C. A. COSTIGAN.

DISPENSING APPARATUS.

APPLICATION FILED MAR. 17, 1917.

1,348,269.

Patented Aug. 3, 1920.

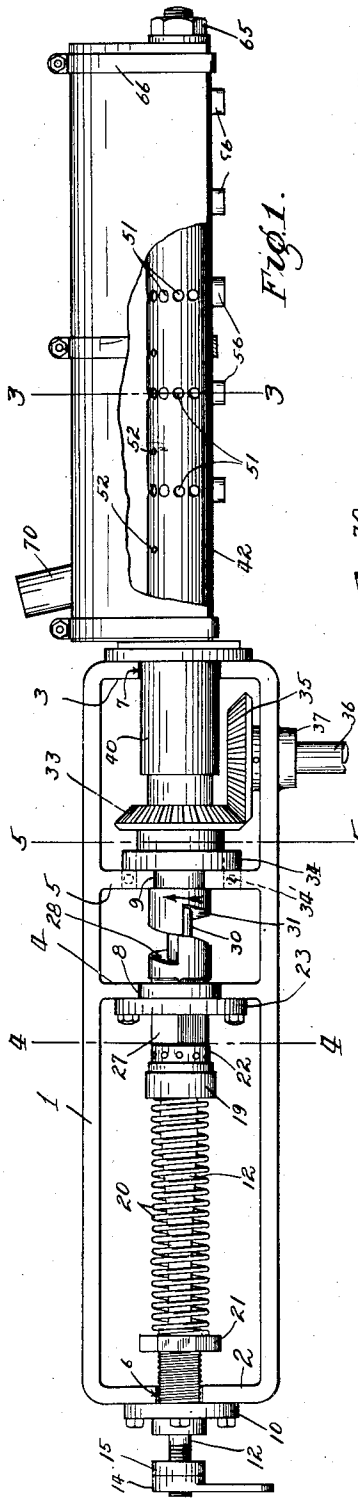


Fig. 1.

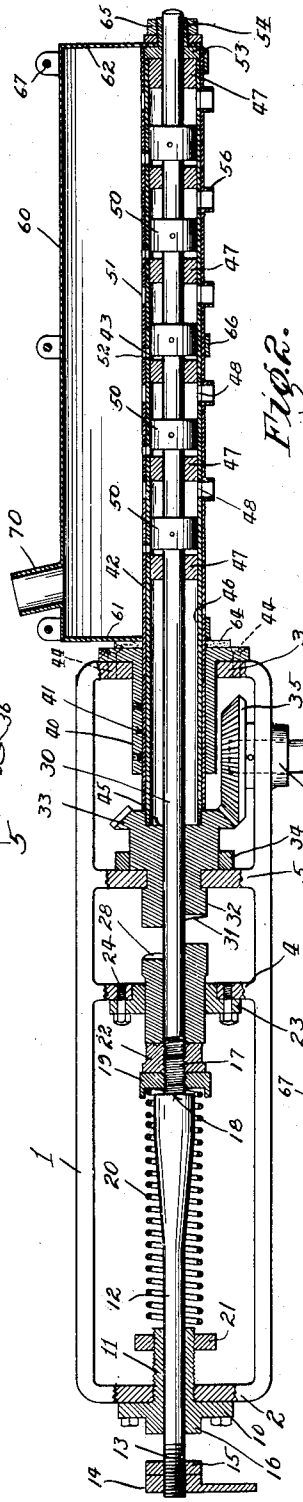


Fig. 2.

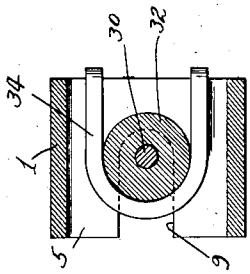


Fig. 5.

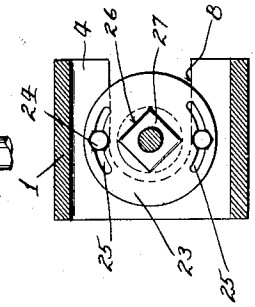


Fig. 4.

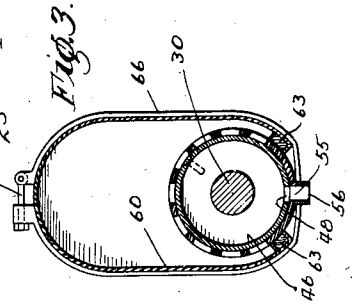


Fig. 3.

INVENTOR.

Charles A. Costigan

BY H. A. Stock

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES A. COSTIGAN, OF OAKLAND, CALIFORNIA.

DISPENSING APPARATUS.

1,348,269. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed March 17, 1917. Serial No. 155,925.

To all whom it may concern:

Be it known that I, CHARLES A. COSTIGAN, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Dispensing Apparatus, of which the following is a specification.

The invention relates to a type of dispensing apparatus for ejecting a measured quantity of material and the form herein illustrated is particularly adapted for use in connection with pastry baking machines such as is illustrated in my co-pending application Serial #100,408, filed May 27, 1916, for depositing a given quantity of batter in the baking molds.

The principal object of my invention is to provide a device of this character which will simultaneously perform the above mentioned functions in a satisfactory manner for a plurality of molds or in other words a device which will simultaneously eject a plurality of portions of batter. It will be understood that the batter used for this purpose is only semifluid and is liable to contain lumps which will clog the ordinary form of dispensing apparatus.

Another object of the invention is to provide a device which may be readily disassembled for the purpose of cleaning and renewing the parts but which may be easily adjusted in reference to the time of ejecting and the amount deposited.

With these and other objects in view the invention consists of certain novel features of construction combinations and arrangements of parts hereinafter described and more specifically pointed out in the appended claims; it being understood that changes in form proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

To more fully comprehend the invention reference should be had to the drawings forming a part of the specification and wherein:

Figure 1 is a view in side elevation of my improved dispensing apparatus.

Fig. 2 is a view in longitudinal section through the same.

Fig. 3 is a view in section on the line 3—3 of Fig. 1.

Fig. 4 is a view in section on the line 4—4 of Fig. 1.

Fig. 5 is a view in section on the line 5—5 Fig. 1.

Referring to corresponding parts in the several views by the same numerals of reference, 1 denotes an elongated substantially rectangular frame having the end plates 2 and 3 and the intermediate cross bars 4 and 5.

The end plates 2 and 3 as well as the cross bars 4 and 5 are each provided with a slot all of which open from one side of the frame and terminate in semicircular bottoms, the centers of which are in axial alinement. These slots are denoted by 6, 7, 8 and 9 respectively.

Attached to the outer face of end plate 2 is a flanged member 10 having the tubular threaded sleeve 11 which extends inwardly through the slot 6. Slidably mounted in the opening of this sleeve is a shaft 12, the outer end of which is screw threaded as at 13 and engaged thereon is an adjusting nut 14 and lock nut 15. The opposite end of this shaft is shouldered as shown at 18 and provided with the screw threaded portion 17 on which is engaged a recessed threaded member 19 that serves also as a seat for the spring 20. In threaded engagement with sleeve 11 is a nut 21 that serves as an abutment for the other end of the spring and by which the tension may be adjusted. The axial position of member 19 on the screw threads 17 may be changed by turning this member, the adjustment being held by means of the lock nut 22.

A disk 23 is attached to the intermediate cross bars 4 by means of screws 24 extending through arcuate slots 25. This disk is provided with a polyhedrical opening 26 through which extends a similarly shaped member 27 having on its outer face a spiral cam 28. This member is keyed to a shaft 30 in axial alinement with shaft 12. The coöperating cam member denoted by 31, is formed on the outer end of hub 32 of a toothed bevel gear 33. This hub is provided with an opening through which shaft 30 extends and an annular groove which engages the bottom of slot 9 thus taking care of the thrust of the gear and of the cam. To hold this hub in its proper relative position in the slot I provide the "U" shaped piece 34 having its curved portion arranged complementary and

concentric to the semicircular bottom of recess 9. The ends of this piece are bent at right angles and fastened to the frame by means of screws 34'. This accurately centers the hub and by taking out screws 34' the gear may be withdrawn from slot 9.

Gear 33 meshes with a similar toothed gear 35 which is keyed to a shaft 36, this shaft being in turn journaled in a bearing 37 formed on the lower member of frame 1.

Attached to end plate 3 by screws 44 is a flanged tubular sleeve 40 which has its opening 41 concentrically disposed with respect to shaft 30. Held fixedly within this sleeve and projecting outside of the frame 1 is the cylindrical barrel 42, having two series of openings denoted by 51 and 52. In threaded engagement with the outer end of this barrel is a plug 53, having the axially projecting sleeve 54 in which the outer end of shaft 30 is slidably mounted.

Gear 33 has a recess as shown at 45 and seated in this recess is an inner barrel 46 that just fits within the outer barrel 42. This inner barrel is attached to the gear 33 so as to rotate therewith and is provided with spaced openings 43 and 48 adapted to coöperate with openings 52 and 51 respectively. The openings 43 and 48 are single in number and are arranged on diametrically opposite sides of the barrel. The series of openings 51 occupy approximately three-quarters the distance around the barrel while the openings 52 occupy only a short arc across the top thereof.

On the under side of barrel 42 and diametrically opposite the center hole of each set 51 is an opening 55 from which extends a short spout 56. Within barrel 46 are abutments 47 the opposite faces of which are substantially adjacent openings 51 and 52. These abutments are fastened in the barrel and are provided with openings for the shaft 30.

Between these abutments 47 pistons 50 are attached to the shaft 30, and reciprocate therewith.

Surmounting barrel 42 is a casing 60, substantially oval in cross section and having the end plates 61 and 62. The former plate has an opening which slips over the barrel and abuts against a packing ring 64 on the face of the flanged member 40. The end 62 is provided with an opening which fits over sleeve 54, and a nut 65 on the latter forces the inner face of the plate into contact with the face of plug 53 and at the same time holds end plate 61 in contact with packing 64.

This casing is open on the bottom to allow the spouts to discharge and the edges of this longitudinal opening are provided with packing strips 63. To hold these lower edges tight against the surface of barrel 42 I provide bands 66 extending around the outside thereof and which are drawn together by bolts 67 at the top thereof.

On the top of the casing is an intake pipe 70 from which a suitable connecting tube leads to an elevated batter tank (not shown).

The nut 15 forms the stop for the spring actuated parts so that by moving this nut the amount which shaft 30 and its attached pistons moves may be varied.

Having thus described the various features of my invention its operation is as follows:

The shaft 36 and gear 35 drives gear 33 in the direction indicated in Fig. 1 and through it the barrel 46 until the openings 48 are positioned directly above the openings in the discharge spouts 56. As illustrated in the drawings the pump is about to eject batter from the various supply spouts 56. At this time the cam surfaces 28 and 31 are positioned at their greatest distances apart and further rotation of the gear hub will permit the cam portion of 28 to drop into its coacting cam whereby shaft 30 which is rigidly keyed to the portion 28 will be urged toward the right as viewed in Fig. 2.

This is the case because spring 20 abuts against the member 19 which in turn contacts with the outer end of member 27 and thus constantly urges the latter toward the right. This movement of the shaft carries with it the pistons 50 and any batter which is between these pistons and the abutments 47 to the right thereof will be discharged through the openings and spouts 56.

This discharge takes place practically instantaneously so that the baking mold need not be stopped to receive the batter thus permitting constant rotation of the baking machine. Further rotation of gear 33 rotates the cam member 32 in the direction of the arrow in Fig. 1 and pushes the coacting cam member to the left against the lock nut 22 and the tension of spring 20. Member 27 is held against rotation by the square surface 27 while the shaft 12 on which the members 17 and 19 are mounted slides within the sleeve 11.

It will be apparent that the movement of pistons 50 may to a certain extent be regulated by the position of lock nuts 22 and 15, the latter adjusting the final position of the pistons while the former regulates the amount of movement of the pistons. This latter regulation is due to the fact that as the longitudinal position of the nut 22 is changed, the longitudinal position of cam 28 will be correspondingly changed. Then as the coöperating spiral cam 31 turns it will contact with the spiral face of cam 28 at a point farther along the spiral and the continued rotation will only move the cam 28 the axial distance from this point to the end of the spiral.

To adjust the time of the cam so that the release takes place when the holes 48 and 55

are opposite it is only necessary to loosen screws 24 and turn the plate 23.

Just before the discharge takes place hole 43 has passed the last one of the holes 52 and on further rotation hole 48 comes opposite the first of the holes 51. Casing 60 is filled with batter so that as the pistons travel to the left, due to the action of the cams, this batter is drawn in through openings 51. This charging takes place during about three-quarters of a revolution and during the last portion of this movement the spaces back of the pistons are opened by reason of holes 43 coming opposite openings 52. This allows any batter which leaks past the piston to be discharged back into the casing.

From the above description it will be apparent that I have provided a device which effectively accomplishes the objects as set forth in the beginning of this specification and I claim as new and wish to cover by Letters Patent:—

1. A dispensing apparatus comprising; an inner barrel having a plurality of openings, an outer barrel having intake and outlet openings, means for continuously rotating said inner barrel to bring the openings therein into registry successively with said intake and said outlet openings, and a plurality of pistons mounted on a common rod within said inner barrel and cam means revoluble with said inner barrel for imparting a reciprocating movement to said shaft.

2. A dispensing apparatus comprising a cylindrical outer barrel having a plurality of spaced intake openings and a plurality of spaced outlet openings, an inner barrel revolubly mounted in said outer barrel and having openings adapted to register successively with said intake openings and said outlet openings, geared means for continuously rotating said barrel, abutments carried within said inner barrel forming a plurality of pump chambers, a shaft extending axially through said abutments, pistons mounted on said shaft within said chamber, a cam revoluble with said inner barrel, and a cooperating cam carried by said shaft for imparting a reciprocating motion to said shaft.

3. A dispensing apparatus comprising a stationary cylindrical outer barrel, having intake openings and outlet openings arranged in a plurality of spaced sets, an inner barrel continuously rotatable within said outer barrel and having a plurality of single openings adapted to register successively with the intake and outlet openings of said sets, gear means for rotating said inner barrel, abutments forming a plurality of chambers within said inner barrel, a shaft extending axially through said inner barrel, pistons on said shaft within said chambers, coöperating cams on said shaft and said inner barrel for reciprocating said shaft, and means for limiting the movement of said shaft toward said abutments.

4. A dispensing apparatus comprising a fixed cylindrical outer barrel having intake and outlet openings in sets in spaced relation, a casing embracing said barrel so as to include said intake openings only, an inner barrel revolubly mounted in said outer barrel and having openings in spaced relation adapted to register successively with said intake openings and said outlet openings, pistons within said inner barrel, a shaft carrying said pistons, cam means for moving said shaft in one direction while said inner barrel openings register with said intake openings and then to release said shaft, spring means for moving said piston rod in the opposite direction when the opening in said inner barrel registers with said outlet opening and means for limiting the movement of said shaft under the action of said spring.

5. A dispensing apparatus comprising an outer barrel having a plurality of spaced intake and outlet openings, a continuously rotatable inner barrel having openings adapted to be brought into registry with said inlet and said outlet openings, a piston for each outlet opening, a rod common to all of said pistons, means for holding said rod against rotation, a spiral cam attached to said rod, a coacting cam member revoluble with said inner barrel adapted to move said rod in one direction, and spring means for returning said rod in the other direction.

In testimony whereof I affix my signature.

CHARLES A. COSTIGAN.