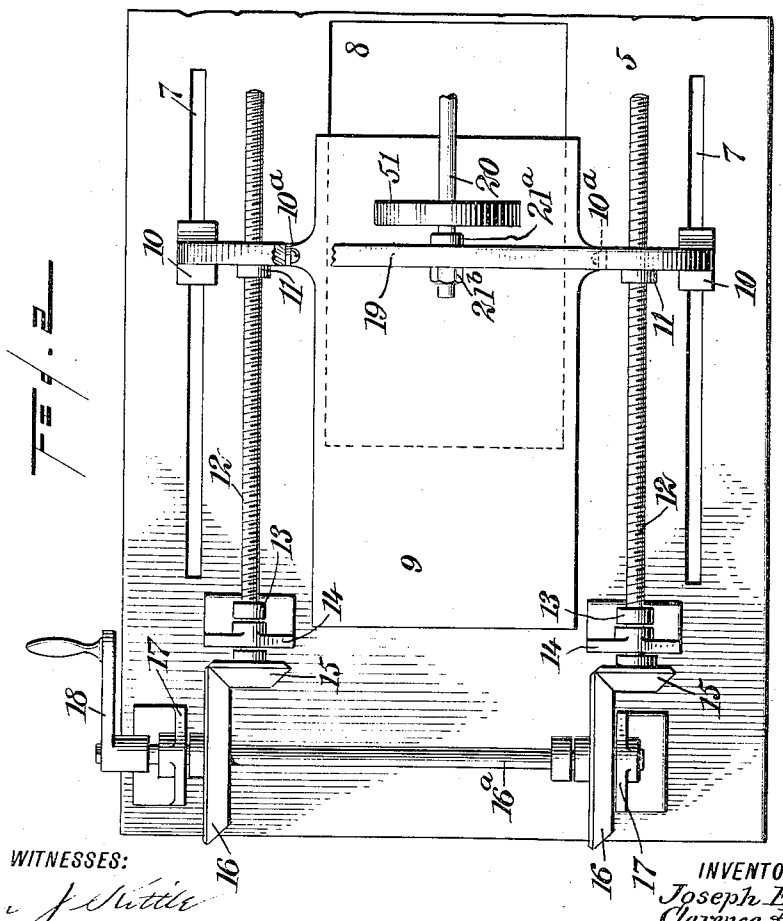


Fig. 2.

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JOSEPH EDWARD DUNNE AND CLARENCE AURELIUS FLETCHER, OF CHICAGO, ILLINOIS.

ICE-CREAM FREEZER.

No. 816,652. Specification of Letters Patent. Patented April 3, 1906.

Application filed February 21, 1905. Serial No. 246,746.

To all whom it may concern:

Be it known that we, JOSEPH EDWARD DUNNE and CLARENCE AURELIUS FLETCHER, citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Ice-Cream Freezer, of which the following is a full, clear, and exact description.

Our invention relates to ice-cream freezers, and more particularly to those intended to be built upon a large scale.

Our invention further relates to various constructional improvements, whereby the capacity of the freezer is greatly increased and the apparatus is rendered more easily accessible and more readily handled than freezers as heretofore constructed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical longitudinal section through a freezer made in accordance with our invention. Fig. 2 is a fragmentary plan view of the gearing used for emptying the freezer. Fig. 3 is a vertical section upon the line 3 3 of Fig. 1 looking in the direction of the arrow, showing the closure-head in the freezing-chamber and the means for operating the same; and Fig. 4 is a perspective view of a modified form of dasher employed.

A table 5 is provided with supporting-legs 6 and with longitudinal slots 7, disposed upon opposite sides of a doorway 8. A sliding door 9 is adapted to cover the doorway 8 and is made a little longer than the same, as indicated in Fig. 2. By means of screws 10^a this sliding door 9 is connected with brackets 10, sliding in the slots 7 and provided with threaded portions 11, which engage threaded stems 12, provided with annular stops 13 and resting in bearings 14, so as to be revoluble relatively thereto. The stems 12 are each provided with a bevel-gear 15, which engages a larger bevel-gear 16, there being two of these last-mentioned bevel-gears mounted upon a single shaft 16^a, the latter being revolubly supported in bearings 17 and provided with a hand-crank 18, whereby the shaft may be rotated at will. We do not limit ourselves, however, to the use of the hand-crank 18, as any other form of revoluble gear member may be employed instead of the crank. By turning the hand-crank 18 motion is communicated through the bevel-gears 16 and 15 to the threaded stems 12, and this causes the sliding door 9 to move back and forth, according to the direction of rotation of the stems, so that the doorway 8 is covered or uncovered, as the case may be. A yoke 19 it connected rigidly with the sliding brackets 10 and extends over the doorway 8 in the same manner as an arch. Revolubly connected with the yoke 19 by means of an annular stop 21^a and a nut 21^b is a shaft 20, provided with a conical end 20^a. Mounted upon the under side of the table 5 are a pair of funnel-shaped members 21 23, disposed concentrically to each other, the outer member 23 being connected to a steam-pipe 25, whereby steam may be admitted intermediate of the funnel-shaped members. The two funnel-shaped members terminate at their lower ends in cylindrical members 22 22^a, connected together and separated by a space 24, which communicates with the steam-pipe 25 in such manner that it may be filled with steam therefrom. By this means a gentle heat may be conferred upon the funnel-shaped members, and particularly upon the inner funnel-shaped member 21 and also upon the inner cylindrical member 22.

A refrigerating-tank 26 is mounted upon the table 5 and is provided with inlet and exit pipes 27 28. The purpose of these pipes is to fill the refrigerating-tank with a freezing mixture or with a cold brine prepared extraneously to the apparatus for the purpose of abstracting heat from the substance to be operated upon. Mounted within the receptacle 26 are supports 29, upon which rests a cylindrical member 30, constituting the body portion of the freezing-chamber. The cylindrical member 30 terminates at one of its ends in an annular flange 30^a, beveled, as indicated in Fig. 1. The upper wall of the receptacle 26 is connected with the freezing-chamber 30 by means of a tubular member 31, closed by a door 31^a. This door and tubular member are used for the purpose of placing the ice-cream or other commodity to be frozen within the freezing-chamber 30. One end of the freezing-chamber 30 is provided with a closure member 32, threaded and fitted thereupon, so as to form a water-tight joint. The other end of the freezing-

chamber is provided with a closure member 33, having the form of a flat disk of a diameter commensurate with that of the greatest diameter of the flange 30^a. (See Figs. 1 and 3.) The closure member 33 is provided with a number of clamps 34, spaced equidistant upon its periphery, each clamp being provided with a slot 35, in which slidably engages a pin 36, carried by the closure member 33, so that when the several clamps are drawn inwardly they bind slightly upon the beveled flange 30^a, and yet when they move outwardly they are released from engagement with said flange. Links 37 are each connected with the clamps 34 and with pins 37^a, mounted upon a rocking disk 39. This disk carries another pin 38, which is engaged by a link 40, the latter being connected directly with a hand-lever 41. By manipulating the hand-lever the rocking disk 39 is caused to move in either of two directions, and in so doing it moves the clamps 35 inwardly or outwardly, as the case may be, so as to grip or release the flange 30^a. By causing the clamps to release the flange the disk 33 may be moved away from the freezing-chamber 30, as hereinafter described. The disk 33 is provided with a stuffing-box 42, which engages the shaft 20, so as to form a water-tight connection therewith. Another stuffing-box 43 similarly engages the other end of the shaft 20 and is located at the opposite end of the freezing-chamber 30.

Keyed upon the shaft 20 are blades 44, connected with panels 45 and free to move slightly in relation thereto, being tensioned by means of springs 46. The panels 45 thus form a snug connection with the inner surface of the freezing-chamber 30. If desired, the form of the dasher shown in Fig. 4 may be employed instead. In this construction slats 44^a are connected with beams 44^b, the whole being rigidly mounted upon the shaft 20 and revoluble therewith.

Encircling one end of the shaft 20 is a bearing 47, preferably a ball-bearing or a roller-bearing, and made of such form that the conical end 20^a of the shaft 20 may be readily inserted into it.

Mounted rigidly upon the shaft 20 and revoluble therewith are pistons 48 49, each having substantially the form of a flat disk. A gasket 50 is employed intermediate of the flange 30^a and the disk 33 for the purpose of rendering the freezing-chamber water-tight, the disk 33 and the gasket 50 constituting a very effective form of closure member for the freezing-chamber 30. The shaft 20 is rotated by means of a pulley 51. (See Figs. 1 and 2.)

Our apparatus is used as follows: The closure member 33 and the gasket 50 having been placed in position the clamps 35 are applied by means of the lever 41, so as to render the freezing-chamber completely water-tight. The freezing mixture, brine, or other refrigerant is charged into the receptacle 26 and cools the freezing-chamber 30. The ice-cream or other commodity to be operated upon is passed downwardly through the door 31^a and the tubular member 31 directly into the freezing-chamber 30. The pulley 51 is now operated, thus causing the revolution of the shaft 20 and the dasher carried by it, so that the ice-cream or analogous commodity is frozen substantially in the usual manner. The freezing being complete, the clamps are unlocked and the hand-crank 18 or other revoluble gear member is turned, so as to rotate the threaded stems 12, and this draws the yoke 19 in a lateral direction, and consequently causes the door 9 to move to the left, according to the view shown in Fig. 2. The doorway 8 is thus gradually opened. The movement of the yoke 19 to the left causes the shaft 20 to travel longitudinally to the left, so that this shaft is withdrawn from the bearing 47 and also from the stuffing-box 43. The piston 48, however, prevents the shaft 20 from falling and holds it centrally within the freezing-chamber 30. The piston 48 also causes the ice-cream or other commodity to be carried to the left, so that as the door 9 gradually uncovers the doorway 8 the ice-cream or other commodity is fed into the funnel-shaped member 21, which serves as a sort of hopper. The movement of the hand-crank 18 being continued sufficiently all of the ice-cream or other commodity contained within the freezing-chamber is discharged into the funnel-shaped member 21 and passes downwardly through the cylinder 22, from which it may be discharged in any appropriate manner or fed into cans. Should the ice-cream or similar substance be too cold to move downwardly within the funnel-shaped member 21, a little steam is admitted through the pipe 25 into the steam-jacket, consisting of the members 21 23, separated by the space 24, and the heat thus produced melts a thin pellicle of the commodity, so as to cause the mass to slip downwardly with ease. It will be understood, of course, that too much steam should not be turned on, for the reason that this would melt the ice-cream or otherwise undo the work of the freezer. Only enough steam is admitted to effect a sort of lubrication for the purpose of enabling the commodity to move with sufficient freedom. The piston 48, because of its neat fit within the freezing-chamber, causes the entire commodity contents of the freezing-chamber to be ejected, leaving no part of the same adhering to the sides. The freezing-chamber may then be scalded or otherwise cleaned, if desired. One of its ends is completely opened and all parts of its interior are readily accessible. When ready to proceed, the operator reverses the direction of rotation of the hand-crank 18 or other revoluble gear member,

causing the dasher, the shaft, and all other parts to move back into place, and then by moving the hand-lever 41 the clamps 35 are locked upon the beveled flange 30ª and the apparatus is ready for another charge. Of course the contents of the refrigerating-receptacle 26 may be discharged as often as desired and replaced with fresh material or the supply may be allowed to flow continuously through the pipes 27 and 28.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of a freezing-chamber, a shaft extending into said freezing-chamber, a piston mounted upon said shaft for the purpose of ejecting a commodity from said freezing-chamber, a hopper disposed adjacent to said freezing-chamber, a door movable relatively to said hopper, and means controllable at will for moving said door and said shaft simultaneously.

2. The combination of a receptacle for containing a freezing mixture or the like, a freezing-chamber mounted within said receptacle and projecting therefrom, said freezing-chamber being provided with an open end, a closure member for said open end, a shaft extending through said closure member, means for supporting said shaft, mechanism for withdrawing said shaft from a part of its supporting means, and partly from said freezing-chamber, a dasher connected with said shaft, and a piston mounted upon said shaft and coacting therewith for ejecting a commodity from said freezing-chamber.

3. The combination of a freezing-chamber, a dasher revolubly mounted within said freezing-chamber, a closure member for said freezing-chamber, and means controllable at will and connected with said closure member and with said dasher, for removing the same simultaneously.

4. The combination of a table provided with a gateway, a movable gate for opening and closing said gateway, a freezing-chamber disposed adjacent to said gateway and adapted to discharge its contents thereinto, ejecting mechanism for ejecting a commodity from said freezing-chamber through said gateway, and means connected with said movable gate and also connected with said mechanism, for the purpose of actuating the same and ejecting said commodity.

5. The combination of a freezing-chamber, mechanism for ejecting a frozen commodity from said freezing-chamber, a hopper disposed adjacent to said freezing-chamber for receiving and guiding the commodity thus ejected, and a steam-jacket for heating said hopper so as to slightly melt said commodity.

6. The combination of a driving mechanism, gearing connected therewith and including a pair of revoluble threaded stems, a yoke provided with portions engaging said stems, whereby said yoke may be moved in opposite directions according to the direction of motion of said driving mechanism, a dasher connected with said yoke, means for turning said dasher, a piston connected with said dasher, and a freezing-chamber encircling said dasher and said piston.

7. The combination of a receptacle for holding a refrigerant, a freezing-chamber mounted partially within said receptacle, a shaft passing through said freezing-chamber and said receptacle, a piston mounted upon said shaft bearings for supporting said shaft, and gearing controllable at will for causing said shaft to travel in the general direction of its axis so as to remove it from said freezing-chamber.

8. The combination of a receptacle for holding a refrigerant, a freezing-chamber mounted partially within said receptacle, a tubular member extending from the outer surface of said receptacle to said freezing-chamber so as to place said freezing-chamber in communication with the outer atmosphere, a closure member for said tubular member, a dasher mounted within said freezing-chamber, means for actuating said dasher incidental to the freezing of a commodity within said freezing-chamber, and means controllable at will for removing said dasher without disturbing said closure member.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOSEPH EDWARD DUNNE.
CLARENCE AURELIUS FLETCHER.

Witnesses:
W. J. McNAMARA,
E. LANDRY.