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E. R. JOHNSTON

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PASTRY FILLER

Filed Feb. 12, 1929

Fig. 1

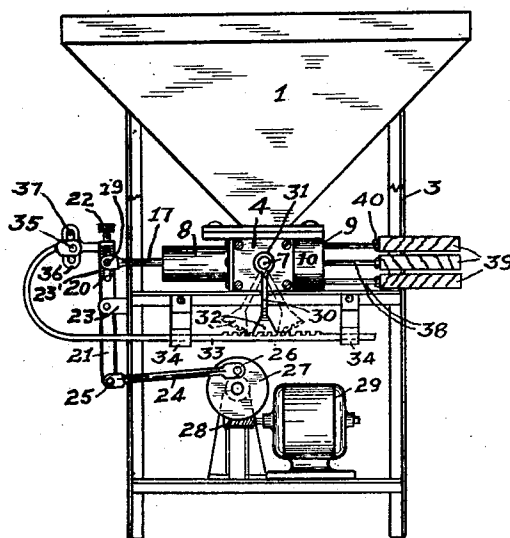


Fig. 2

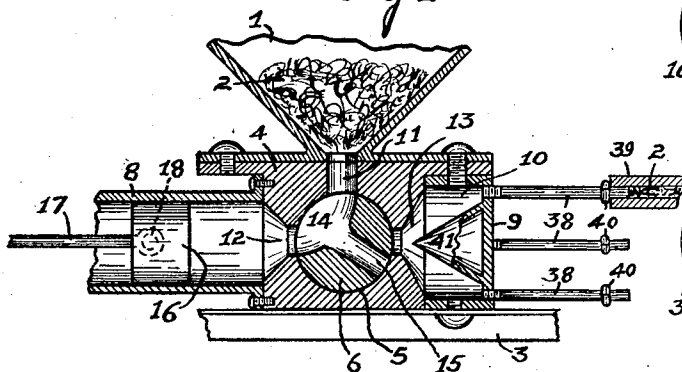


Fig. 3

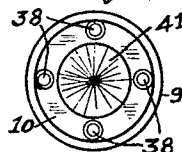


Fig. 4

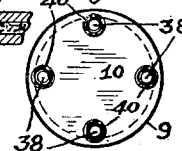
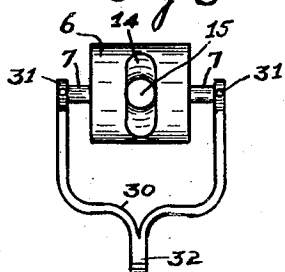


Fig. 5



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PASTRY FILLER

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My invention relates to a pastry filler intended for placing the custard, jelly, marsh mallow, or any other analogous paste products in tarts, rolls, and other forms of pastry shells.

Important objects of the invention are to provide a pastry filler of the character described, which is power operated for simultaneously filling a plurality of pastry shells and in consequence expedite pastry filling operations, and which is readily adjustable to deposit a pre-determined quantity of the paste filling at each operation thereof.

Further objects of the invention are to provide a device of the character described, which is simple in its construction and arrangement, durable and efficient in its use, compact, sanitary, positive in its action, and comparatively inexpensive to manufacture and operate.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood, that changes in the precise embodiment of the invention herein disclosed can be made within the scope of the claims hereunto appended without departing from the spirit of the invention.

In the drawing wherein like numerals of reference designate corresponding parts throughout the several views:

Figure 1 is a side elevational view of a pastry filler constructed in accordance with the invention, with a portion of the supporting frame broken away.

Figure 2 is an enlarged, cross sectional view of the valve elements and of associated parts.

Figures 3 and 4 are, respectively, rear and front end views of the pastry filling distributor.

Figure 5 is a rear view of the valve member and of the associated operating yoke.

Referring in detail to the drawing 1 denotes a hopper, for the pastry filling 2, having its side walls converging toward the lower end thereof. The hopper 1 is mounted on

the top of a supporting frame of any suitable construction, as indicated at 3.

A valve casing 4, formed with a transversely disposed, cylindrical chamber 5, is fixedly attached against the lower end of the hopper 1. A cylindrical valve member 6 is rotatably mounted in the valve chamber 5. The valve member 6 is provided with trunnions 7, which are suitably journaled and project from respective sides of the valve casing 4.

A cylinder 8 is secured against the rear end of the valve casing 4, and a distributor 9 is attached against the front end of the latter. The distributor 9 includes a cup 10, which has its open end disposed toward the valve casing 3. The cylinder 8, valve casing 3, and distributor 9 are horizontally aligned to extend from the rear to the front of the apparatus.

An inlet passage 11, combinedly formed in the top of the valve casing 4 and in the lower converging end of the hopper 1, establishes communication between the latter and the valve chamber 5. A rearwardly flaring passage 12, formed in the rear wall of the valve casing 4, provides communication between the valve chamber 5 and the forward open end of the cylinder 8. A forwardly flaring passage 13 is provided in the front wall of the valve casing 4 and establishes communication between the valve chamber 5 and the distributor cup 10.

The forward top portion of the cylindrical valve member 6 is provided with an oblong, circumferentially disposed passage recess 14, the bottom of which communicates with a forwardly disposed outlet passage 15, likewise formed in the valve member 6. The distance between the ends of the recess 14 is exactly commensurate to the distance between the forward side of the inlet passage 11 and the lower side of the passage 12 at the forward end of the latter.

During the operation of the device, the valve member 6 rocks alternately back and forth in the valve chamber 5, to respectively bring the top of the recess 14 into and out of registration with the inlet passage 11, and the outlet passage 15 out of and into registra-

tion with the passage 13, while the passage 12 is at all times in communication with the recess 14. The valve casing passages 11 and 13 are never in communicating registration with
 5 respective valve member passages 14 and 15 at the same time, but one of said valve casing passages 11 or 13 is always closed by the periphery of the valve member 6 during the time that the other is open. The relative po-
 10 sitions of the valve member passages 14 and 15 to the valve casing passages 11 and 13 is clearly illustrated in Figure 2 of the drawing.

A plunger 16 is mounted for reciprocal movement in the cylinder 8. The former is
 15 driven by a connecting rod 17, which is pivotally joined therewith, as at 18. The rear end of the connecting rod 17 is pivotally joined, as at 19, in an elongated slot 20, which is formed to extend longitudinally in the
 20 upper end portion of the operating bar 21. An adjusting screw 22 is operatively mounted in the upper end of the operating bar 21 and joins with the rod connection 19 to provide adjustment of the latter in the slot 20.
 25 The adjustment of the screw 22 elevates or lowers the connection 19 in the slot 20 and correspondingly increases or diminishes the length of the stroke of the plunger 16 in the cylinder 8.

30 As the plunger stroke length determines the quantity of filling 2 that is ejected at each reciprocation of the plunger 16, it is essential that the plunger stroke be accurately adjusted to provide just the right amount of
 35 filling 2 required. To allow such accurate adjustment the side of the operating bar 21 is provided with gradation markings 23', which will facilitate the positioning of the rod connection 19, by the operation of the
 40 screw 22, to establish the proper plunger stroke length.

The operating bar 21 extends vertically and is pivotally connected for oscillatory movement in a bearing bracket 23, which is
 45 fixed to the supporting frame 3. The operating bar 21 is actuated by a driving rod 24, which has its rear end pivotally connected, as at 25, to the lower end of the former. The front end of the driving rod 24 is pivotally
 50 connected, as at 26, to a worm wheel 27 eccentrically of the latter.

The worm wheel 27 is suitably journaled for rotation, and meshes with a worm 28, which is fixed to the shaft of the driving
 55 motor 29. The operation of the latter will impart reciprocating movement to the plunger 16 by the operation of the inter-connected parts as herein before described.

The valve member 6 is automatically operated and controlled by an actuating yoke
 60 30, which depends below the valve casing 4 and has the upper ends of its arms fixed to respective trunnions 7, as indicated at 31. The lower end of the yoke 30 is formed to
 65 provide a segment gear 32, which is adapted

for engaging a gear bar 33. The latter extends horizontally and is longitudinally shiftable in a pair of hanger guides 34, which are fixed to the supporting frame 3.

The rear end of the gear bar 33 curves upwardly and is pivotally connected, as at 35, to the cross arm 36, which is fixed to and extends laterally rearward from the upper end of the latter. The cross arm 36 is provided
 70 with a vertically disposed slot 37 for the connection 35 to permit of compensatory movement of the latter while the gear bar 33 reciprocates on an even plane horizontally, during the operation of the apparatus.
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A plurality of forwardly extending feeder
 80 tubes 38 are fixed in the front end of the distributor cup 10 and communicate with the interior of the latter. The feeder tubes 38 are regularly spaced from and are disposed parallel to each other adjacent to the periph-
 85 ery of the distributor cup 10.

The forward ends of the feeder tubes 38 are adapted for insertion in the ends of the tubular pastry shells 39 to support the latter while the same are being filled. To facilitate
 90 the proper mounting of the pastry shells 39, each of the feeder tubes is preferably provided with a resilient, split, gage ring 40, which may be adjusted on the feeder tube to establish the proper insertion distance of the
 95 latter in the pastry shell 39.

A cone-shaped equalizer 41 is fixed to and projects rearwardly in the distributor cup 10. The converged end of the equalizer 41 is dis-
 100 posed adjacent to the valve casing rear wall passage 13, while the periphery of the enlarged end of the equalizer extends in close proximity to the rear ends of the feeder tubes 38. The purpose of the equalizer 41 is to uni-
 105 formly equalize the distribution of the filling 2 on its travel through the distributor cup 10 from the valve casing rear wall passage 13 to the rear ends of the feeder tubes 38.

While the tubular type of pastry shells 39 are herein illustrated in connection with the embodiment of the present invention, it will be obvious that any other form of pastry shell may be successfully filled by my improved
 110 filler apparatus, provided that the feeder tubes 38 are equipped with suitable attaching devices for connecting such shells in position during the operation of the filler.
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Further, any desired arrangement and number of feeder tubes 38 may be employed to best meet conditions found in practice. Like-
 120 wise, a plurality of cylinders may be utilized instead of the single cylinder 8, as herein illustrated and described.

The filler apparatus is preferably intended to be operated continuously, and at a speed permitting the operator to remove and re-
 125 place the pastry shells 39 during the suction stroke of the plunger 16 in the cylinder 8.

In practice, the operation of the filler ap-
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paratus is as follows: The operation of the driving motor 29 is continuous, and will impart continuous reciprocating movement to the plunger 16 in the cylinder 8. As soon as the plunger 16 begins its rearward or suction stroke, the rearward movement of the upper end of the operating bar 21 will shift the gear bar 33 rearwardly in its guides 34. This rearward movement of the latter will draw the actuating yoke 30 rearwardly, thereby partially rotating the valve member 6 to close the passage 13 and at the same time open the inlet passage 11. While the latter is in such open position, the filling 2 is sucked from the hopper 1, through the passage 11, recess 14, passage 12, and into the cylinder 8.

It will here be noted, that the operation of the valve member 6 is effected at the beginning of each plunger stroke, and is continued only until the segment gear 32 clears the engagement of the gear bar 33, after which the segment gear 32 will ride idly over the gear bar 33 until the end of the plunger stroke is reached. This idle movement of the segment gear 32 over the gear bar 33 will impart a jiggling action to the valve member 6 providing for the efficient travel of the filling 2 through the recess 14 and passage 15.

As the filling 2 is very light, the weight and suspension of the yoke 30 maintain the valve member 6 in its proper operative position by gravity, and further assure re-engagement of the segment gear 32 with the gear bar 33 at the beginning of each plunger stroke.

The plunger 16, having reached the end of its suction stroke and thereby drawn the filling 2 into the cylinder 8, and as the plunger 16 begins its forward or feeding stroke, the yoke 30 will be shifted forwardly by the gear bar 33 to partially rotate the valve member 6 until the inlet passage 11 is closed by the periphery of the valve member 6 and the outlet passage 15 is positioned in registration with the valve casing passage 13.

During the forward or feeding stroke of the plunger 16, the filling 2 in the cylinder 8 and in the recess 14, will be shoved through the passage 15, the valve casing passage 13, and against the equalizer 41 in the distributor cup 10. The filling 2 will now pass into the feeder tubes 38 and finally into the pastry shells 39. During the operation of the device the distributor cup 10 is always full to capacity with filling 2, and in consequence the latter will be forced from the distributor cup 10 into the feeder tubes 39 in uniform amounts, while the equalizer 41 serves to divert the filling 2 to the latter. After the pastry shells 39 have been filled, by the feeding stroke of the plunger 16, they are removed from the feeder tubes 38 by the operator and replaced by empty pastry shells. Such removal and replacement of the pastry shells being done during the subsequent suction stroke of the plunger 16.

Owing to the consistency of the usual pastry filling 2, the same is deposited in the shells 39, in the manner herein stated, without perceptible force or pressure, but merely moved or shoved forwardly into the pastry shells. In practice it has been established that a small quantity of filling 2 is ejected from each of the feeder tubes 38 as the pastry shells are being removed from the latter. This is a desirable feature, as such ejected quantity of filling 2 serves to fill the space in the pastry shell that was engaged by the insertion of the feeder tube, and is deposited at the time that the shell is being drawn from the feeder tube.

The various parts of my improved filling apparatus, are, of course, so arranged, constructed, operated, timed, and adjusted, so that just the requisite amount of the filling 2 is delivered from the device, by each forward or feeding stroke of the plunger 16, to properly fill the pastry shells mounted thereto.

The present invention provides a most efficient power operated device of its kind, which operates automatically to expedite pastry filling operations in a uniform and economical manner.

What I claim is:

In an apparatus for depositing pastry filling into pastry shells, the combination of a hopper for the filling, a supporting frame for said hopper, a valve casing connecting with the lower end of said hopper, a cylinder connecting with one end of said valve casing, a filling distributor cup connecting with the other end of said valve casing, a valve member revolubly mounted in said valve casing, a plunger shiftably mounted in said cylinder, an operating mechanism carried by said frame for imparting reciprocal movement to said plunger in said cylinder, means connecting with said valve element and operatively engaging said operating mechanism for shifting said valve element to establish communication between said hopper and said cylinder during the rearward or suction movement of said plunger and further to establish communication between said cylinder and said distributor cup during the forward or feeding movement of said plunger, a plurality of feeder tubes being fixed to and communicating with the rear end of said distributor cup adjacent to the periphery of the latter, and a cone-shaped equalizer mounted in said distributor cup for directing the filling through said distributor cup to said feeder tubes.

In testimony whereof I affix my signature.
EARL R. JOHNSTON.