

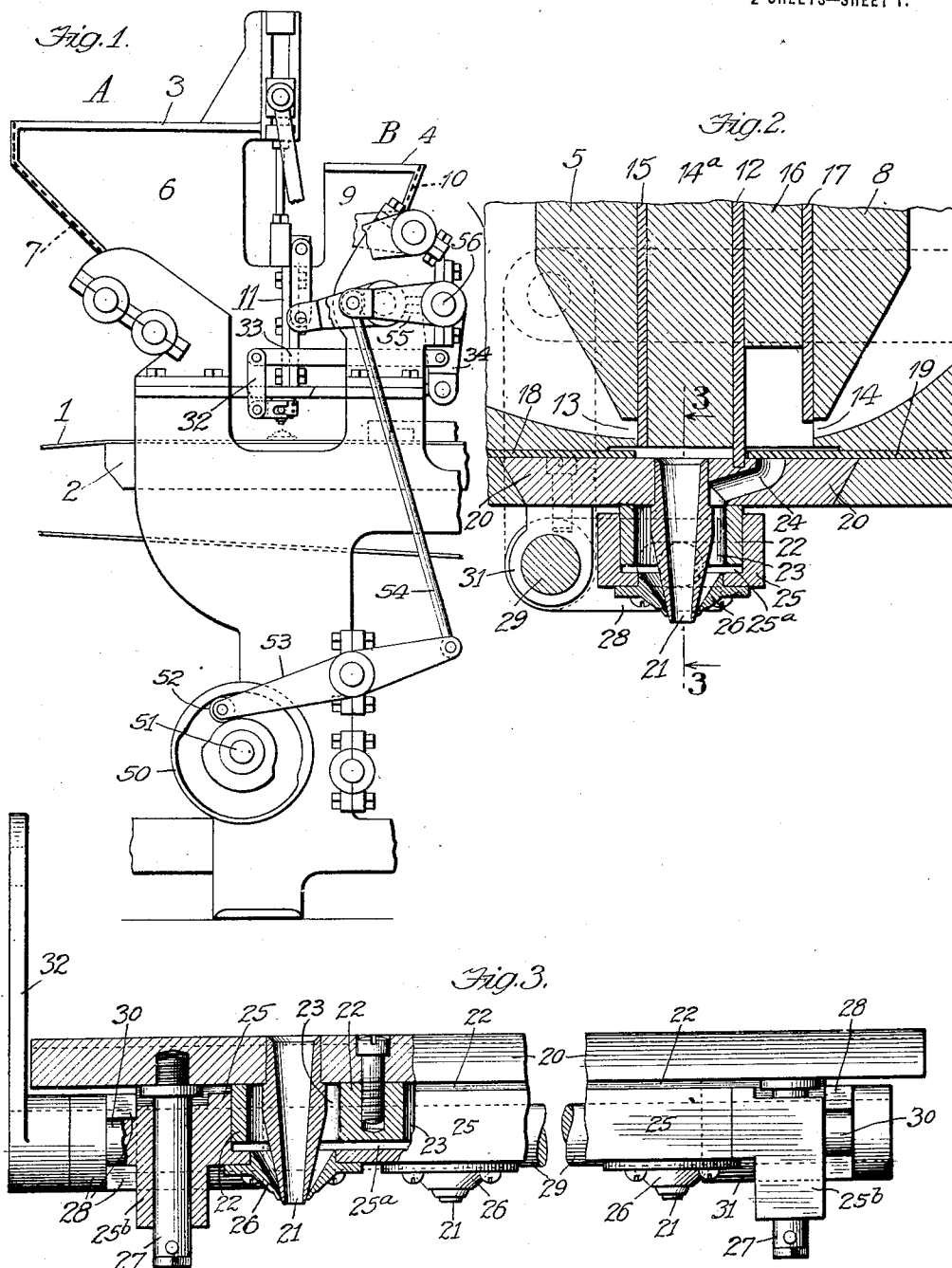
F. G. SALERNO.
DEPOSITING MACHINE.

APPLICATION FILED DEC. 4, 1917. RENEWED FEB. 19, 1921.

1,404,548.

Patented Jan. 24, 1922.

2 SHEETS—SHEET 1.



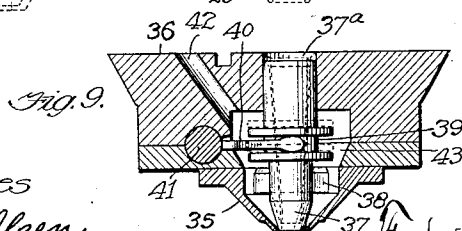
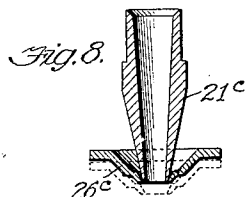
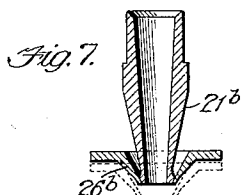
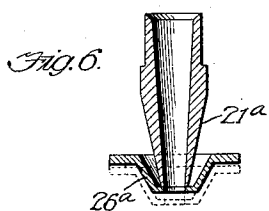
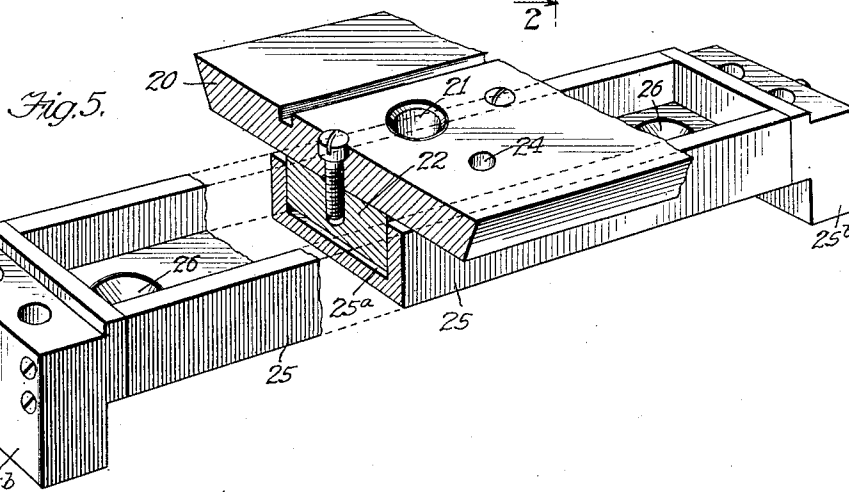
Witnesses
Martin H. Olsen.
Robert D. Dobberman

Inventor
Ferdinando G. Salerno
By Rector, Hibben, Davis & Macaulay
His Attys

APPLICATION FILED DEC. 4, 1917. RENEWED FEB. 19, 1921.

Patented Jan. 24, 1922.

2 SHEETS--SHEET 2.



Inventor
 Ferdinando G. Salerno
 By Rector, Hibben, Davis & Mearns, Attys.

UNITED STATES PATENT OFFICE.

FERDINANDO G. SALERNO, OF CHICAGO, ILLINOIS.

DEPOSITING MACHINE.

1,404,548.

Specification of Letters Patent.

Patented Jan. 24, 1922.

Application filed December 4, 1917, Serial No. 205,421. Renewed February 19, 1921. Serial No. 446,497.

To all whom it may concern:

Be it known that I, FERDINANDO G. SALERNO, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Depositing Machines, of which the following is a specification.

My present invention is intended to be applied to and form a part of a depositing machine of the general construction shown in my pending application No. 834,780, filed April 27th, 1914, which has become Patent Number 1,303,599, and more particularly relates to modifications and improvements connected with the nozzles of the depositing mechanism of the machine. It has been found that with some forms of concentric double nozzles heretofore employed, especially those in which the annular opening between the nozzles is restricted, small lumps, or coagulated or hardened fragments of the confection, or undissolved particles of the material being used will sometimes lodge between the nozzles and interfere with the free and uniform passage of the confection, making it necessary to clean the nozzles while the machine stands idle to obtain a perfect product. The object of the present invention is to provide mechanism which will automatically keep the orifices of the nozzles free and unobstructed, to which end I have devised and invented the mechanism which will be hereinafter more fully described. My invention consists in the combination and organization of cooperating parts constituting such mechanism, the essential elements of which are particularly pointed out in the appended claims.

Of the drawings Figure 1 is a side view of a portion of the hoppers and adjacent portions of a depositing machine to which my invention is applied; Fig. 2 is a cross section of the nozzle bar on a larger scale taken centrally through one of the double depositing nozzles and longitudinally of the machine; Fig. 3 is a broken section taken longitudinally of the nozzle bar (transversely of the machine) on the line 3—3 of Fig. 2; Fig. 4 is a plan view of the nozzle bar partly broken away; Fig. 5 is a perspective of the nozzle bar structure, broken away to show the construction and arrangement

of the parts thereof; Figs. 6, 7, and 8 are fragmentary diametrical sections of modified forms of nozzles; and Fig. 9 is a section corresponding to Fig. 2 but viewed in the opposite direction, showing a modified form of my invention.

The same reference characters indicate the same parts in all the figures of the drawings.

It will be unnecessary for an understanding of my present invention to describe the general construction of the depositing machine to which it is applied or of which it forms a part, further than to state that it includes an endless belt 1 arranged to be shifted with a step-by-step movement over the surface of an oscillating table 2 which is intermittently lifted to a position adjacent the depositing nozzles while deposits of the two kinds of confection are being deposited through the double nozzles on rows of cakes fed into alignment with the nozzles, and then lowered as the flow is broken, after which the row acted upon is carried forward by the movement of the belt and another row fed into position to receive deposits when the belt is next lifted. The two hoppers A and B may conveniently be constructed of the two castings 3 and 4, the casting 3 being formed with a back wall 5 and side walls 6 to which is secured a sheet metal plate 7 to make up the larger or marshmallow hopper A, and the casting 4 being formed with a back wall 8 and side walls 9 to which is secured a sheet metal plate 10 to make up the smaller or jelly hopper B. The lower parts of the side walls of the two castings meet to form a tight joint, and externally are formed with meeting vertical flanges 11 by which they are bolted together, but the back walls are offset or separated from each other to leave a rectangular space lying between such walls and the extended portions of the side walls, which space is divided by a partition plate 12 into two piston chambers for the reception of the rectangular pistons or plungers of the forcing mechanism. The partition plate 12 is seated in grooves formed in the casting 4 and also seated in a groove in the nozzle bar later to be described. The bases of the castings are suitably secured to the frame of the machine, and the hoppers A and B communicate with the adjacent forc-

ing chamber through long inlet ports 13 and 14 respectively opening into the associated forcing chamber near its bottom. The larger forcing chamber is closed at its top by a rectangular piston 14^a and a thinner rectangular supply valve 15 governing the port 13, and the smaller forcing chamber is closed by a corresponding piston 16 and supply valve 17. A rectangular plate 18 forming a shut-off valve is arranged to reciprocate horizontally in a slideway formed in the casting 3, and a similar shut-off valve 19 is provided in the casting 4. As in the case of the nozzle bar described in my prior application, the nozzle-bar or nozzle-carrying member of my present novel mechanism is in the form of a plate which extends transversely of the machine and forms the bottom wall of the two chambers which contain the forcing mechanism, and is seated in a dove-tailed recess formed at the bottom of the two castings 3 and 4, such seat being formed partly in one casting and partly in the other.

By suitable connections unnecessary to be described the main plunger or piston of each forcing mechanism is caused to descend gradually from uppermost position, the supply valve at the time closing the supply port, and the shut-off valve being in outermost position. After the piston reaches lowermost position and as soon as it begins its upward stroke the confection is sucked back into each of the group of nozzles to which it is connected and which will hereinafter be described in detail, the supply valve remaining momentarily closed and the shut-off valve open, after which the shut-off valve quickly shifts to inner or closed position and the supply valve uncovers the inlet port. The upward movement of the main piston or plunger now draws a charge of confection into the forcing chamber, and the supply valve returns to close the inlet port in advance of the downward forcing stroke of the main piston, the shut-off valve also shifting to open or outer position.

The object of automatically keeping unobstructed the annular openings between the inner and outer depositing nozzles of my new nozzle bar mechanism, which will now be described, is attained by mounting one set of nozzles rigidly in the nozzle-carrying member, and mounting the other set slidably therein, with the ends of the nozzles so arranged and constructed that in one position of the sliding nozzles, an annular discharge opening will be formed between the members of each associated pair of nozzles for the discharge of one of the confections, while in the opposite position,—which is brought about between the intermittent depositing actions of the forcing mechanism,—the inner surface at the end of the outer nozzle will be brought into contact

with an overhanging surface upon the outer portion of the inner nozzle, with the result that any particles of matter which might clog up the opening between them will be crushed and the opening left free at the next discharge of confection by the depositing mechanism. To this end the nozzle bar 20 is equipped with a series of nozzles 21 rigidly fixed therein and having valved communication with the larger supply receptacle, or icing hopper, of the machine. Rigidly secured to the bar 20, and in effect forming a part thereof, is, a block 22 formed with a row of openings 23 concentric of the nozzles 21; ports 24, formed in the nozzle-bar, serving to connect the spaces in the openings around the nozzles with the smaller supply receptacle, through which chocolate or jelly, is usually supplied. Slidably embracing the block 22 is a box 25, the bottom of which is equipped with a series of nozzles 26, the box 25 being in the present instance, for convenience of machining the parts, constructed of a central trough 25^a, to the ends of which are bolted end blocks 25^b, each end block being formed with a pair of vertical bores arranged to engage depending guide-pins 27 rigidly secured to the under side of the nozzle-bar 20. The nozzle-bar is supported and vertically reciprocated by a pair of yokes 28 secured to a rock shaft 29 and engaging trunnions 30 formed upon the end blocks 25^b of the box 25. The rock shaft 29 is pivotally mounted in bearing lugs 31 depending from the nozzle bar 20, and is oscillated by means of a rock arm 32 which by a link 33 is connected to a second rock arm 34 by means of which the shut-off valve 19 is also operated. The rock arm 34 constitutes a part of the connections described in my prior application before mentioned for operating said shut-off valve, such connections including a grooved cam 50 fixed to a rotating shaft 51 and arranged to cooperate with a roller 52 carried by a rocking lever 53, which lever, through a pivoted connecting rod 54 rocks a crank 55 fast on a rock shaft 56, which shaft at one end carries the rock arm 34 above mentioned and at its opposite end a similar arm, the two arms being pivoted to the opposite ends of the shut-off valve. Since the shut-off valve is closed just as soon as the action of the main plunger has broken the flow of confection and sucked the material upwardly a short distance in the nozzles, and no depositing action takes place until after the shut-off valve moves outwardly again, the arm 34, through the link 33 and rock arm 32 will rock the shaft and first bring the inner and outer nozzles into contact and then restore them to open or active position in the intervals of time between the discharges of confection. It is of course obvious that if desired an entirely

independent train of operating connections may be used to reciprocate the movable nozzles.

It may here be stated that, as fully described and explained in my copending application before referred to, adjustments are provided whereby any desired timing of the two depositing mechanisms relatively to each other may be attained. With the nozzle bar structure above described, the hopper of smaller capacity is usually arranged to communicate with the annular spaces between the nozzles, and the associated forcing mechanism timed to complete its depositing action after the other depositing mechanism, to superimpose a deposit of chocolate or jelly upon the marshmallow deposited through the central tubes. It will be noted that the outer surface of the inner nozzles 21 is cone-shaped, and that the inner surface of the outer nozzles 26 is funnel-shaped but at a more obtuse angle with respect to the axis of the nozzles; also, that the opening of the outer nozzle is larger than the lower end of the inner nozzle; from which construction it results that when the ends of the nozzles are approximately at the same level an annular orifice of appropriate size for the depositing of the confection arranged to pass between the nozzles is formed, and when the outer nozzle is lifted so that the inner edge of its depositing orifice brings up against the overhanging conical outer face of the inner nozzle any solid particles which may have been carried down into the annular space between the nozzles will be crushed by a quasi wedging action of the approaching faces.

The outer nozzles, however, may be arranged if desired to contact the inner nozzles at or near their lower end, as shown in Figs. 6, 7 and 8, in which I have illustrated modified forms of nozzles which may be used in carrying out my invention, the inner or fixed nozzles being respectively marked 21^a, 21^b and 21^c, and the outermost position of the movable nozzles 26^a, 26^b and 26^c being in each case indicated by dotted lines. In these modified forms of the nozzles, the confection which issues from the annular orifice between the nozzles moves obliquely or laterally against and around the central core of the confection issuing from the inner nozzle, and by the joint action of the forcing mechanisms the two confections are deposited in a single stream.

In the modified form of my invention shown in Fig. 9, (viewed in the opposite direction as compared with Fig. 2) the outer nozzles 35 are rigidly connected with the nozzle bar 36, the inner nozzles 37 being slidably mounted in bores 37^a in the nozzle bar and guided by a spider 38 secured in the top portion of the outer nozzles. Each nozzle 37 is formed with a peripherally grooved

hub 39 which is engaged by the end of an oscillating fork 40 fixed to a rock shaft 41 corresponding to the rock shaft 29 of the preferred form of my invention which has already been described. As shown, the nozzle bar is composed of an upper plate and a lower plate bolted together, the parts being bored and chambered to form a passage leading from the forcing mechanism to a chamber 43 surrounding the hub 39 of each nozzle and communicating through the spider 38 with the annular space between the outer and inner nozzles, and are also grooved to form a bearing for the rock shaft 41.

I claim:

1. In a machine of the class described and having two confection hoppers, an inner nozzle communicating with one confection hopper and having an overhanging outer face above its discharge orifice, an outer nozzle surrounding said inner nozzle and having a discharge orifice larger than the lower end of said inner nozzle, and means for reciprocating one of said nozzles whereby an annular opening will be formed between the ends of said nozzles when they are at the same level and such opening will be closed when said outer nozzle is above said inner nozzle and is in contact with the overhanging face of said inner nozzle.

2. In a machine of the character described, a nozzle structure according to claim 1 in which the inner nozzle has a conical outer face and the outer nozzle has a funnel-shaped inner face.

3. In a machine of the character described, a nozzle structure according to claim 1 in which the inner nozzle has a conical outer face and the outer nozzle has a funnel-shaped inner face, and in which the angle of the outer face of the inner nozzle is more acute than the angle of the inner face of the outer nozzle.

4. In a machine of the class described and having two confection hoppers and two forcing mechanisms housed adjacent the lower ends of such hoppers, a plate forming the bottom wall of the housing for said forcing mechanisms and equipped with a set of rigidly-secured nozzles communicating with one hopper, a second set of nozzles slidably mounted in said plate and communicating with the other hopper and arranged respectively concentric with said first-mentioned nozzles, and means including a rock-shaft pivotally mounted on said plate for reciprocating said second-mentioned set of nozzles in unison to restrict and enlarge annular openings between the ends of the nozzles of such set and the ends of the nozzles of the other set.

5. In a machine of the class described and having two confection hoppers and two forcing mechanisms housed adjacent the

lower ends of such hoppers, a plate forming the bottom wall of the housing for said forcing mechanisms and equipped with a set of rigidly-secured nozzles communicating with one hopper, a telescoping member mounted to slide vertically in said plate and equipped with a second set of nozzles arranged respectively concentric with said first-mentioned nozzles, said plate and telescoping member being bored and chambered to form passages connecting said other hopper and the annular spaces between the nozzles, and means for reciprocating said telescoping member to restrict and enlarge the annular openings between the nozzles.

6. In a machine of the class described and having two confection hoppers, a nozzle-carrying member equipped with a set of rigidly-secured nozzles communicating with one hopper, a block depending from said member and surrounding said nozzles, a box slidably engaging said block and equipped with a second set of nozzles arranged respectively concentric with said first-mentioned nozzles, said nozzle-carrying member and block being bored to form passages connecting the other hopper with the annular spaces around said first-mentioned nozzles, and means for reciprocating said box to restrict and enlarge the annular openings between the nozzles.

7. In a machine of the class described and having two confection hoppers, a nozzle-carrying member equipped with a set of rigidly-secured nozzles communicating with one hopper, a block depending from said member chambered around said nozzles, a box slidably engaging said block and equipped with a second set of nozzles arranged respectively concentric with said first-mentioned nozzles, said nozzle-carrying member being bored to form passages connecting the other hopper with the annular spaces around said first-mentioned nozzles, and means for reciprocating said box to restrict and enlarge the annular openings between the nozzles.

8. A mechanical structure according to claim 5 in which the ends of the nozzle-carrying member are equipped with depending guide pins and the end portions of the box orificed to slidably engage such pins.

9. In a machine of the class described and having two confection hoppers, a nozzle-carrying member equipped with a set of rigidly-secured nozzles communicating with one hopper, a block depending from said member and surrounding said nozzles, a box slidably engaging said block and having trunnions at its opposite ends, said box being equipped with a second set of nozzles arranged respectively concentric with said first-mentioned nozzles, and said nozzle-carrying member and said block being bored to form passages connecting the other hopper with the annular spaces around said first-mentioned nozzles, and means cooperating with said trunnions

for reciprocating said box to restrict and enlarge the annular openings between the nozzles.

10. A mechanical structure according to claim 9 in which the ends of the box consist of separate blocks formed with trunnions and bolted to a portion of the box forming its sides and bottom.

11. A mechanical structure according to claim 10 in which the end blocks of the box are also orificed and the ends of the nozzle-carrying member are equipped with depending guide pins slidably engaging said orifices.

12. In a machine of the class described and having two confection hoppers, a nozzle-carrying member equipped with a set of rigidly-secured nozzles communicating with one hopper, a block depending from said member and surrounding said nozzles, a box slidably engaging said block and having trunnions at its opposite ends, said box being equipped with a second set of nozzles arranged respectively concentric with said first-mentioned nozzles, and said nozzle-carrying member and said block being bored to form passages connecting the other hopper with the annular spaces around said first-mentioned nozzles, a rock shaft arranged longitudinally of said nozzle-carrying member, formed rock-arms on said rock shaft engaging said trunnions, and means for rocking said shaft.

13. In a machine of the character described and having two confection hoppers, a set of stationary inner nozzles communicating with one hopper, a reciprocating member equipped with a corresponding set of larger nozzles coaxially surrounding said stationary nozzles and mounted to slide in an axial direction, the space between the stationary and movable nozzles communicating with the other hopper and the lower ends of the movable nozzles being formed to cooperate respectively with the lower ends of the stationary nozzles to enlarge and restrict openings between such ends when the reciprocating member and movable nozzles are reciprocated.

14. In a machine of the class described and having two confection hoppers, and two forcing mechanisms housed adjacent the lower ends of such hoppers, a plate forming the bottom wall of the housing for said forcing mechanism and equipped with a set of rigidly-secured nozzles communicating with one hopper, a second set of nozzles slidably mounted in said plate and communicating with the other hopper and respectively coaxially surrounding said first-mentioned nozzles, and means for reciprocating said second-mentioned set of nozzles in unison to restrict and enlarge annular openings between the ends of the nozzles of such set and the ends of the nozzles of the other set.

FERDINANDO G. SALERNO.