Oct. 14, 1930. O. H. HANSEN 1,778,216

CAN FILLING MACHINE

Filed Dec. 11, 1925 2 Sheets-Sheet 1

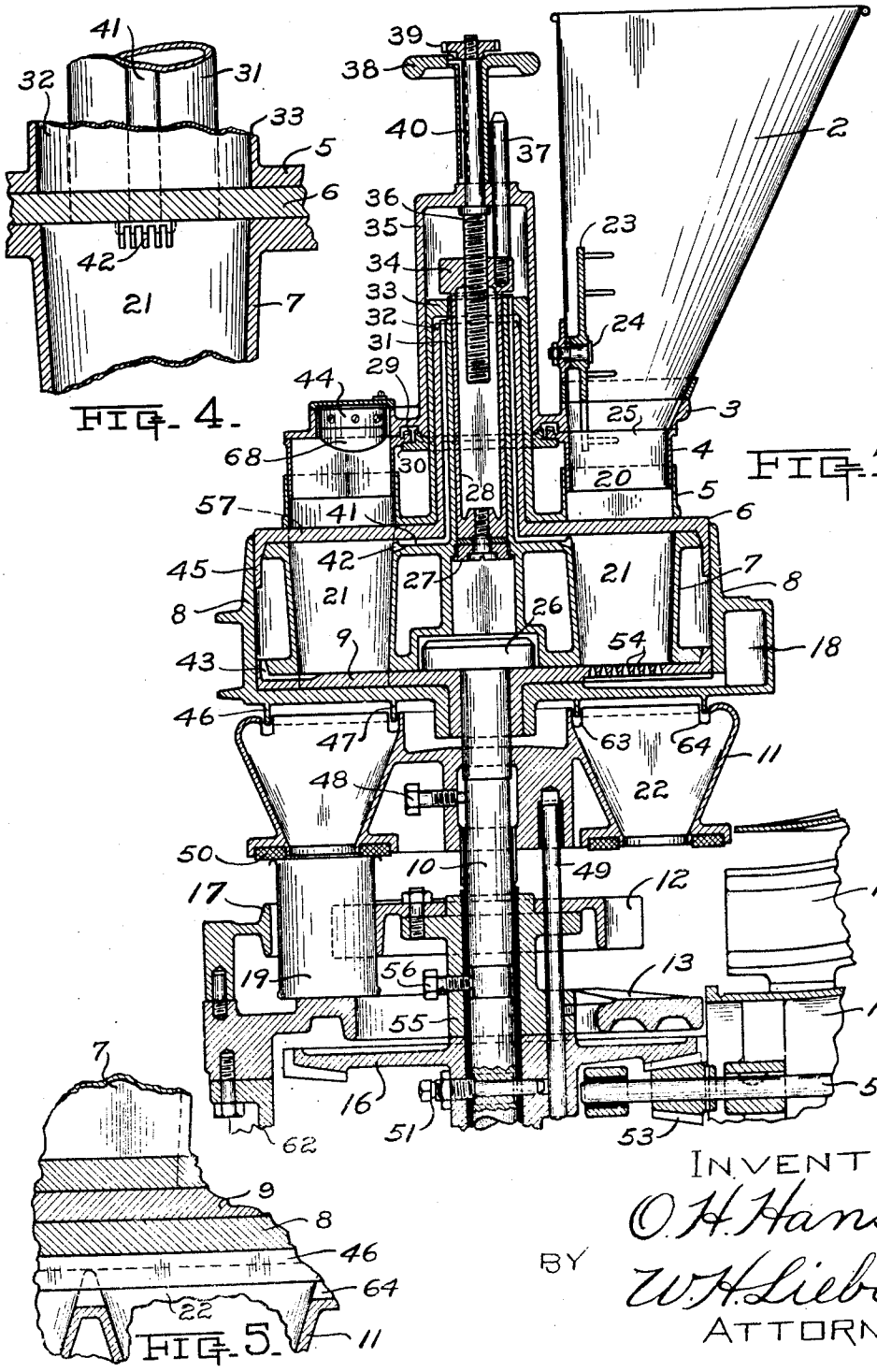


FIG. 4.

FIG. 1.

FIG. 5.

INVENTOR-
O. H. Hansen
BY
W. H. Lieber
ATTORNEY.

Oct. 14, 1930. O. H. HANSEN 1,778,216

CAN FILLING MACHINE

Filed Dec. 11, 1925 2 Sheets-Sheet 2

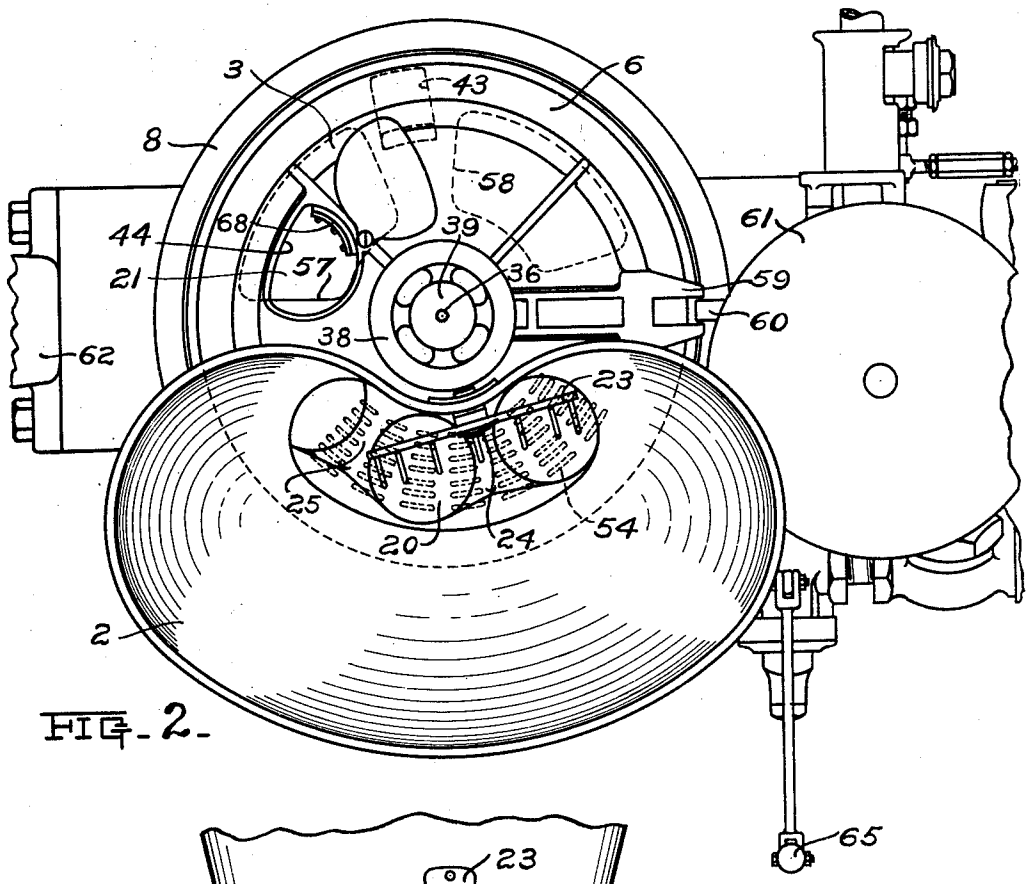


FIG. 2.

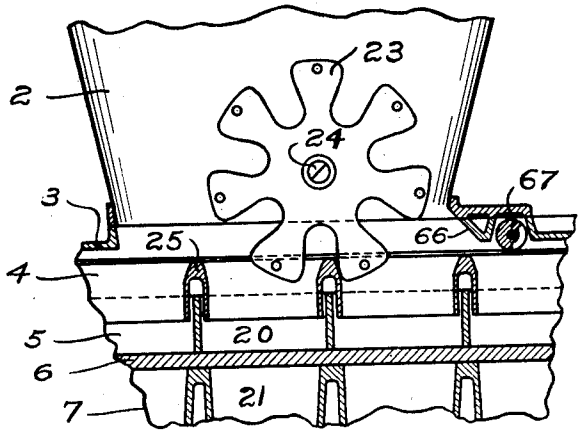


FIG. 3.

INVENTOR-
O. H. Hansen
BY
W. H. Lieber
ATTORNEY.

Patented Oct. 14, 1930 1,778,216

UNITED STATES PATENT OFFICE

OSWALD H. HANSEN, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO HANSEN CANNING MACHINERY CORPORATION OF CEDARBURG, WISCONSIN, A CORPORATION OF WISCONSIN

CAN-FILLING MACHINE

Application filed December 11, 1925. Serial No. 74,676.

This invention relates in general to improvements in the art of packing fluent mixtures, and relates more specifically to improvements in the construction and operation of machines for automatically delivering measured batches of mixture of granular material such as peas and liquid such as brine, to successive cans as they are transported in series through the machine.

A general object of the invention is to provide an improved material measuring and feeding mechanism which is simple in construction and efficient in operation.

Some of the more specific objects of the invention are as follows:—

To provide various improvements in the details of construction and operation of filling machines of the type disclosed in application Serial No. 643,850, filed June 7, 1923, which illustrates and claims various novel features of can filler structure disclosed but not specifically claimed herein.

To provide improved instrumentalities for positively preventing escape of liquid from the moving measuring structure of a filling machine or the like.

To provide improved means for conducting the batches of fluent substance from the measuring pockets to the successive cans without wasting any of the material.

To provide improved agitating mechanism for preventing bridging and for insuring effective delivery of granular material from a supply hopper to the successive measuring pockets which are brought in communication with the hopper.

To provide improved structure for automatically and positively discharging sticky granular material from the successive measuring pockets without damaging the particles of material.

To provide improved venting means for effecting escape of gases from the measuring pockets, and means for preventing granular material from clogging the vent passages.

To provide an improved assemblage of measuring and feeding elements whereby manufacture, adjustment, assembly and dismantling of filling machines is facilitated.

To provide improved driving connections between the various driving and driven elements of can filling machines or the like.

To provide other improvements in the details of construction and operation of can filling machines or the like, whereby a compact, sanitary, conveniently operable, and highly efficient structure results.

While the various features of novelty are disclosed herein by way of illustration, as being applied to a can filling machine which is especially adapted to substantially fill successive cans with measuring batches of mixture comprising peas and brine, it is not intended to limit the scope of the invention by such specific disclosure.

A clear conception of the features of novelty constituting the present improvement and of the operation of devices constructed in accordance therewith, may be had by referring to the drawings accompanying and forming a part of this specification in which like reference characters designate the same or similar parts in the various views.

Fig. 1 is an irregular section through a fragment of a can filling machine embodying the present invention, the major portion of the section being taken along a central vertical plane, but the section through the left half of the pea measuring pocket cover being taken radially through the inspection opening therein.

Fig. 2 is a fragmentary top view of the improved can filling machine.

Fig. 3 is a fragmentary developed section through the supply hopper and measuring pockets of the improved can filling machine.

Fig. 4 is an enlarged fragmentary section through one of the mixture measuring pockets of the improved filling machine, looking toward the central axis of the filler.

Fig. 5 is an enlarged fragmentary section through several of the final discharge hoppers of the filler, looking away from the central filler axis.

The improved can filling machine comprises in general a pea supply hopper 2 having a restricted bottom discharge opening; relatively adjustable upper and lower pea measuring pocket elements 4, 5 cooperating to form an annular series of movable measuring

pockets 20 successively communicable with the hopper 2; an element 7 forming an annular series of movable mixture measuring pockets 21 successively communicable with the pockets 20 and with a source of brine supply; means for transporting cans 19 in series beneath the measuring pockets 20, 21; an element 11 forming an annular series of movable discharge hoppers 22 successively communicable with the pockets 21 and with the cans 19; and mechanism for driving the movable elements of the machine.

The pea supply hopper 2 is mounted upon a vertically adjustable but non-rotatable cover 3 which has a central sleeve 35 formed integral therewith and projecting upwardly therefrom. An agitator 23 comprising a peripherally recessed disk supporting an annular series of parallel pins which project into the hopper 2, is supported for free rotation about a pivot 24 secured to the hopper wall, the lower portion of the agitator disk projecting below the bottom of the hopper 2 and of the cover 3. The cover 3 and hopper 2 are fixed against rotation by means of spaced lugs 59 formed integral with the cover and coacting with an upwardly projecting lug 60 formed integral with the stationary cup-shaped casing 8. An inspection opening 44 formed in the cover 3 is normally closed by a closure plate, and has a depending resilient flap 68 secured to a wall thereof as shown in Figs. 1 and 2.

The upper adjustable pocket element 4 is rotatably supported upon a bearing plate 30 secured to cover 3, and has a series of walls 25 segregating it into a series of upper pocket portions and successively cooperable with the peripheral notches of the agitator 23 as shown in Fig. 3. The resilient flap 68 projects downwardly below the upper edges of the walls 25 and is sufficiently pliable to permit the advancing walls 25 to freely distort and pass the depending flap. The element 4 is provided with gear teeth 29 cooperating with a rotary valve 67 to cut off the delivery of peas from the hopper 2 to the pockets 20. The hopper 2 and cover 3 are provided with an inclined surface 66 cooperating with the valve 67 to effectively interrupt the delivery of peas to the pockets 20 without mashing the product.

The upper pocket element 4 fits within and is vertically adjustable relatively to the lower pocket element 5 which has an integral central sleeve 33 coacting with the bore of the cover sleeve 35. The lower element 5 is rotatably supported upon an upper stationary cut-off plate 6 and imparts rotary motion to the upper element 4 through the walls 25. The cut-off plate 6 has a discharge opening 57 located in vertical alinement with the inspection opening 44 in the cover 3, and also has a peripheral depending wall 45 which snugly fits the bore of the stationary cup shaped casing 8. The casing 8 is secured to the main frame 62 and has a brine supply manifold 18 formed integral therewith. The manifold 18 communicates with a brine supply tank 61 through suitable control valves operable by a lever 65 which also controls the application of power to the machine. The manifold 18 also communicates with a brine admission grid 54 formed in the lower cut-off plate 9.

The mixture measuring pocket element 7 is rotatably supported within the casing 8 upon the cut-off plate 9 located therein, and coacts at its upper end with the upper cut-off plate 6. The element 7 has a lower driving socket and has an upwardly extending integral sleeve 31 which coacts with the bore of the stationary sleeve 32 and is drivingly keyed to the upper end of the sleeve 33. The sleeve 31 of the element 7 is provided with a series of vents 41 which communicate with the atmosphere and with the pockets 21 through grids 42. A tubular member 28 fitting the sleeve 31 has a central plate 27 secured to its lower end and coacting with an abutment surface of the element 7. The upper end of the member 28 is threaded to receive the adjusting rod 36 which has a medial collar coacting with the cap sleeve 35. A rod 37 secured to the member 28 passes through a hole in the sleeve 35 thus preventing rotation of the member 28 with the sleeves 31, 33. An adjusting hand wheel 38 is secured to the rod 36 by means of a spline 40 and a second hand wheel 39 coacting with screw threads at the upper end of the rod 36 serves to lock this rod in adjusted position.

The lower cut-off plate 9 is provided with a mixture discharge opening 58 and has a leakage return recess 43 connecting the space between pocket element 7 and the casing 8 with the interiors of the successive pockets 21 after they have delivered their measured batches of mixture and before they are brought in communication with the opening 57 in the top plate 6. The plate 9 is fixed against rotation in any suitable manner and is freely vertically removable from within the casing 8. The central portion of the plate 9 is bored to receive the vertical drive shaft 10 which has a driving head 26 at its upper end fitting within the lower recess of the element 7.

The hopper element 11 is rotatably supported by the main shaft 10, being adjustably secured to this shaft by means of a locking screw 48. The lower end of each of the hoppers 22 formed by the element 11, is provided with a resilient sealing ring 50 and the upper portion of the element 11 is provided with concentric grooves 63, 64 which are formed to receive depending annular baffle walls 47, 46 respectively, formed integral with the bottom of the casing 8. The outer walls of the hoppers 22 are formed with reverse curves at their upper ends, in order

to direct splashing material inwardly and downwardly toward the cans 19 located below the hoppers.

The can hooks 12 located below the hoppers 22 are secured to a support 55 which is rotatably associated with the main shaft 10 and is adjustably secured to this shaft by means of a locking screw 56. The can hooks 12 are located above a can support 13 secured to the main frame 62, and cooperate with the support 13 and with the can guide 17 to transport the cans 19 through the machine. The can guide 17 is secured to the support 13 by means of vertical pins from which the guide is freely vertically removable.

The lower portion of the main shaft 10 has a driving gear 16 secured thereto by means of a transverse driving pin 51 and a vertical driving rod 49 carried by the gear 16 provides a direct driving connection between the gear 16, the can hooks 12 and the hopper element 11 as shown in Fig. 1. The driving gear 16 is rotatable in any suitable manner and serves to rotate a can feed drum 15 through a pinion 53 and a counter shaft 52. A can supply chute 14 conducts the empty cans 19 upon the feed drum 15 which delivers the cans in properly spaced relation into the path of the revolving can hooks 12. Suitable can discharge mechanism of well known construction serves to deliver the filled cans 19 from the machine.

During normal operation of the improved can filling machine, peas are delivered in bulk to the supply hopper 2 and brine from the supply tank 61 is being delivered by gravity into the manifold 18. Rotary motion is being transmitted through the gear 16 to the vertical main shaft 10 and from thence to the can hooks 12, to the discharge hoppers 22, and to the pocket element 7 in an obvious manner. From the element 7, rotary motion is transmitted through the direct connected sleeves 31, 33 to the pocket element 5 and from the element 5 directly to the adjustable upper pocket element 4.

When the successive measuring pockets 20 pass beneath the feed hopper 2, the agitator 23 is rotated upon its pivot 24 and peas are delivered by gravity into the successive pockets 20. As the filled pockets 20 pass laterally from beneath the hopper 2, the rotary cut-off valve 67 automatically functions to separate the measured batches of peas in the successive pockets 20 from the bulk of material in the hopper 2 without damaging any of the peas. The filled pockets 20 are slid along the surface of the upper plate 6 until they reach the discharge opening 57 whereupon the successive measured batches of peas are delivered into the mixture measuring pockets 21 located below. If the peas are of a sticky nature, the resilient flap 68 which rides over the walls 25 between the successive pockets and dips into each pocket, serves to positively urge the peas from the pockets 20 through the opening 57. After the pockets 21 have been supplied with measured batches of peas, they are brought into communication with the grid 54 and are filled with brine from the manifold 18. The brine which enters the pockets 21 from below, fills the voids of the peas and forces the air from the pockets 21 through the vents 41. The successive pockets 21 after being filled with measured batches of mixture of peas and brine are advanced over the final discharge opening 58 in the plate 9 and casing 8 whereupon the measured batches of mixture are discharged through the funnels or hoppers 22 to the cans 19 which are being advanced beneath the funnels by the can hooks 12. During such delivery of the charges, air again enters the pockets 21 through the vents 41 and the pockets are ready for subsequent measuring. The successive cans 19 delivered to the device by the feed drum 15 are thus transported through and from the machine and are automatically supplied with accurately measured quantities of mixture of peas and brine having like proportions of ingredients.

Should it be desired to vary the proportion of peas and brine, the adjusting hand wheel 38 may be released by loosening the locking wheel 39, and manipulated to raise or lower the sleeve 35 and the cover 3 formed integral therewith. As the cover 3 is moved, it carries with it the upper pocket element 4 which rests upon the bearing plate 30, thus simultaneously varying the volumes of all of the pockets 20. Such adjustment may be effected during normal operation of the machine as the adjusting rod 36 coacts only with stationary elements such as the sleeve 35 and the member 28 which is fixed against rotation by the rod 37.

If, during operation of the machine, any liquid should escape from the pockets 21 to the space between the element 7 and the casing 8, such leakage will be returned to the empty pockets 21 through the conduit 43 formed in the plate 9, after the pockets 21 have passed the discharge opening 58 and before they receive a fresh batch of peas. The baffle walls or projections 46, 47 formed on the stationary casing 8 and extending into the annular recesses 64, 63 of the hopper element 11, cooperating with the reversely curved upper walls of the hoppers 22, effectively prevent escape of material during delivery to the cans 19. The sealing rings 50 snugly fit the upper ends of the cans 19 thus further eliminating waste of material, the hoppers 22 being vertically adjustable to insure tight closure of the cans by the rings 50, by virtue of the adjusting screw 48. The adjusting screw 56 also permits limited vertical adjustment of the can hooks 12 and the driving pin 51 which pierces the shaft

10 cooperates with gear 16 and with the rod 49 to provide a rigid but readily detachable drive for the movable elements.

The entire structure may obviously be readily assembled and dismantled. Upon removal of the hand wheels 38, 39, the cover 3, hopper 2 and agitator 23 are simultaneously freely removable, the cover 3 carrying with it the upper pocket element 4. The entire measuring pocket structure may be removed from within the cup-shaped casing 8 without removing the hand wheels 38, 39 and upon removal of the pocket element 7 from within the casing 8, the plate 27 may be removed thereby permitting free removal of the member 28 from within the sleeve 31. Upon removal of the element 7, and of the driving pin 51, the shaft 10 and plate 9 may also be removed thereby dismantling the entire machine. By virtue of the opening 44, access is permitted to the pockets 20 and also to the pockets 21, the opening 44 being disposed directly above the discharge opening 57. The grids 42 effectively prevent peas from entering the vents 41 thereby assuring proper escape and admission of air. The agitator 23 effectively prevents peas from bridging the hopper discharge opening and the walls 25 of the pockets 20 provide simple and efficient means for driving the agitator.

It will be apparent that the improved filler is extremely simple, compact, sanitary and efficient and is operable at high speed without wasting or damaging the product. All of the elements may be conveniently manufactured and maintained in operation with minimum attention. The various adjustments may be quickly made and absolutely accurate filling results.

It should be understood that it is not desired to limit the invention to the exact details of construction and operation herein shown and described, for various modifications within the scope of the claims may occur to persons skilled in the art.

It is claimed and desired to secure by Letters Patent:—

1. In a filling machine, a casing, means forming a series of measuring pockets movable within and spaced from a wall of said casing, and means providing an inlet for admitting liquid to said pockets, the space between said wall and said pockets communicating with the successive pockets of said series.

2. In a filling machine, a casing, means forming a series of measuring pockets movable within and spaced from a wall of said casing, means providing an inlet for admitting liquid to said pockets in succession, and means providing an outlet for discharging the contents of said pockets in succession, the space between said wall and said pockets communicating with the successive pockets after the contents thereof have been discharged.

3. In a filling machine, a cup-shaped casing, means forming an annular series of measuring pockets revoluble within and spaced from the side wall of said casing, and means providing an inlet for admitting liquid to said pockets through a wall of said casing, the space between said side wall and said pockets communicating with the successive pockets of said series.

4. In a filling machine, a cup-shaped casing, means forming an annular series of measuring pockets revoluble within and spaced from the side wall of said casing, a plate between said pockets and the bottom of said casing, and means providing an inlet for admitting liquid to said pockets through said plate, said plate having a conduit connecting the space between said wall and said pockets with the successive pockets of said series.

5. In a filling machine, a cup-shaped casing, means forming an annular series of measuring pockets revoluble within and spaced from the side wall of said casing, a cut-off plate between said pockets and the bottom of said casing, and means providing an inlet for admitting liquid to said pockets through said plate, means providing an outlet for discharging the contents of said pockets through said plate and the bottom of said casing, said plate having a conduit for connecting the space between said wall and said pockets with the successive pockets after the contents thereof have been discharged.

6. In a filling machine, means forming a series of measuring pockets, means for transporting cans beneath said pockets, means forming a series of hoppers for conducting material from said pockets to said cans, and an annular baffle wall disposed between said pockets and said hoppers.

7. In a filling machine, means forming an annular series of measuring pockets, a casing supporting said pockets, means forming an annular series of discharge hoppers located below said pockets, said hopper forming means having an annular recess therein, and an annular projection associated with said casing and extending into said recess.

8. In a filling machine, means forming a measuring pocket revoluble about an axis, means forming a hopper located below and revoluble with said pocket, and means for revolving said pocket and said hopper, said hopper having a wall remote from said axis which is curved inwardly toward said axis at the top.

9. In a filling machine, means forming an annular series of measuring pockets, means forming an annular series of hoppers located below said pockets, and means for revolving said pockets and said hoppers about a common axis, the walls of said hoppers remote

from said axis being directed toward the axis adjacent to said pockets.

10. In a filling machine, means forming an annular series of measuring pockets, means forming an annular series of hoppers located below said pockets, said hopper forming means having an annular recess therein adjacent to said pockets, and an annular wall projecting into said recess.

11. In a filling machine, means forming an annular series of measuring pockets, means forming an annular series of hoppers located below said pockets, said hopper forming means having a pair of concentric annular recesses therein, and an annular stationary wall projecting into each of said recesses.

12. In a can filling machine, a lower pocket forming element having a sleeve projecting upwardly therefrom, means for rotating said element, a stationary sleeve embracing said element sleeve, a second pocket forming element disposed above said lower element and having a sleeve embracing said stationary sleeve and drivingly connected at its upper end to said lower element sleeve, a stationary element located within said lower element sleeve, a cover disposed above said second element, and means between said stationary element and said cover for adjusting the latter.

13. In a filling machine, a lower pocket forming element having a sleeve projecting upwardly therefrom, means for rotating said element, a stationary sleeve embracing said element sleeve, and a second pocket forming element disposed above said lower element and having a sleeve embracing said stationary sleeve and drivingly connected to said lower element sleeve.

14. In a filling machine, a lower pocket forming element having a sleeve projecting upwardly therefrom, a stationary sleeve embracing said element sleeve, an upper pocket forming element having a sleeve embracing said stationary sleeve and drivingly connected to said lower element sleeve, a second stationary sleeve embracing said upper element sleeve, and means for rotating said pocket forming elements.

15. In a filling machine, means forming a series of measuring pockets movable about an axis, means having an opening communicable with the successive pockets of said series to deliver material therefrom, and a laterally resilient depending flap suspended at its upper end above said opening and formed to enter the successive pockets and to brush over the material therein by virtue of its lateral resiliency.

In testimony whereof, the signature of the inventor is affixed hereto.

OSWALD H. HANSEN.