C. K. GREAVES.

ICE CREAM FREEZER.

APPLICATION FILED NOV. 23, 1909.

970,369.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

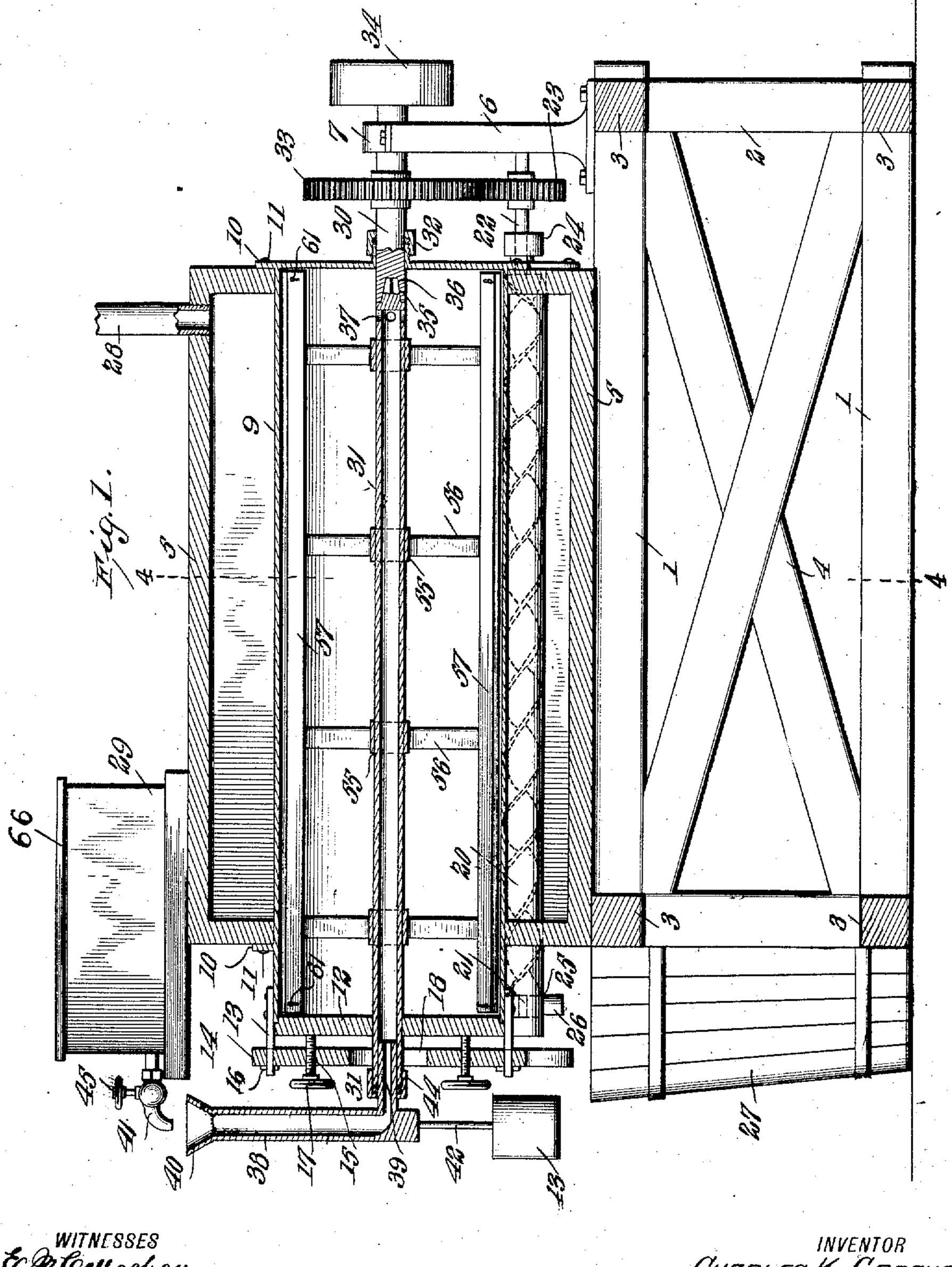

Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

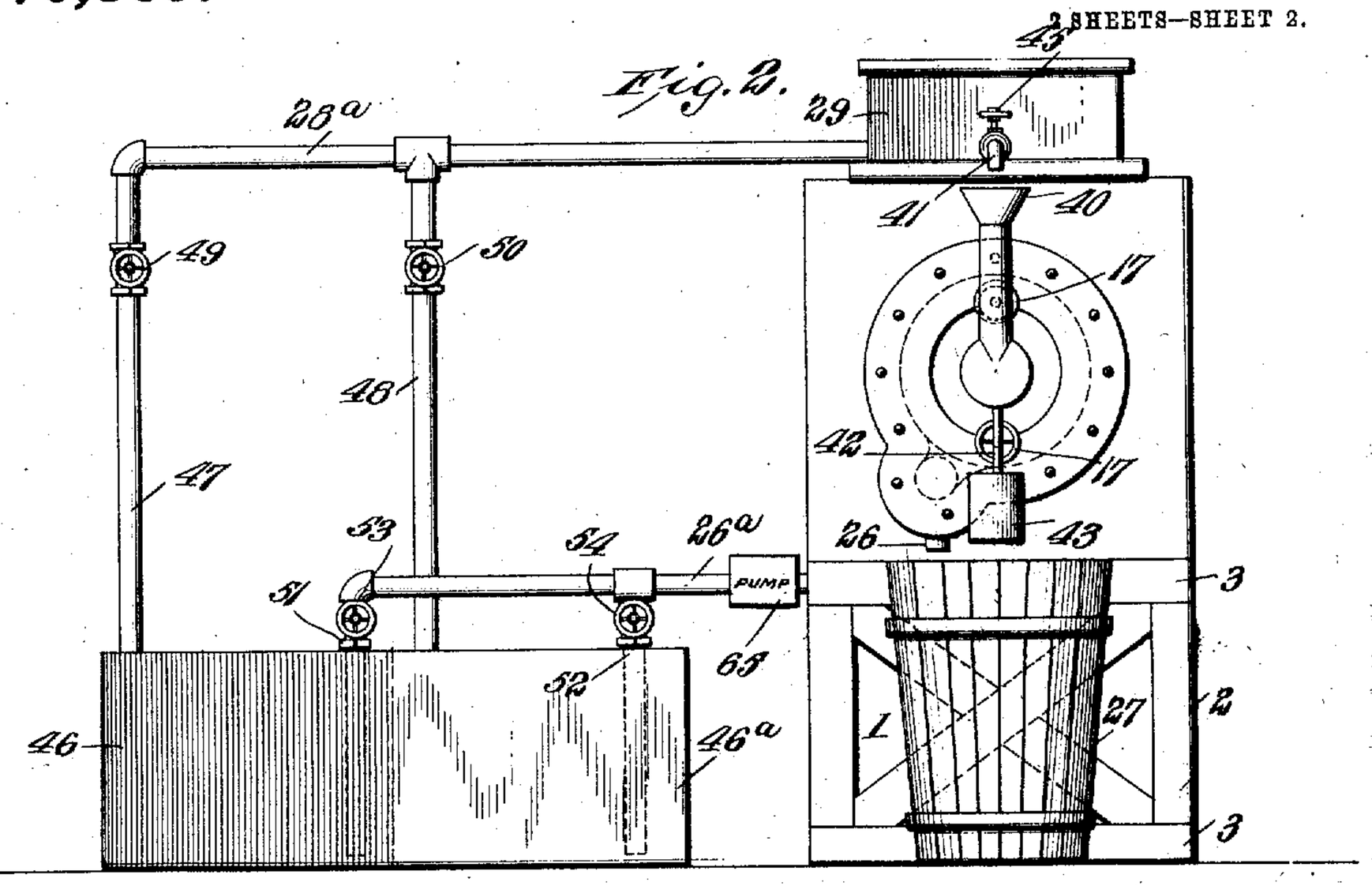


Fig. 3.

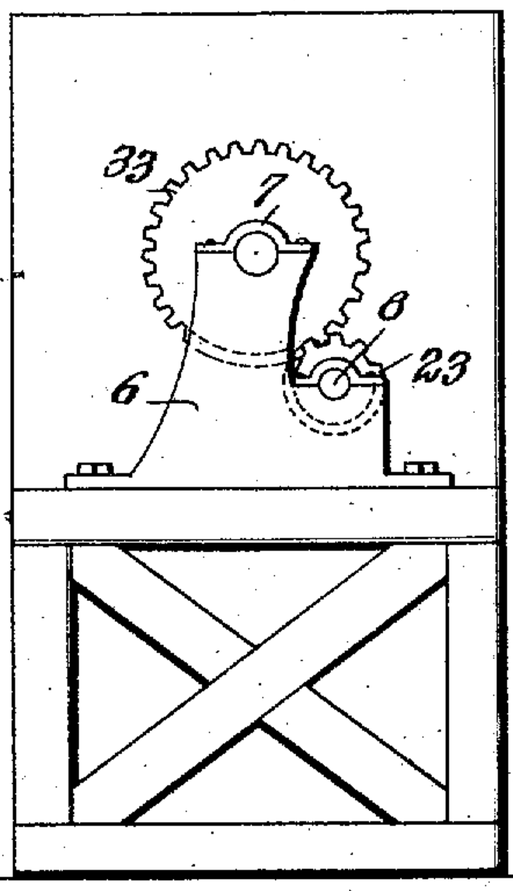


Fig. 5.

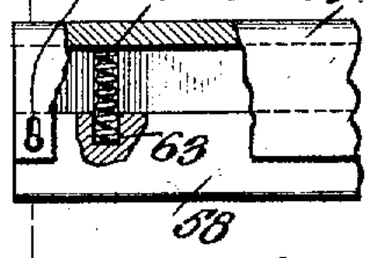


Fig. 6.

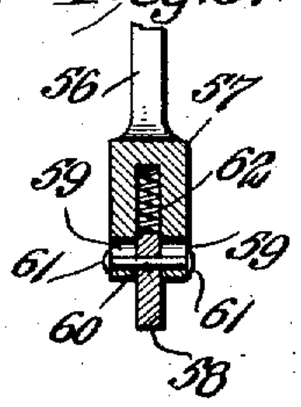
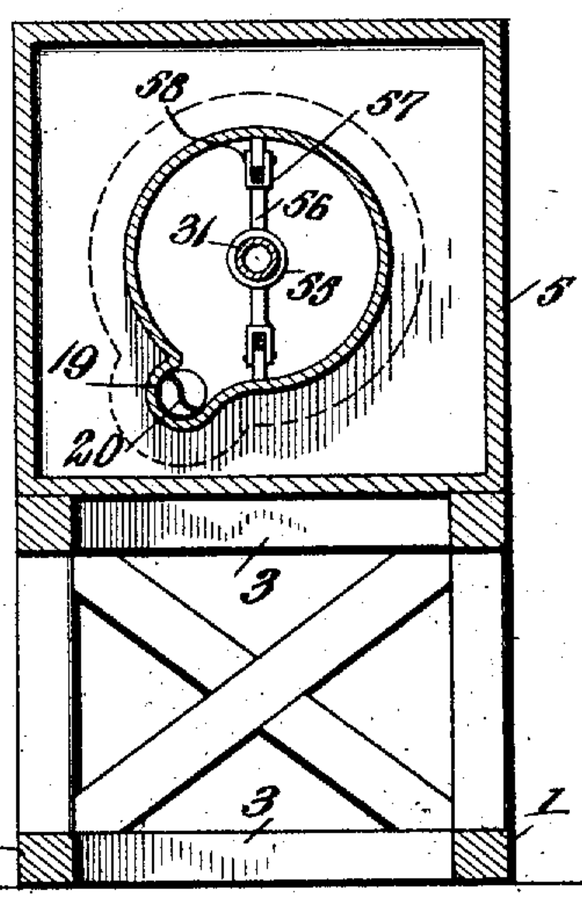


Fig. 4.



WITNESSES

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CHARLES KNIGHT GREAVES, OF WACO, TEXAS.

ICE-CREAM FREEZER.

970,369. Specification of Letters Patent. **Patented Sept. 13, 1910.**

Application filed November 23, 1909. Serial No. 529,569.

To all whom it may concern:

Be it known that I, CHARLES K. GREAVES, a citizen of the United States, and a resident of Waco, in the county of McLennan and State of Texas, have made certain new and useful Improvements in Ice-Cream Freezers, of which the following is a specification.

My invention is an improvement in ice cream freezers, and consists in certain novel constructions, and combinations of parts, hereinafter described and claimed.

The object of the invention is to provide a power freezer, by means of which the cream or the like may be frozen by the use of ammonia, or by the use of ice or salt, or by the use of both.

Referring to the drawings forming a part hereof, Figure 1 is a vertical longitudinal section of the improvement, Fig. 2 is a front view, Fig. 3 is an end view, Fig. 4 is a transverse vertical section of the freezer, on the line 4—4, of Fig. 1, Fig. 5 is a front view of a portion of the stirring device, and Fig. 6 is a section on the line 6—6 of Fig. 5.

The embodiment of the invention shown in the drawings, comprises a frame, composed in the present instance of longitudinal bars 1, uprights 2, cross bars 3, and braces 4, and the casing 5 of the freezer proper is supported on one end of the frame, while at the other end is a bracket 6, provided with an upper sectional bearing 7, and a lower bearing 8. The casing 5 is square in cross section as shown in Fig. 4, and a cylindrical receptacle 9 is supported in the casing, the ends of the casing having circular openings, through which the ends of the receptacle extend, and the receptacle is provided with annular flanges 10, which are secured to the casing ends by screws or nails 11.

One of the heads 12 of the receptacle is removable, and the receptacle adjacent to the said head is provided with longitudinally extending bracket arms 13, which extend through openings in the ends of a plate 14, spaced apart from the end of the receptacle, and having rods 15 threaded therethrough and engaging the head to secure it in place against the end of the receptacle. Wedge pins 16 are passed through openings in the outer ends of the bracket arms, for securing the plate in place, and the rods 15, are provided with hand wheels 17, for convenience in manipulating the rods. The plate 14 is provided with a central opening 18, for a purpose to be presently described, and the head is provided with an annular groove on its inner face for receiving the end of the receptacle. It will be evident that the head may be forced tightly against the receptacle end by the threaded rods.

Near the bottom and at one side of its center the receptacle is provided with a lateral extension 19, extending the full length thereof, and communicating with the receptacle throughout its extent, and a screw or spiral conveyer 20 is arranged in the extension, the said extension being substantially circular in cross section.

The ends of the conveyer are provided with journals 21, 22, and the journal 22 is journaled in the bearing 8 before mentioned, and is provided with a pinion 23 between the bearing and the casing. The end of the extension adjacent to the journal 22 is provided with a packing nut 24, through which the journal extends, and the journal 21 is journaled in a block 25 on the head 12. The extension 19 is also provided with an outlet pipe 26 adjacent to the head 12, which delivers to a cask or receiver 27 semi-circular in cross section, and secured to the end of the supporting frame as shown. The casing is provided with an outlet pipe 28 at the opposite end from the head 12, and a tank 29 is supported on the casing at the opposite end from the pipe 28.

A shaft is journaled in the receptacle at the center thereof, and the said shaft consists of a solid section 30, and a hollow section 31. The solid section is journaled in the bearing 7, and in a packing nut 32 in the adjacent head of the receptacle, and is provided with a gear wheel 33, meshing with the pinion 23, and with a pulley 34, for receiving a belt from any suitable source of power, whereby to rotate the shaft.

The solid section of the shaft is provided in its inner end with a tapering socket 35, polygonal in cross section, and the hollow section with a lug 36 fitting the socket, and adjacent to the lug the said section is provided with a plurality of radial openings 37. At its opposite end the hollow section is journaled in the head 12, and extends through the opening 18 in the plate.

A vertical pipe 38 is arranged outside of the plate 14, and is provided with a lateral extension or nipple 39, fitting within the end

of the hollow section 31, a packing nut 44 encircling the said nipple and engaging the end of the section to make a tight joint. The upper end of the pipe 38 is flaring as at 40, and is directly below a faucet 41 leading from the tank 29 before mentioned, and having a valve 45. A rod 42 extends downwardly from the pipe, and a weight 43 is connected with the rod, for counterbalancing the pipe and retaining it in vertical position.

A pair of reservoirs 46 and 46ª are arranged at one side of the supporting frame, (Fig. 2), and the outlet pipe 28 of the casing, is extended laterally as at 28ª, and is provided with two branches 47 and 48 leading into the receptive reservoirs, each branch having a valve 49 and 50 respectively. An inlet pipe 26ª is also extended laterally from the bottom and front of the casing and is likewise provided with two branches 51 and 52 communicating with the receptive reservoirs, each branch having a valve 53 and 54, respectively. The branches 47 and 48 open from the top of the reservoir as shown in Fig. 2, and the branches 51 and 52 open near the bottom thereof, as indicated by dotted lines in the same figure. The hollow shaft section 31 is provided at spaced intervals with sleeves 55, and each of the sleeves is provided with oppositely extending arms 56, and the corresponding arms on each side of the shaft section, are connected by bars 57 parallel with the shaft section.

As shown in Figs. 5 and 6, the bars 57 which connect the arms 56 are grooved throughout their length on the outer edges and a plate 58 is seated in the groove of each bar. Near the ends of the bar, the sides of the groove are provided with registering slots 59, which are radial to the shaft section, and the plate is provided with a transverse pin 60, whose ends move in the slots, the extremities being headed as shown at 61. The plates are also provided with depressions or recesses 63, and coil springs 62 are seated in the recesses, and act inwardly to force the plates outwardly from the bar. When the shaft consisting of the sections 30—31 is rotated, the plates 58 move in contact with the inner wall of the receptacle, but may yield inwardly, should they meet an obstruction.

In operation, the material to be frozen is placed in the tank 29 on the casing, and is discharged through the vertical pipe 38 and the extension 39 into the hollow shaft section 31. The flow may be regulated by the faucet. From the shaft section it is discharged into the receptacle through the openings 37. The dasher or stirrer consisting of shaft, arms, bars and plates, thoroughly mixes the material, and finally pass it into the extension 19 of the receptacle. The screw conveyer moves the frozen material to the front end of the machine, and it is discharged through the pipe 26. Power is applied to the pulley 34, thus rotating the shaft 30—31, continuously and also the screw conveyer. The cooling medium is supplied to the casing 5 which is the jacket of the receptacle by means of the pipes 26ª and 51—52, the said medium entering by either branch 51 or 52, and discharging by the corresponding branch of the pipe 28ª.

One of the reservoirs 46 or 46ª is adapted to contain the usual ammonia pipes, while the other is adapted to contain the usual salt and ice mixture, and a pump 65 is preferably interposed in the outer pipe 26ª to supply the cooling medium to the casing. By properly manipulating the valves 49—50 and 53—54, the casing may be connected with either reservoir.

The cooling medium enters the casing at the lower front end thereof, and the material to be frozen enters the receptacle at the adjacent end, so that the coldest part of the medium comes into contact with the warmest portion of the material.

The parts in the receptacle may be easily removed for cleaning, by releasing or loosening the rods 15, and taking out the head 12. The pinion 23 is keyed to the shaft 22, so that the shaft may be slipped out of the pinion for removal. The pipe 38 may be removed by loosening the packing nut 44, and the shaft section 31 brings away all of the dasher or stirrer, when it is removed from the socket of the solid section. The cover 66 of the tank 29 is removable, and when the head 12 is removed, the screw conveyer can also be withdrawn.

I claim:

1. In combination, a supporting frame, a casing thereon, a cylindrical receptacle supported in the casing, and having its ends extending through the ends of the casing, one of the ends of the receptacle being open, a removable head for closing the open end, means for forcing the head into position to close said open end, said receptacle having an extension at one side near its bottom, said extension extending the full length of the receptacle and communicating therewith, and having an outlet near the removable head a screw conveyer in the extension, a shaft journaled coaxially of the receptacle, means for delivering the material to be cooled into the receptacle, a dasher connected with the shaft, means for rotating the shaft, a driving connection between the shaft and the conveyer, and means for supplying a cooling medium to the casing.

2. In combination, a supporting frame, a casing thereon, a cylindrical receptacle supported in the casing, and having its ends extending through the ends of the casing, one of the ends of the receptacle being open, a removable head for closing the open end, means for forcing the head into position to

close said open end, said receptacle having an extension at one side near its bottom, said extension extending the full length of the receptacle and communicating therewith, and having an outlet near the removable head, a screw conveyer in the extension, a shaft journaled coaxially of the receptacle, means for supplying the material to be cooled to the receptacle, a dasher operated by the shaft, and means for supplying a cooling medium to the casing.

3. In combination, a substantially cylindrical receptacle arranged horizontally, a hollow shaft journaled coaxially of the receptacle and provided with radial discharge openings, said shaft extending beyond the receptacle at one end, a vertical pipe having a nipple engaging the extended end of the shaft, the upper end of the pipe being funnel-shape, and a counter-balance for retaining said pipe in vertical position.

4. In a device of the class described, a stirring device comprising a shaft, arms extending in opposite directions from the shaft at spaced intervals, bars connecting the corresponding arms, said bars each having a longitudinal groove in its outer edge, a plate in each groove, the side walls of the groove being transversely slotted at each end, pins arranged transversely of the plates and engaging the slots to limit the movement of the plates, and springs normally pressing said plates outwardly.

CHAS. KNIGHT GREAVES.

Witnesses:
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J. E. TURNER.