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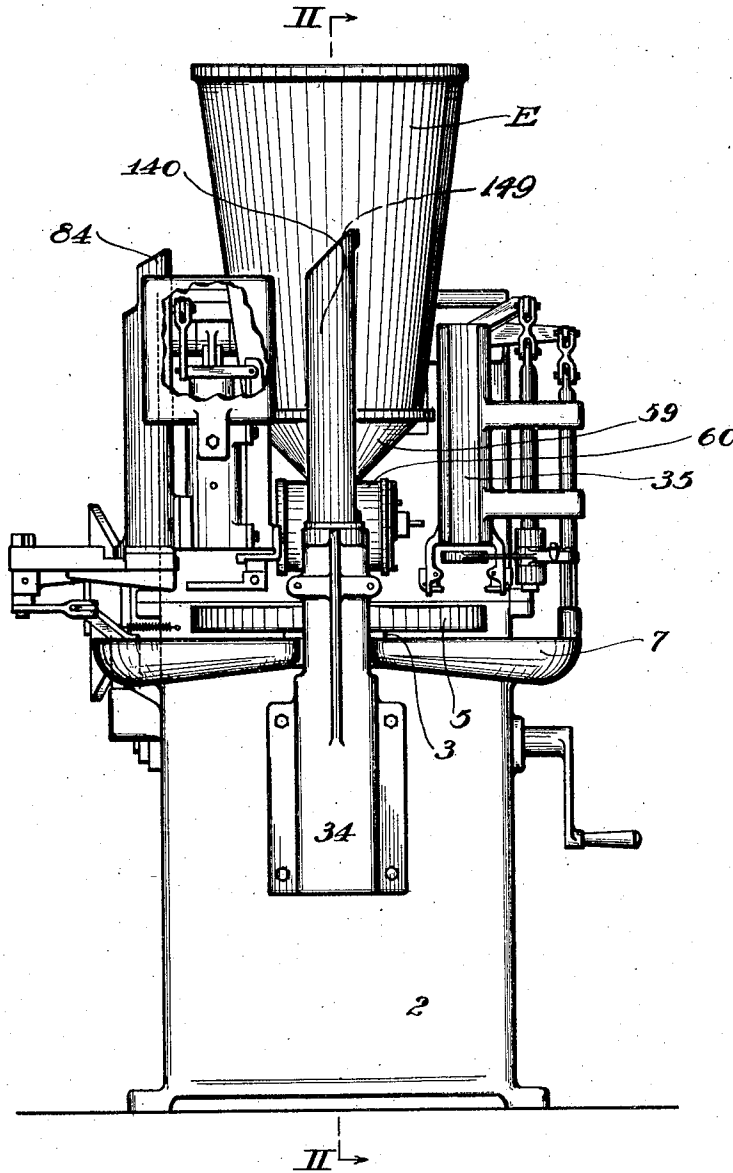
C. N. BERGMANN ET AL

1,643,367

RECEPTACLE HANDLING MEANS FOR UNIT MEASURING MACHINES

Original Filed July 1, 1925 4 Sheets-Sheet 1

Fig. 1.



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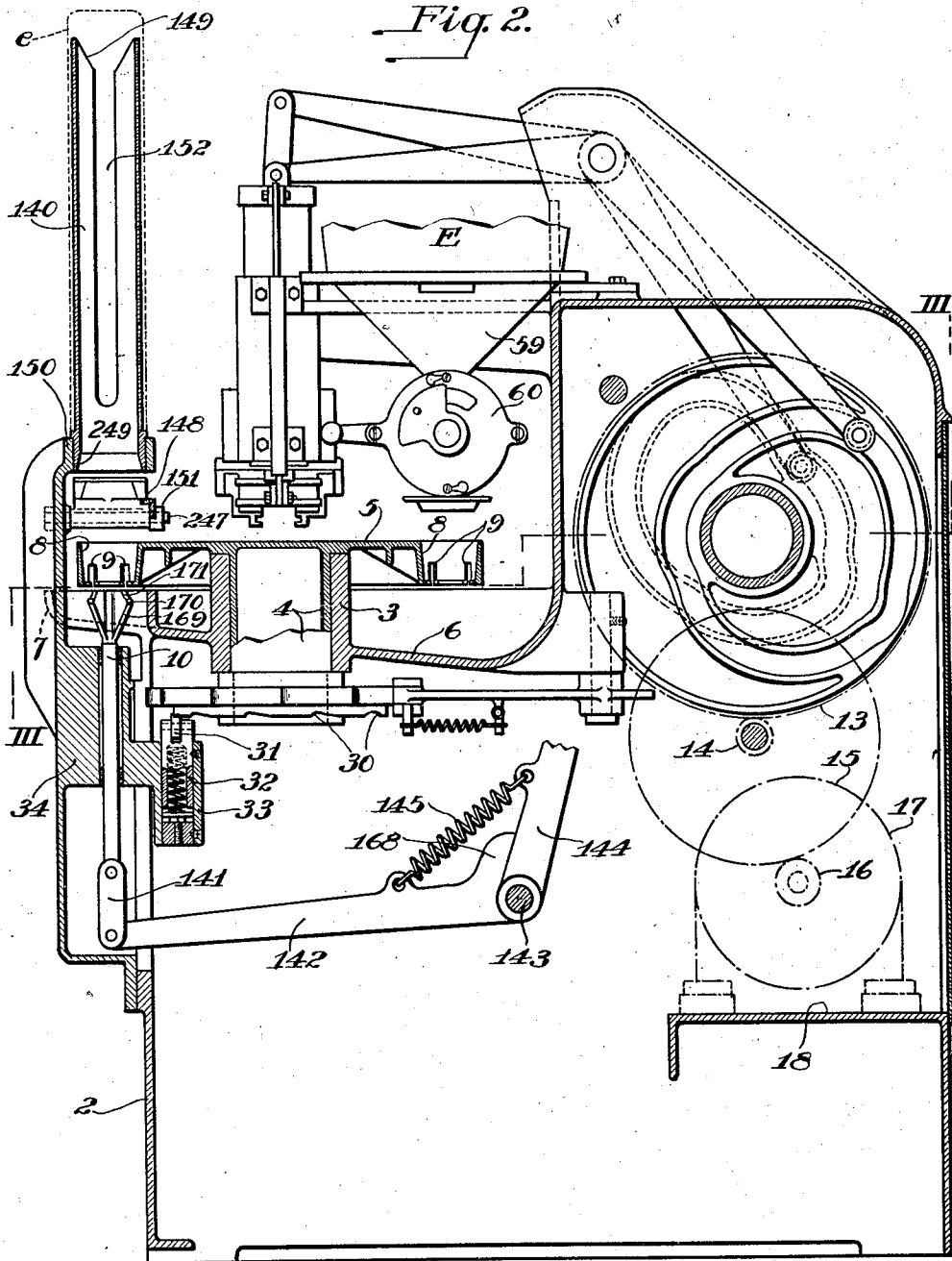
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RECEPTACLE HANDLING MEANS FOR UNIT MEASURING MACHINES

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RECEPTACLE HANDLING MEANS FOR UNIT MEASURING MACHINES

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Fig. 3.

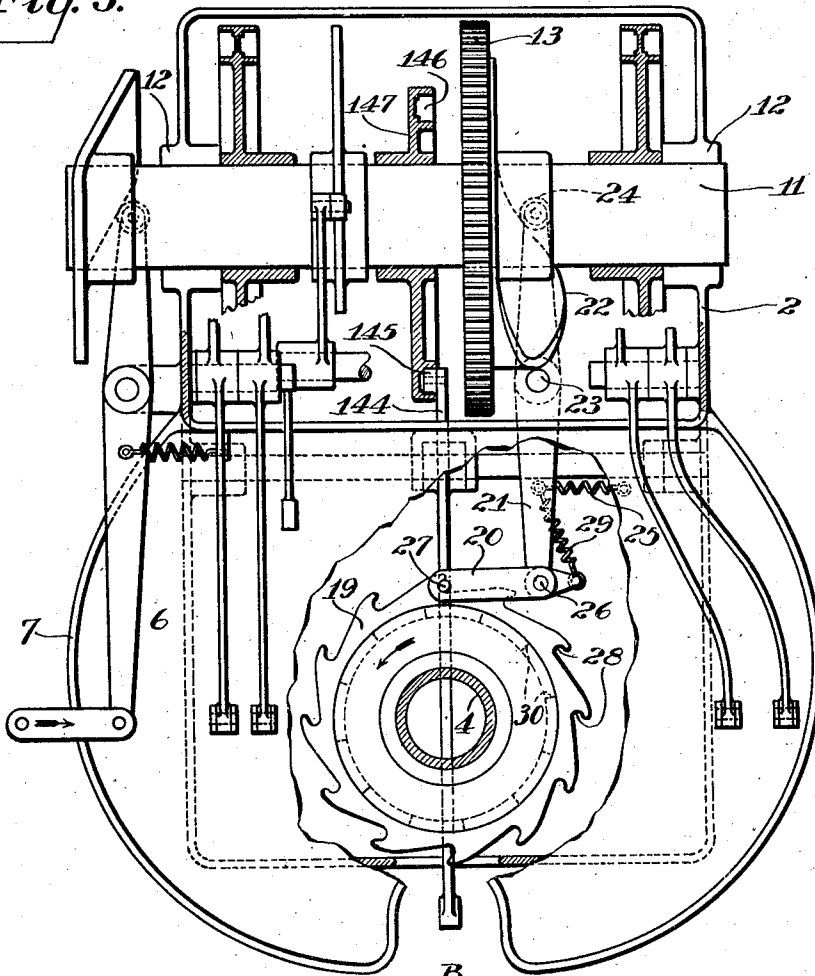
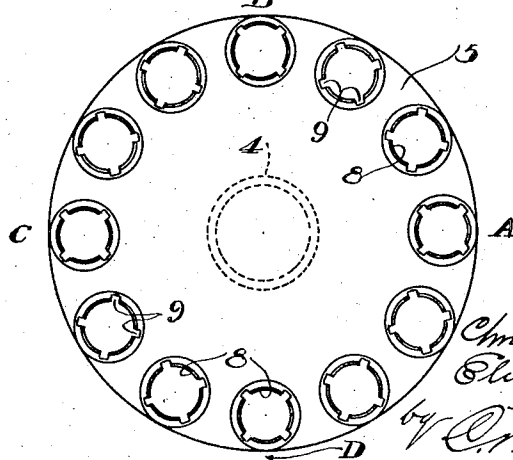


Fig. 4.



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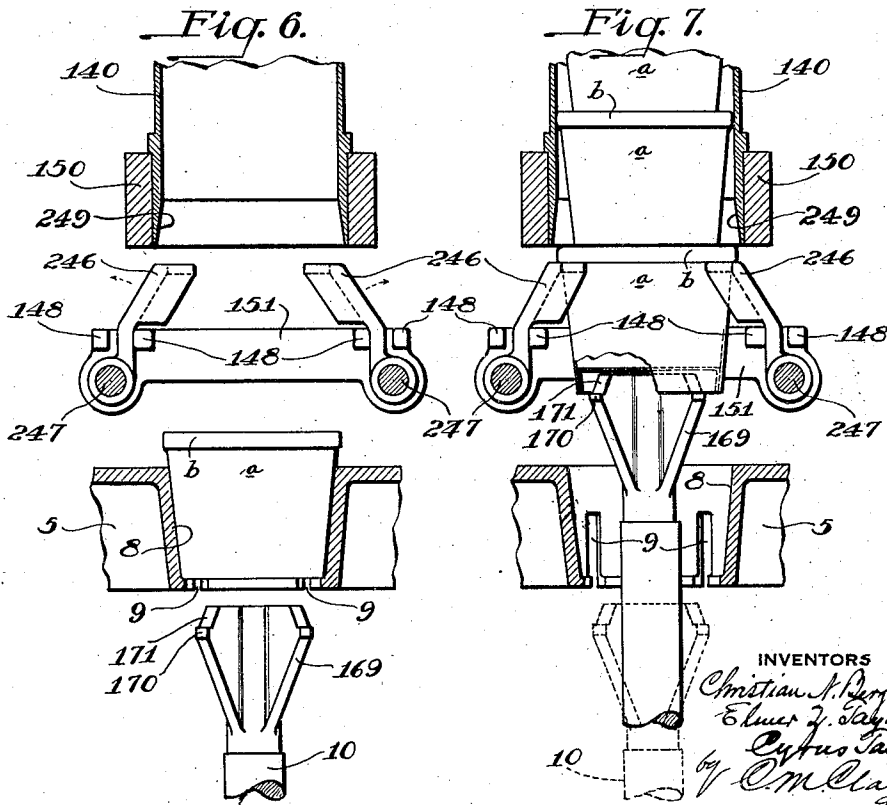
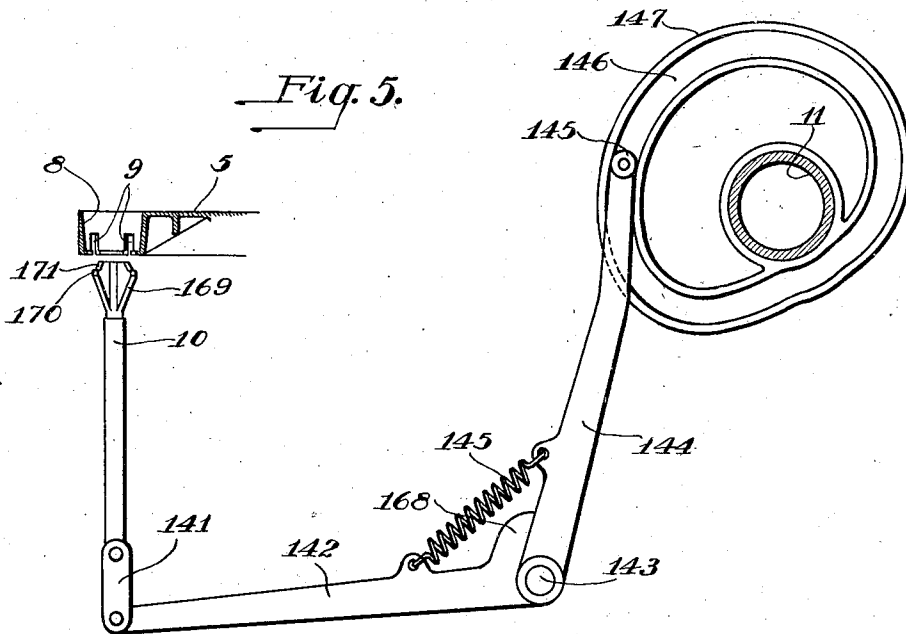
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RECEPTACLE HANDLING MEANS FOR UNIT MEASURING MACHINES

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UNITED STATES PATENT OFFICE.

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RECEPTACLE-HANDLING MEANS FOR UNIT-MEASURING MACHINES.

Original application filed July 1, 1925, Serial No. 40,796. Divided and this application filed May 27, 1926. Serial No. 111,994.

Our invention is an improvement in machines for measuring units of mobile material, as ice cream, for separating such measured units from a mass, depositing them separately into containers, capping the containers, and ejecting the filled containers. The invention also embodies an improved mechanism for placing the containers in a carrier whereby they are brought separately into position for filling, capping and ejection.

The present invention is generally similar in its main elements to that shown in a prior application filed by C. N. Bergmann et al. on April 4, 1925, Serial No. 20,696, but differs therefrom mainly in the substitution of an intermittently rotatable carrying turret for the receptacles, in place of the longitudinally movable carrying trays thereof, as well as in other respects hereinafter described.

This application is a division of our prior application filed July 1, 1925, Serial No. 40,796 for unit measuring machines, and refers particularly to the means for moving the receptacle or cup in, through, and from the machine.

In the present construction we provide a rotatable turret wheel having an annular series of cup receiving cavities by which each cavity is brought successively in registering position underneath the cup depositor, the filling mechanism and the capper, and then over the ejector.

The present invention refers particularly to the receptacle handling means, including the turret wheel carrier, its manner of construction and operation, the ejector, bag filler, the means for actuating the several operative mechanisms in sequence with suitable rest periods, and various features of detail construction, as shall be hereinafter more fully described.

In the drawings illustrating one preferred embodiment of the invention:

Figure 1 is a view of the machine in front elevation;

Figure 2 is a partial central vertical section on the line II—II of Fig. 1;

Figure 3 is a horizontal sectional view on the line III—III of Fig. 2, with the turret removed and partly broken away;

Figure 4 is a plan view of the turret;

Figure 5 is a detail view showing the ejector plunger and its actuating mechanism;

Figure 6 is a sectional detail view showing the cup ejecting and supporting mechanism with the cup in the turret socket;

Figure 7 is a similar view showing the cup elevated by the plunger.

Referring to the drawings, the operative portions of the machine are mounted upon and within a hollow box shaped base 2 of cast metal supported upon the floor or foundation by a suitable flat pedestal, as in Fig. 1;

At the front middle portion of the base is a vertically arranged bearing 3 in which is rotatably mounted the central depending stem 4 of the turret 5. Bearing 3 is cast integral with a laterally extending transverse bottom wall 6, forming a concave dish or basin, surrounding the turret beyond the lower base and providing a rearwardly inclined collecting and drainage cavity for excess cream, washing, etc.

As shown in Fig. 3 the outer edges 7 are rounded, and surround the turret, a drain connection being made at the lower level for cleaning purposes. Turret 5 is generally of the form of a flat wheel or disk having an annular series of tapered sockets 8 open at the bottom and provided with lateral clearance openings 9 for the discharging plunger 10. Sockets 8 are of a size to receive and support on their flanged bottoms the cups or receptacles *a* as they are deposited therein for filling.

It will be understood that sockets 8 are in multiples of four, as twelve, so as to always locate a socket at four equidistant points around the center in position for cup depositing, filling, capping, and discharge at each intermittent rest period of the turret.

The several mechanisms for such purpose receive their operative movement from a main transverse shaft 11 mounted in bearings 12—12 of the main frame 2. Shaft 11 is driven through gearing 13—14—15—16 or other suitable gearing, from a motor 17.

Said motor is mounted on an interior supporting shelf or base 18 of the frame and is

provided with the necessary current supply, controls, etc.

Turret 5 is intermittently rotated, say one twelfth of a revolution with an intervening rest period, by a ratchet wheel 19 and pawl 20 of lever arm 21 by cam 22 extending from or movable with gear 13. Lever 21 is pivoted at 23 and its terminal roller 24 is held against the annular face of cam 22 by a spring 25. Pawl 20 is pivoted at 26 to the other end of lever 21 and its free end has a terminal pin or roller 27 adapted to engage the successive teeth sockets 28 of the ratchet wheel 19 for each operation, under control of spring 29 secured to the other end of the pawl and to the lever, as shown.

The under side of ratchet wheel 19 is provided with a series of holding sockets 30 adapted to co-act with roller 31 of a spring retracted stud 32 mounted in a supporting housing 33 of the discharge plunger housing 34. In its intermittent rotation, one complete revolution of the turret will bring each of the annular cavities 8 into rest positions A, B, C and D, respectively. In such positions, a cup is placed in the cavity at A, the cup is filled at B, the cover or cap is placed in the cup at C, and the filled cup is discharged upwardly at D.

The cups *a* provided with a rib *b* are nested in a vertical column above position A in a slotted magazine tube 35 rigidly supported from the rear gear housing extension. Each cup is tapered to fit snugly within the tapered cavity 8 of turret 5 without binding. Means are provided below tube 35 for lowering the endmost cup into the cavity and arresting and detaching it while the remaining cups are lifted upwardly and there held until the turret has moved one space, when such operation is repeated, as fully described in the parent application Serial No. 40,796.

When the cup is moved around to position B it is there filled with ice cream, or other commodity, by means similar to that shown in the parent application noted. Depending below a hopper bottom 59 of hopper E is a short cylindrical casing 60, supported from the upper frame of the machine.

Within casing 60 is a rotatable drum or barrel having a middle transverse passage-way adapted to register with the bottom opening of the hopper and an opposite discharge opening in the casing. A reciprocable plunger acts to withdrawn and eject a measured unit of ice cream into the cup at each half revolution of the barrel at location B.

The filled cups are capped at position C by placing within the upper edge of each cup a thin paper disk 83 having a projecting withdrawal tang. Said disks are mounted in a vertically arranged bank in a magazine tube 84, slotted along its outer side, and fixedly bolted to the plunger frame, provided with the cap placing plunger.

When the filled and capped cup arrives at position D it is ejected upwardly into a receiving tube 140 by plunger 10.

Said plunger has a series of laterally diverging wings 169 adapted to pass through openings 9 of socket 8 to engage the bottom of the filled cup by its annular edge, avoiding any danger of injuring the middle bottom portion.

The stem of the plunger is guided in bearing 34 and is connected by link 141 with the end of lever 142 pivoted to a cross shaft 143. A cam lever 144 is also pivoted on shaft 143 and extends upwardly by a terminal having a roller 145 engaging the cam groove 146 of cam 147 on shaft 11. As the cam rotates, the groove is so designed as to throw the plunger 10 upwardly at the proper time to discharge the filled and capped cup upwardly towards the tube 140.

Ordinarily, levers 142 and 144 will operate together as one piece, but are made separate to allow for easement of the lifting pressure on the cup in case of jamming.

For such purpose lever 142 bears up against lever 144 by an extended lug 168 due to the holding action of spring 145 connecting the levers across the angle joint, as in Fig. 2. Normally the cam will impart lifting and lowering movement to the plunger, but if the plunger is arrested for any reason, as by interference with the turret, the hinge joint will open, allowing the cam movement of section 144 to continue without actuating the plunger, until the obstruction or interference is removed or adjusted.

The shape of the plunger 10 tends to avoid jamming or interference. The lateral wings 169 are provided with terminal abutments 170 and inwardly sloping upper shouldered faces 171 which act to centralize the cup and plunger, and to support the cup for lifting by its lower annular edge against the shouldered abutments 170, thus relieving pressure against the flat thin bottom of the cup.

Between the bottom of tube 140 and the surface of the turret 5 are interposed a pair of automatic inwardly gravitating cup arresting jaws 246-246. These as shown are pivoted at 247 and fall inwardly by gravity against stop abutments 148, and have inner inclined faces terminating in narrow concaved lips.

As the cup is lifted by the plunger, it passes between and above such lips which then fall inwardly by gravity and engage the rim *b* as in Fig. 7. At the same time that each succeeding cup is raised, it pushes the already lifted and supported cups upwardly a distance equalling the depth of one cup. The entire series are thus supported by the jaws 146, each cup supporting the next uppermost one by its cover, the bottom edge of the adjacent cup resting thereon within the wider upper rim *b*.

Tube 140 is slotted along opposite sides as at 152 for inserting the fingers in removing any selected number of cups, and is preferably inclined at the top as at 149. The base of the tube is flared as at 249 for easy entrance, and is secured in an upper extension 150 of housing 34 as in Fig. 2. Hinge pins 247 are also secured in said support together with the cross bars 151 having the confining abutments 148.

In assembling the filled cups for refrigeration, storage, shipment, etc., a paper bag *e* is placed over the tube 140 in inverted position, the tapered top 149 facilitating such placement. As many cups as are desired, say four or eight, are gathered upwardly into the bag by lifting the cups, with the surrounding bag, by inserting the fingers through the opposite open and closed end slots 152.

Thus the cups and the enclosing bag are removed together as they accumulate by finally lifting through the open slot at one side, the bags being closed at the lower open end in any suitable way.

It will be understood that each of the sockets 8 of the turret is occupied successively by a cup at position A, and that as each arrives at the subsequent positions B, C, and D, the operations above described are performed.

Therefore as each socket arrives at the final discharging position, a filled cup is ejected, the empty socket then passing around to position A where a fresh empty cup is deposited.

The operation is continuous, rapid, and substantially automatic, merely requiring renewal of the cup and cap supply in their respective magazine tubes, removal of the filled cups into their paper bags, and of course maintaining a sufficient amount of ice cream at all times in the hopper.

The several movements are all effected through the various cams and their transmitting levers in the manner described and illustrated.

The timing of the operations is easily controlled by the design and setting of the cams and the various adjusting, limiting and controlling devices and mechanisms. The machine as a whole is very compact and of comparatively small size, considering its capacity and speed of operation.

It may be changed or varied by the skilled mechanic in various details or features, or otherwise modified within the scope of the general principle of operation, but all such changes are to be understood as within the scope of the following claims.

What we claim is:—

1. In combination with a rotatable turret having an annular series of open bottom pockets, a lower plunger adapted to move upwardly therethrough, an actuating cam,

and a pivotally connected compound lever, having one arm engaging the cam and the other end flexibly connected with the plunger and provided with an arresting portion adapted to engage the other arm.

2. In combination with a rotatable turret having an annular series of open bottom pockets, a lower plunger adapted to move upwardly therethrough, an actuating cam, and a pivotally connected compound lever composed of two arms, one being connected with the plunger and the other engaging the cam, said arms being held in abutting normal position capable of allowing for temporary stoppage of the plunger arm without stoppage of the cam arm, and a spring connecting said arms normally holding them in operative position and capable of permitting of such temporary stoppage of the plunger arm during continued movement of the cam arm.

3. In combination with a rotatable turret having an annular series of open bottom pockets, an upper open ended receiving tube, a lower plunger in register therewith having lateral portions for edge engagement with the bottom of a cup adapted to discharge it upwardly through a pocket and into the tube, and arresting mechanism for the cup above the turret adapted to cooperate with the plunger and to support a cup upon retraction of the plunger.

4. In combination with a rotatable turret having an annular series of open bottom pockets, an upper open ended receiving tube, a lower plunger in register therewith adapted to discharge a filled cup upwardly through a pocket and into the tube, pivotally mounted oppositely arranged inwardly gravitating arresting jaws arranged at each side of the open bottom of the tube above the turret, and limiting abutments therefor.

5. In combination with a lower cup supporting turret having open bottom sockets and a discharging plunger therefor operable upwardly therethrough, an upper open ended receiving tube having opposite finger clearance slots, and pivoted gravitating arresting jaws for a lifted cup between the turret and the lower end of the receiving tube.

6. In combination with a lower cup supporting turret having open bottom sockets and a discharging plunger therefor operable upwardly therethrough, an upper open ended receiving tube having a tapered upper end for placement of a holding bag and pivoted gravitating arresting jaws for a lifted cup between the turret and the lower end of the receiving tube.

7. A cup carrier having a series of tapered cup pockets with inwardly extending supporting flanges and radially arranged clearance openings.

8. A cup carrier having a series of tapered

cup pockets with inwardly extending supporting flanges and radially arranged clearance openings, and a discharging plunger therefor having radially disposed abutments for edge engagement with a cup bottom.

9. A cup carrier having a series of tapered cup pockets with inwardly extending supporting flanges and radially arranged clearance openings, and a discharging plunger having radially disposed abutments adapted to ride upwardly through each pocket with the abutments extending into said clearance openings and adapted to engage the lower rim of a cup.

10. A discharge plunger adapted to be inserted upwardly through the open bottom of a cup carrying pocket provided with laterally extending shouldered abutments for engagement with the bottom edges of a filled cup.

11. A discharge plunger adapted to be inserted upwardly through the open bottom of a cup carrying pocket provided with laterally extending shouldered abutments for engagement with the bottom edges of a filled cup and having inwardly sloping portions upwardly beyond said abutments.

12. In a machine of the class described, a cup carrier having a series of cup receiving pockets each provided with an open center bottom and an annular inwardly extending bottom supporting flange.

13. In a machine of the class described, a cup carrier having a series of cup receiving pockets each provided with an annular tapering wall having a terminal inwardly extending bottom flange surrounding a central clearance opening.

14. In a machine of the class described, a cup carrier having a series of cup receiving pockets each provided with an annular tapering wall having a terminal inwardly extending bottom flange surrounding a central clearance opening and provided with radial clearance openings for a discharging plunger.

15. In a filling machine, the combination with a main frame, a horizontal turret wheel provided with an annular series of cup receiving pockets at its outer peripheral portion and a central bearing stem, a collecting basin incorporated with the main frame arranged below and around the cup receiving pockets of the turret and provided with a middle upwardly extending bearing for the turret stem forming the inner wall of the basin, and means secured to the lower end of the stem for intermittently actuating the turret.

16. In a filling machine, the combination

of a main frame, a horizontal turret wheel provided with an annular series of cup receiving pockets at its outer peripheral portion and a central bearing stem, a collecting basin incorporated with the main frame arranged below and around the cup receiving pockets of the turret and provided with a middle upwardly extending bearing for the turret stem forming the inner wall of the basin, a ratchet wheel on the lower end of the stem, and a cam-actuated lever having a spring retracted pawl therefor.

17. In a filling machine, the combination of a main frame, a horizontal turret wheel provided with an annular series of cup receiving pockets and a central bearing stem, a main shaft, a discharging plunger for filled cups below the turret adapted to push a cup upwardly from a pocket, means actuated by the main shaft for rotating the turret with an intervening rest period, and means actuated by the main shaft for operating the discharging plunger to discharge a filled cup from the turret during said rest period, said means consisting of a pair of oppositely extending freely pivoted arms connected by a spring and holding said arms in shouldered engagement, one of said arms being in engagement with an actuating cam and the other being connected to the discharging plunger.

18. In a filling machine, the combination of a main frame, a horizontal turret wheel provided with an annular series of cup receiving pockets and a central bearing stem, a main shaft, a guiding housing for filled cups above the turret in register with a cup pocket position, a discharging plunger for filled cups below the turret in register with the guiding housing adapted to push a cup upwardly from a pocket towards the housing, means actuated by the main shaft for rotating the turret with an intervening rest period, and means actuated by the main shaft for operating the discharging plunger to discharge a filled cup from the turret during said rest period, said means consisting of a pair of oppositely extending freely pivoted arms connected by a spring and holding said arms in shouldered engagement, one of said arms being in engagement with an actuating cam and the other having a pivoted link pivotally connected to the discharging plunger.

In testimony whereof we have hereunto set our names.

CHRISTIAN N. BERGMANN.
ELMER Z. TAYLOR.
CYRUS TAYLOR.

Certificate of Correction.

Patent No. 1,643,367.

Granted September 27, 1927, to

CHRISTIAN N. BERGMANN ET AL.

It is hereby certified that error appears in the printed specification of the above-numbered patent requiring correction as follows: Page 3, line 63, claim 1, for the word "annulus" read *annular*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of October, A. D. 1927.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.