3 Sheets—Sheet 1.

J. DOOLING.

ICE-CREAM FREEZER.

No. 180,421. Patented Aug. 1, 1876.

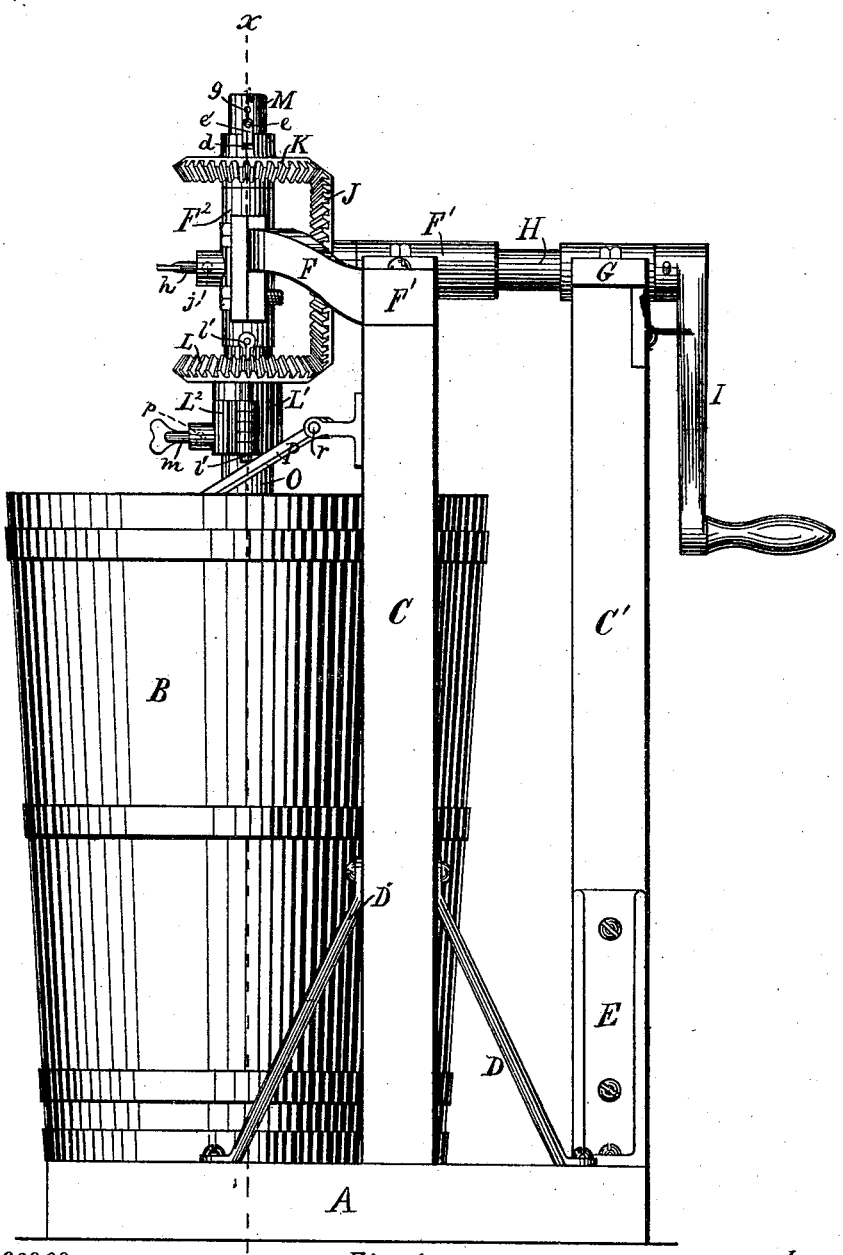

Fig. 1.

Witnesses.

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Inventor.

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3 Sheets—Sheet 2.

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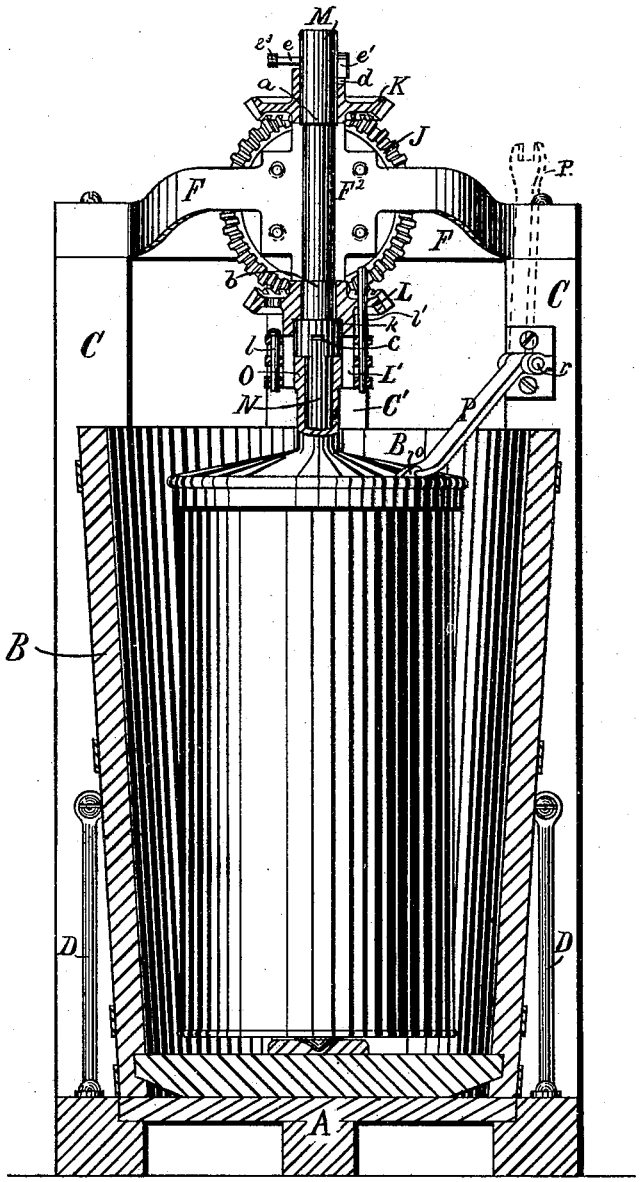

Fig. 2.

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3 Sheets—Sheet 3.

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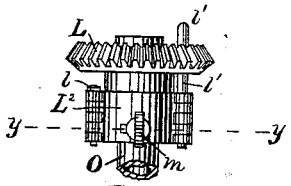

Fig. 4.

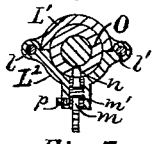

Fig. 5.

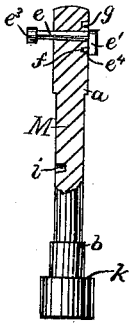

Fig. 6.

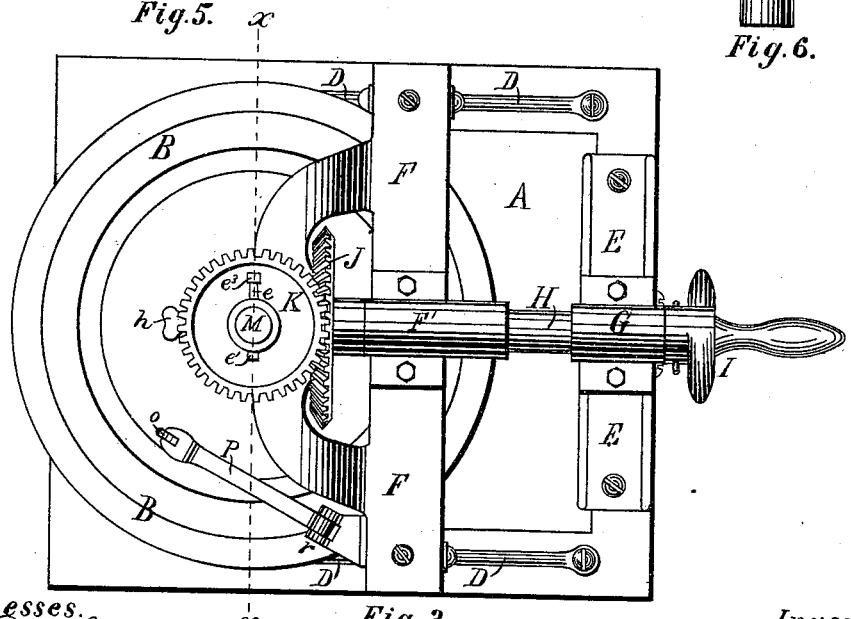

Fig. 3.

Witnesses.

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E. A. Hemmenway.

Inventor.

Jamy Dooling

UNITED STATES PATENT OFFICE.

JAMES DOOLING, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ICE-CREAM FREEZERS.

Specification forming part of Letters Patent No. **180,421**, dated August 1, 1876; application filed April 3, 1876.

To all whom it may concern:

Be it known that I, JAMES DOOLING, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ice-Cream Freezers, of which the following, taken in connection with the accompanying drawings, is a specification:

My invention relates to the arrangement of the gearing for operating the beater and cream-holder, the manner of supporting the spindle and socket, which connect with and operate the beater and cream-holder, and the means employed to control the motion of the beater and cream-holder; and it consists, first, in the combination of a short vertical spindle mounted by its middle in a single bearing, and prevented from moving endwise therein by suitable shoulders formed thereon, and adapted to bear one against either end of said bearing, the lower end of said spindle having formed therein a slot to receive a flattened portion of the upper end of the beater-shaft, and thus compel the beater-shaft to revolve with the spindle or remain stationary when the spindle is stationary, and also provided with a shoulder to support the gear and coupling, which imparts motion to the cream-holder; a bevel-gear-wheel mounted upon the upper end of said spindle above the bearing, and adapted to be connected rigidly to said spindle, or to revolve freely thereon, as may be desired; a corresponding bevel-gear wheel, fitted to revolve freely upon the lower end of the spindle, below its bearing, being held in position thereon by a shoulder formed on the spindle and provided with a divided cylindrical socket to embrace a corresponding cylindrical hub on the cover of the cream-holder, one-half of said socket being cast in one piece with the gear, and the other half being made in a separate piece and hinged to the portion cast with the gear, and secured by pins parallel to the axis of the socket, one of which is removable for the purpose of opening the socket, and a third bevel-gear wheel mounted upon a horizontal driving-shaft, and meshing into and imparting motion to both of the previously-mentioned bevel-gear wheels, but in opposite directions.

My invention further consists in the use of a taper pin passing through the upper end of the vertical coupling-spindle, and provided at its small end with a collar to prevent withdrawal, and at its large end with a head projecting therefrom in one direction only, and having set in the inner face thereof a short pin projecting therefrom parallel to the main pin, and adapted to enter either of two holes drilled in the side of the spindle, one above and the other below the hole through the spindle which receives the main pin, in combination with a slit or notch cut in the upper end of one side of the hub of the upper bevel-gear wheel, all so arranged that by slipping the pin endwise, and turning it about its axis till the one-sided head is downward, and then moving it endwise again in the opposite direction, the bevel-gear wheel will be firmly secured to its spindle; or, if the one-sided head be turned upward, the gear-wheel will be free to revolve on its spindle without imparting motion thereto.

My invention further consists in the use, in combination with three bevel-gear wheels, arranged as set forth, and a single bearing for supporting the operating spindle, of a screw-pin set in said bearing, and adapted to enter a hole in the spindle and lock it to said bearing to prevent its revolution by the friction of its operating gear when disconnected, so as to revolve freely thereon.

My invention further consists in the use of a round hub on the cover of the cream-holder, in combination with a cylindrical socket to fit the same, and a screw-pin fitted to said socket, adapted to have a limited motion toward or from the axis of said hub imparted thereto, and to enter a hole formed in the side of the hub of the cream-holder cover, to lock said cover to the socket, and compel it and the cream-holder to revolve with the coupling-socket; or, by withdrawing said screw-pin from engagement with the hub of the cream-holder, the cream-holder may be held stationary while the socket revolves freely about the hub of the cream-holder cover, and the beater revolves within the cream-holder.

My invention further consists in the use of a lug formed upon and projecting upward from the upper surface of the cream-holder cover near its periphery, in combination with a forked pawl pivoted to some fixed part of the frame

of the machine, and adapted to engage with said lug to prevent rotation of the cream-holder when uncoupled from the operating-socket, and to swing up out of engagement with said lug when the cream-holder is coupled to the driving mechanism.

Figure 1 of the drawings is a side elevation of an ice-cream freezer embodying my invention. Fig. 2 is a central vertical section on line *x x* on Figs. 1 and 3, showing the cream-holder in elevation. Fig. 3 is a plan of the same. Fig. 4 is a front elevation of the lower bevel-gear wheel and coupling-socket, for making connection with and transmitting motion to the cream-holder. Fig. 5 is a horizontal section on line *y y* on Fig. 4; and Fig. 6 is a sectional elevation of the vertical spindle, which engages with and imparts motion to the beater-shaft.

A is the platform, upon which the ice-tank B is placed when in connection with the driving mechanism. C and C′ are the standards erected upon the platform A, and securely attached thereto by the braces D D and angle-irons E. F is a metallic frame secured to the tops of the standards C, and provided with the boxes F^1 and F^2. In the box F^1 and the box G, secured to the top of the standard C′, is mounted the horizontal driving-shaft H, provided at its rear end with the crank I or a driving-pulley, and has secured to its front end the bevel-gear wheel J, which meshes into and imparts motion to the bevel-gear wheels K and L, revolving them about a common axis in opposite directions.

M is a spindle, mounted, by its middle, in the box F^2, with the shoulder *a* bearing upon the upper end, and the shoulder *b* bearing against the lower end of the box F^2, as shown in Fig. 2, and provided with a slot, *c*, in its lower end, to receive the flattened upper end of the beater-shaft N, in such a manner that the beater-shaft will be compelled to revolve with said spindle when so coupled. To the upper end of the spindle M is fitted the bevel-gear wheel K, in such a manner that it may revolve freely thereon, with the lower end of its hub resting upon the upper end of the bearing F^2, and having formed in one side of the upper end of its hub a slot or notch, *d*, to receive the one-sided head e^1 of the pin *e*, which passes through the spindle M above the hub of said gear-wheel.

The pin *e* is made slightly tapering, and has secured to its small end a collar, e^3, to prevent accidental withdrawal of said pin, and has formed upon its other end the one-sided head e^1, of a width just equal to the diameter of the large end of the pin, and adapted to enter the slot *d* in the hub of the gear K, as shown in Fig. 1.

The one-sided head e^1 has set in its inner face a short secondary pin, e^4, which projects therefrom parallel to the main pin *e*, and adapted to enter the hole *f*, formed in the spindle M directly below the hole through which the pin *e* passes, or into a corresponding hole, *g*, above the pin *e*, for the purpose of retaining the head e^1 out of contact with the hub of the gear K, when it is desired to have the beater remain in a state of rest, at which time the screw-pin *h* is made to engage with the hole *i* in the spindle M, and thus effectually lock the spindle, to prevent it from being revolved with the cream-holder.

When the gear K is secured to the spindle M by turning the pin *e* with the head e^1 downward, and causing the head e^1 to engage with the slot *d*, and the pin e^4 to enter the hole *f* in the spindle, the screw-pin *h* is withdrawn till its shoulder comes in contact with the stop-screw *j*, when the point is entirely withdrawn from the hole *i*, and the spindle M is free to revolve with the gear K.

The gear L has its bearing entirely upon the lower end of the spindle M, about which it is free to be revolved, and prevented from falling downward by the shoulder *k*, formed on the spindle M, and a corresponding shoulder in the hub of the gear, as shown in Fig. 2.

The hub O of the cream-holder cover is made cylindrical, and fitted to a cylindrical socket, one-half of which, L^1, is cast in one piece with the gear-wheel L, and provided with a series of ears upon each side thereof, to one series of which the other portion, L^2, of the cylindrical socket is hinged, so as to swing about a pintle, *l*, the axis of which is parallel to the axis of the gear and the socket, and secured at the other side by a similar pin, *l′*, adapted to be removed and inserted at will, for the purpose of coupling and uncoupling the cream-holder and the driving mechanism.

A screw-pin, *m*, is inserted in the swinging portion L^2 of the socket, the inner end or point of which, when screwed in, engages with the hole *n*, formed in the side of the cylindrical hub O of the cream-holder cover, coupling the gear and its socket to the cream-holder, and causing them to revolve together.

The cream-holder cover is provided upon its upper surface near its outer edge with a raised lug or tooth, *o*, with which the forked pawl P engages when it is desired to stop the motion of the cream-holder, at which time the screw-pin *m* is withdrawn till its shoulder *m′* comes in contact with the stop-pin *p*, as shown in Fig. 5.

The pawl P is pivoted at *r* to a stand secured to the standard C, and when not engaged with the lug *o* is swung upward and backward, as shown in dotted lines in Fig. 2.

The cream holder and beater may be constructed in any well-known manner, the upper end of the beater-shaft N having it bearing in the hub O of the cream-holder cover, and flatted at its extreme upper end, so as to fit into the slot *c*, cut through the lower end of the spindle M, as shown in Fig. 2.

I do not claim, broadly, a coupling socket made in two parts, hinged together in such a manner that it may be swung around to one side to open said socket; neither do I claim, broadly, three bevel-gears for revolving a

beater and cream-holder in opposite directions, for such devices were described in Letters Patent No. 141,209, granted to me July 29, 1873; but

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of the spindle M, mounted by its middle in the bearing F^2, and provided with a socket at its lower end to engage with the beater-shaft, the gear J, mounted upon the upper end of said spindle, the driving-gear K, the gear L, mounted, and revolving freely upon said spindle below the bearing F^2, and provided at the lower end of its hub with a coupling-socket, and a central hub, on the cream-holder cover, fitted to engage with, and be revolved by, the socket of the gear L, all arranged and adapted to operate as and for the purposes described.

2. The combination of the spindle M, mounted by its middle in the bearing F^2, the gear-wheel L, mounted, and adapted to revolve freely upon the lower end of said spindle, and to be coupled to the cream-holder, the gear-wheel K, fitted to, and adapted to revolve freely upon, the upper end of said spindle, or to be firmly secured thereto, at the will of the operator, and the gear J, arranged to engage with the gear-wheels K and L, and impart motion thereto in opposite directions, substantially as described.

3. The pin *e*, provided with the one-sided head e^1 and secondary pin e^4, in combination with the spindle M, provided with the holes *f* and *g*, and the gear-wheel K, having slot *d* formed in one side of the upper end of its hub, all adapted to operate as and for the purposes described.

4. In combination, the gear-wheels J, K, and L, and the spindle M, mounted in a single bearing located between the gears K and L, the screw-pin *h*, set in the cap of the spindle-bearing, to engage with the hole *i* in the spindle M, and lock it, to prevent its revolution, as and for the purposes described.

5. As a means of coupling the cream-holder to the operating mechanism, a socket having a cylindrical inner perimeter, and made in two parts, hinged together, and provided with a removable pin to secure the parts together, and a screw locking-pin, *m*, in combination with a can-cover, having a cylindrical hub to fit said socket, and provided with a locking-hole to engage with said locking-pin *m*, as and for the purposes described.

6. The lug *o*, upon the upper surface of the cream-holder cover, in combination with the pawl P, adapted to engage therewith, to prevent a revolution of the cream-holder, when desired, as and for the purposes described.

Executed at Boston, Massachusetts, this 1st day of April, 1876.

JAMES DOOLING.

Witnesses:
N. C. LOMBARD,
E. A. HEMMENWAY.