July 29, 1947. G. J. OLNEY 2,424,842

CAN FILLING MACHINE

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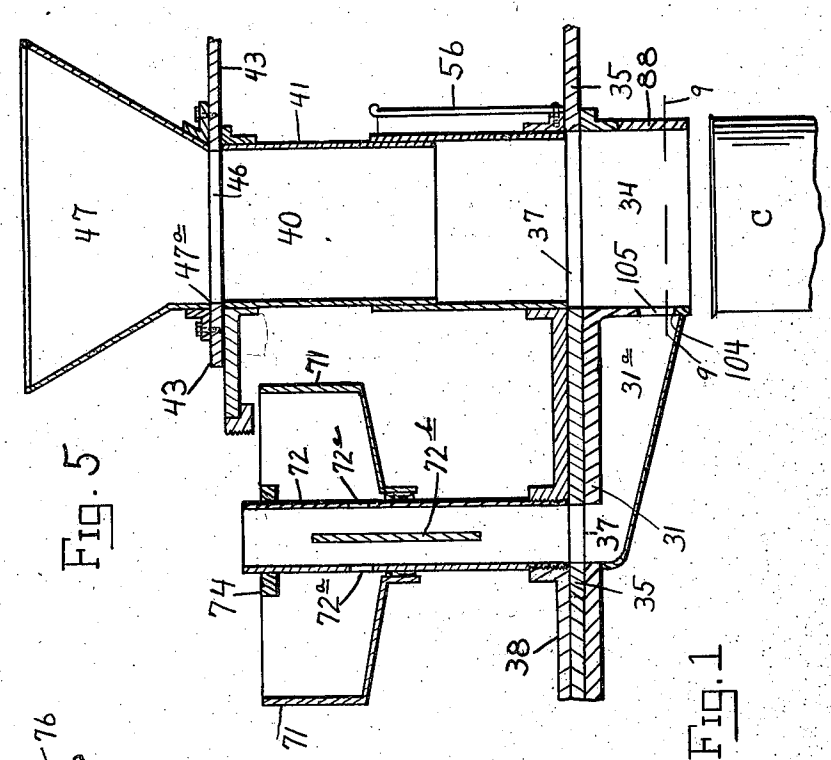


Fig. 5

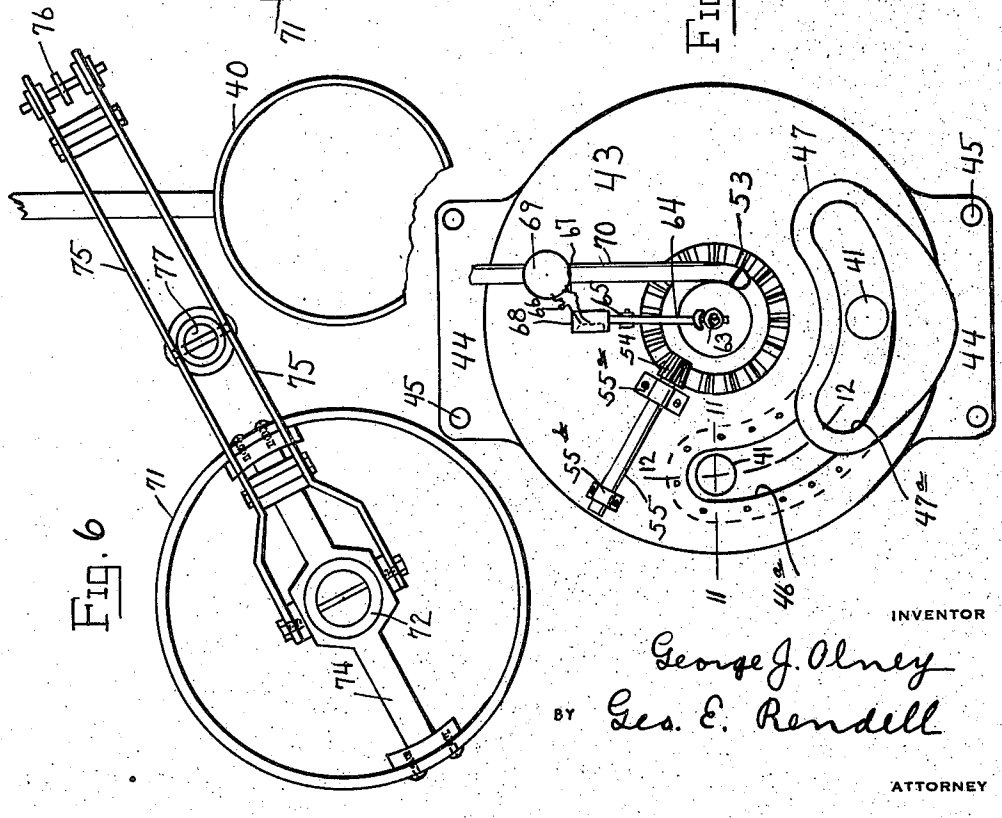


Fig. 1

Fig. 6

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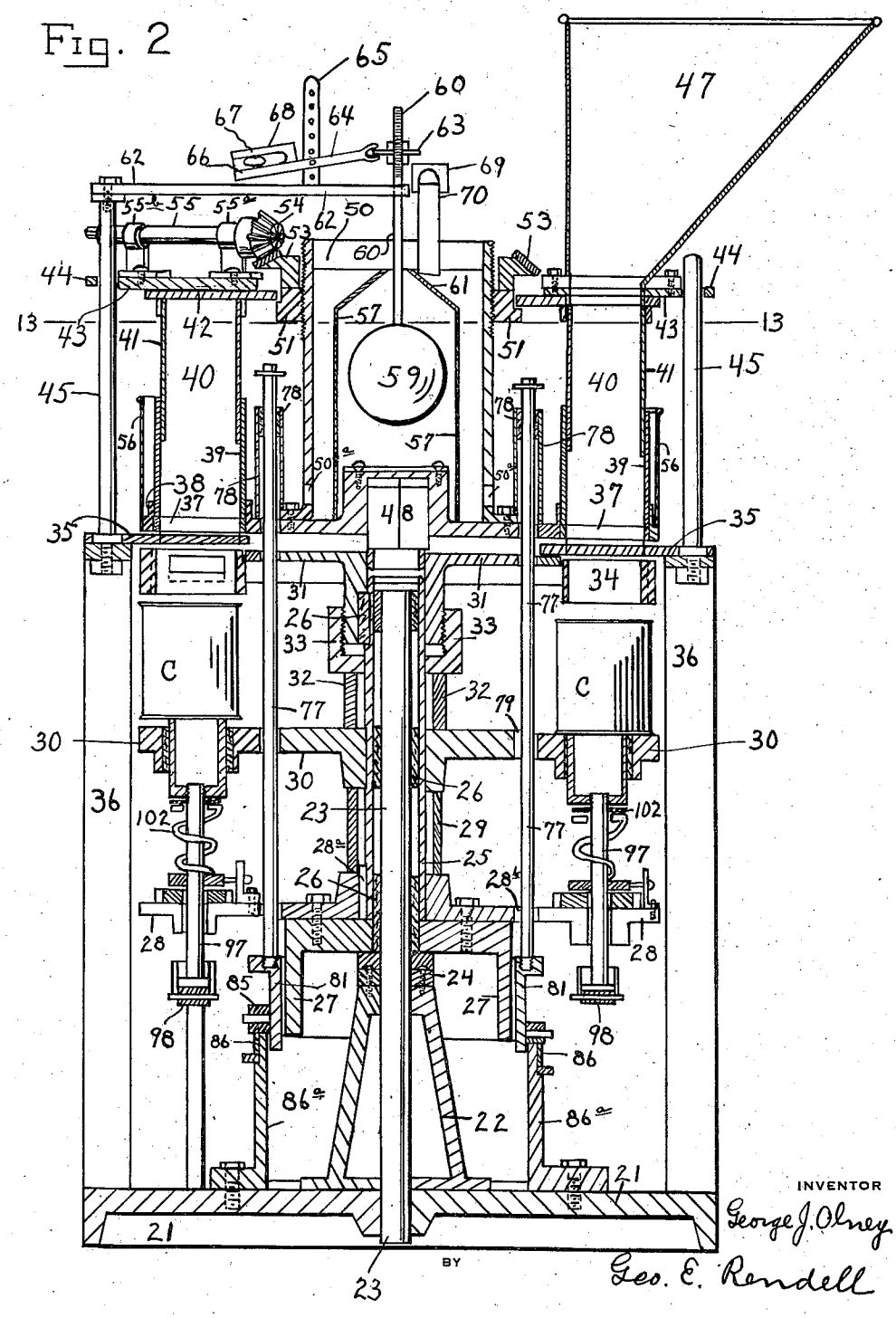
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Fig. 2



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Fig. 10

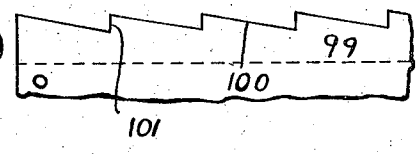


Fig. 9

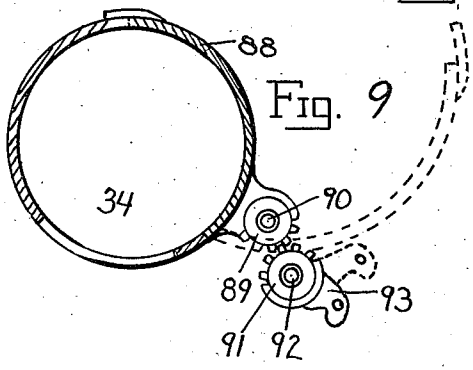


Fig. 3

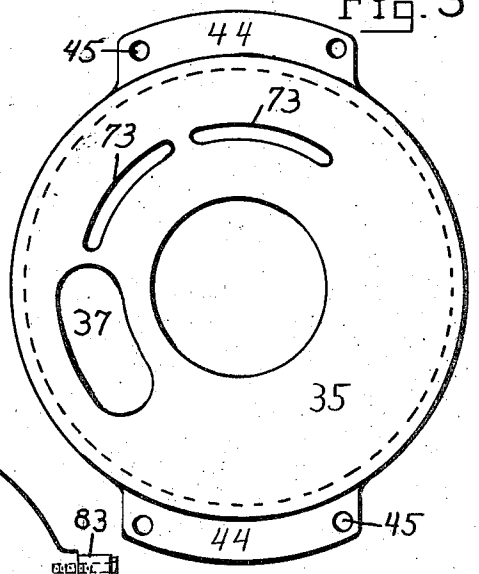


Fig. 7

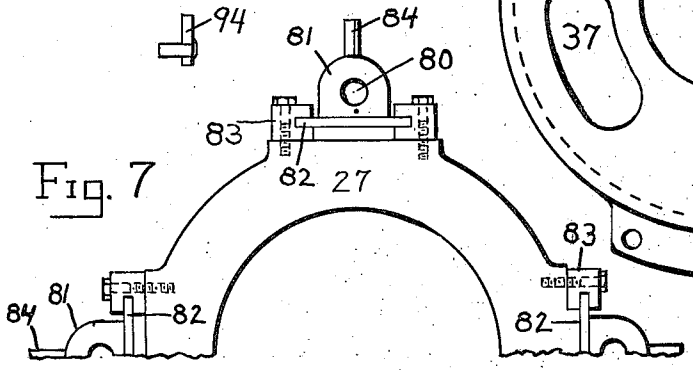


Fig. 8

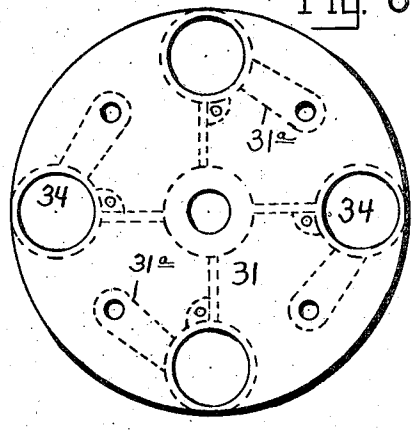
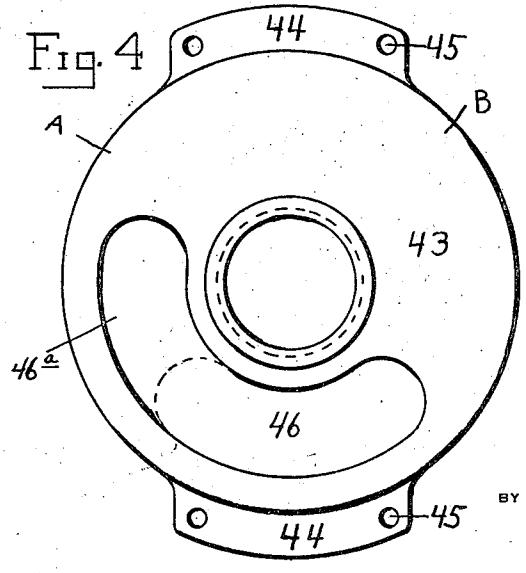


Fig. 4



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Fig. 11

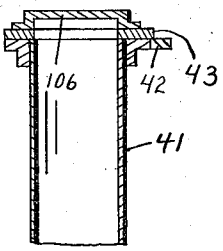


Fig. 12

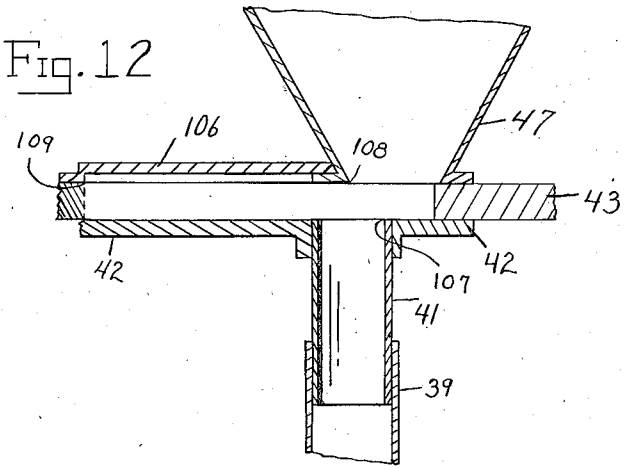
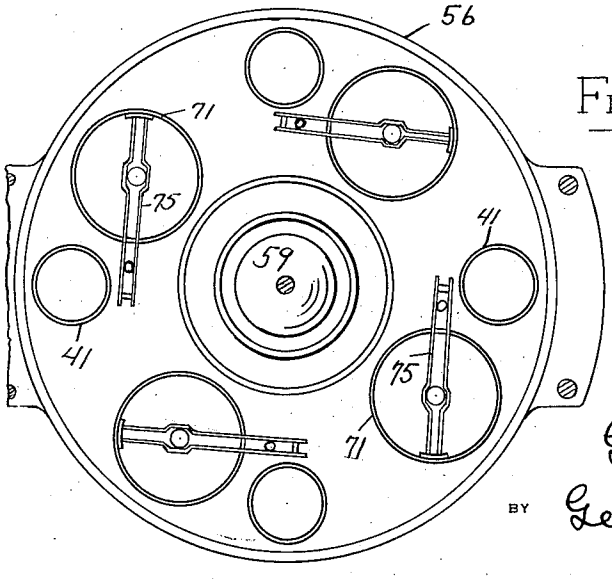


Fig. 13



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Patented July 29, 1947 2,424,842

UNITED STATES PATENT OFFICE

2,424,842

CAN FILLING MACHINE

George J. Olney, Westernville, N. Y.

Application December 13, 1944, Serial No. 567,928

4 Claims. (Cl. 226—102)

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My present invention relates to a can-filling machine.

The general purpose of my present invention is to provide an improved machine for filling cans with shelled peas, shelled beans, cut green beans and other similar semi-solid food.

A further purpose is to provide a can-filling machine of the type indicated which is relatively simple in construction, efficient in operation, not liable to get out of order, adapted to be readily cleaned and kept in a sanitary condition, and particularly with the machine adapted to perform more than previous machines of this gentral character have been able to do.

A further purpose is to provide a machine of the character described which not only measures the amount of the semi-solid food to go into each can, but also to measure out and direct into each can the proper amount of liquid, commonly called brine, that should go with the food in each can.

A further purpose is to provide a new and improved form of measuring mechanism for adding the liquid or so called brine to each can and to provide new and improved mechanism for supplying the proper amount of such liquid to a measure of the semi-solid food in its progress towards the can to be filled with such food.

It will be understood that this machine is of the type of can-filling machine where the essential mechanism is a set of the desired number of units, in this case, four food measuring units and consisting in my machine of four equally spaced pairs of telescopic tubes for measuring the food that is to go into each can. The quantity of food that will be measured out to each can will be adjusted as required mostly by the size of can being used, but partly by the character of the semi-solid food being handled. It is well known in the art that shelled peas and shelled beans easily settle down by their own gravity into a compact space while cut string beans, string carrots and shoe-laced beets and other things of a more or less elongated character do not regularly settle down into a compact mass, sufficient to satisfactorily fill a can without providing originally an apparent oversupply of the material and then on its way to the can or even in the can subjecting the material to agitation or vibration, as it is commonly called in the trade, so as to have the cut string beans and similar elongated food satisfacotrily packed into the ultimate can.

A further primary purpose of this invention is to provide a machine of such construction that it is capable and readily applicable to be used to fill

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peas and cut beans. Heretofore these operations have had to be performed on different machines. It will be obvious that it is an advantage to most canning factories to have a can filling machine that can do both operations.

With my present invention it is quite practicable to begin the season as usual with filling cans with peas and then to meet the next line of material which is cut string beans, a part of the machine is adjusted in a relatively easy manner mechanically for that purpose. By a further adjustment in a ready manner of a part of my machine the machine is adapted to fill whole grain corn through the machine. Similarly the machine can be readily used to can diced carrots, diced beets and like vegetables in small pieces.

Further purposes and advantages of this invention will appear in the specification and claims herein.

Fig. 1 is a top view of a machine embodying my invention but with the cover 106 removed from the extension opening 46a in the upper valve plate.

Fig. 2 is a central vertical section of the machine, parts being in full.

Fig. 3 is a plan view on a relatively smaller scale of the lower valve plate 35.

Fig. 4 is a plan view on a similarly reduced scale of the upper valve plate 43.

Fig. 5 is a vertical sectional view through a cooperating brine transfer cup and the food measuring tube associated therewith.

Fig. 6 is a plan view on a reduced scale of one of the brine cups and a horizontal sectional view through its cooperating measuring tube.

Fig. 7 is a top view of one-half of the cam slide base. Fig. 8 is a plan view of the brine transfer plate.

Fig. 9 is a horizontal sectional view through the connecting chamber 34 on line 9—9 on Fig. 5. Fig. 10 is a side elevation of part of the jolting cam but shown straightened out.

Fig. 11 is a section view immediately on line 11—11 of Fig. 1, but with the cover 106 over the extension opening 46 in the upper valve plate 43. Fig. 12 is a detail view showing a section of the hopper and immediate parts. Fig. 13 is a horizontal sectional view on line 13—13 of Fig. 2.

Referring now to the drawings in a more particular description, it will be seen that the machine illustrated as embodying my invention comprises a strong base plate 21 preferably circular in shape and supporting on its upper side a strong stool 22 fixedly secured by appropriate means to said base plate with the said stool and the base

plate having aligned vertically arranged circular apertures into which is set the lower end of a strong upstanding main fixed shaft 23.

To the upper horizontal face of the stool 22, there is fixed the lower half of a two-part thrust bearing 24 the upper and movable part of which is secured in an appropriate way to the bottom of the hollow quill shaft 25, which is revolubly mounted upon the fixed shaft 23 with the necessary number of intervening bushings 26 spaced along the vertical length of the main shaft 23. Upon the lower end of the quill shaft 25, immediately above the thrust bearing 24 is located an inverted cup-like cam slide base 27, on the diaphragm portion of which said slide base, there is rested and fixedly secured thereto the center of the main large gear 28 driven at any part of its periphery by its teeth being engaged by a power driven pinion not shown in the main vertical section Fig. 2. A key 28a locks the hub portion of the main gear 28 to the engaged lower portion of the quill shaft 25 and in an obvious manner drives in unison with the said main gear 28, the different submechanisms hereinafter described as being keyed to said quill shaft 25.

Next above the center of the main gear 28 about the quill shaft is located a suitable ring-like spacer 29 of sufficient length to hold the can plate 30 which is conveniently of about the same diameter as the main large gear 28 and also the brine transfer plate 31 hereinafter described and about the same diameter as the brine plate and the lower and upper measuring plates also hereafter described.

It will be understood that the can plate 30 is suitably keyed to the said quill shaft 25 so as to rotate therewith and towards the periphery carries the cans C at equal distances apart about the said can plate, that is, at 90° apart in this machine, the said cans being, of course, vertically arranged and with their tops open, said cans being brought up to this machine by a suitable mechanism commonly a can feeder as a spiral conveyor and not herein necessary to be shown or described in detail.

Spaced slightly outside the quill shaft 25 there is placed upon the can plate 30 an annular spacer 32 holding the cup-shaped adjusting nut 33 at the proper distance above the can plate 30 for the purpose in hand, the cylindrical portion of said cup-shaped adjusting nut being internally screw-threaded and engaging the external threading upon the down-hanging hub of the brine transfer plate 31 already mentioned. The hub portion of said brine transfer plate 31 is suitably keyed to the said quill shaft 25 so as to rotate herewith and in unison with the other submechanisms keyed to said quill shaft 25. This brine transfer plate 31 has near its periphery four equally spaced vertically extending connecting chambers 34 each in alignment with the cans C therebelow on the can plate 30 and in alignment with the measuring tubes to be hereinafter mentioned above said brine transfer plate.

Next above the brine transfer plate 31 and its spaced connecting chambers 34 is the lower valve plate 35. This lower valve plate 35 is a large annular ring supported and fixed from rotation by in effect resting upon the upper ends of four spaced vertically extending strong side frame posts 36 upstanding from the outer portion of the base plate 21, said posts being outside of the main gear 28 and the can plate 30 and the brine transfer plate 31 and its outwardly located connecting chambers 34. A separate plan view of this lower valve plate appears in Fig. 3. As will be seen from that Fig. 3, and also from the general central section Fig. 2, there is in this lower valve plate 35, one discharge port 37, the operation of which will be described in detail hereafter. Next above the lower valve plate 35 is located the lower measuring plate 38 which I have so called because it carries the lower halves 39 of the several pairs of telescopic measuring tubes 40, the upper halves of which have their lower portions telescope within the upper ends of the said lower halves. The upper halves 41 of these four spaced measuring tubes 40 are mounted upon the lower side of the top measuring plate 42 which is substantially of the area and shape of the lower measuring plate.

Immediately above this top measuring plate 42 is located the annular and non-rotating upper valve plate 43. This upper valve plate of which a separate plan view is shown in Fig. 4, and which appears prominently in the top view Fig. 1, and a substantially central cross-sectional view is shown in the general vertical sectional view, Fig. 2, has oppositely disposed large outwardly extending ears 44, apertures in which ears ride along the upper portions of the strong upwardly standing posts or horns 45 for the purpose of maintaining said upper valve plate from rotation. These posts or horns 45 extend through similar apertures in outwardly extending ears in the lower valve plate 35, the ears of which plainly appear in the plan view Fig. 3 of said lower valve plate. The feet of these posts 45 are secured to the upper ends of the side frame posts 36. In this stationary upper valve plate 43 there is provided one discharge port 46 which is of the special shape as shown in the plan view of the upper valve plate having spaced semi-circular ends connected by curved lines as required to connect to the path of movement of the slowly rotating measuring tubes 40.

Immediately above this discharge port 46 in the upper valve plate 43 is secured the lower end of the feed hopper 47 into which the vegetable products to be canned are introduced by any suitable means well known in the art and not necessary to be described or illustrated in detail herein.

It will now be seen that as any one of the measuring tubes 40 in the course of its rotation is brought beneath the discharge port 46 the to-be-canned goods (usually vegetables) will begin to drop into the chamber of that measuring tube and will continue to so drop while the upper circular end of that measuring tube is passing along the length of the discharge port 46. During this time, of course, the bottom end of this particular measuring tube 40 is opposite the imperforate portion of the lower valve plate as seen in the right hand part of Fig. 2, so that the said food does not pass entirely through the said measuring tube but begins to accumulate therein.

By referring to the general vertical cross-sectional view Fig. 2 it will be seen that the upper end of the quill shaft 25 has suitably secured thereto an upwardly extending square head 48 which fits into a square aperture in the central and upwardly extending hub portion 49 of the lower measuring plate 38. This square head 48 in an obvious manner transmits the slow rotating motion of the quill shaft 25 to the said lower measuring plate 38 and thereby obviously to the four spaced measuring tubes 40 upstanding vertically therefrom in spaced relation.

Located upon the lower measuring plate 38 is a vertically placed upstanding relatively large

central tube 50 as by its outwardly extending flange bottom being secured by bolts to the upper side of the said measuring plate 38. The upper portion of the exterior of this large central tube is exteriorly screw-threaded and upon these screw threads is mounted a large nut 51 fitting said exterior threads on the central tube. Immediately upon the upper surface of this nut 51 there is mounted and secured as by the necessary number of vertical bolts a beveled pinion 53. The said nut 51 has an upwardly extending shoulder 51*a* upon which shoulder rests the inner lower edge of the top measuring plate 42 with the upwardly and outwardly facing teeth of the beveled gear 53 meshing the matching beveled teeth of a small beveled pinion 54 secured to the inner end of a horizontal shaft 55 mounted in two spaced bearings 55*a* and 55*b* upstanding from the stationary upper valve plate 43. Ordinarily the slowly rotating beveled gear 53 imparts a purely idling rotating motion to the small beveled pinion 54 but when it is desired to adjust the cubical contents of the telescopic measuring tubes 40 the beveled gear wheel 53 may be rotated upwardly or downwardly as required by placing a small hand wheel or appropriate tool on the outer square end of the horizontal shaft 55 and either holding this shaft stationary or rotating it faster than it is already rotating, this rotation of the beveled pinion 53 carries with it the stepped nut 51 and by raising the said nut the upper halves 41 of the measuring tubes 40 are moved upwardly, thus extending the length of each pair of measuring tubes and increasing their cubical contents. If the cubical contents is to be reduced the nut 51 on the central tube 50 is lowered and the top measuring cup resting upon the shoulder of said nut is allowed to descend or is really forced to descend by the weight of itself and the four upper halves of the measuring tubes.

To the outer periphery of the lower measuring plate 38 is secured an annular wall as of suitable sheet metal to make the outer side of a liquid holding tank 56. This tank has for its bottom the said lower measuring plate 38 and encloses the lower half of the four sets of measuring tubes and the large central tube 50 just above mentioned as well as several other parts yet to be mentioned in this large central portion of the machine and relatively close to the adjustable or telescopic measuring tubes 40. Into this liquid holding tank 56 is placed the liquid such as brine which is used to provide this semi-solid food material with the proper amount of liquid to perform the preserving function of brine upon the food and also the lubricating function in packing and compressing the food into the cans. The normal level of the liquid is at a line just below the upper end of the lower halves 39 of the said measuring tubes 40 and, of course, below the top of the exterior side wall of the tank 56.

On the basis that the moving measuring tubes 40 are rotating about six times a minute, it is necessary to provide about 12 gallons a minute of this brine to replace the brine taken from this tank 56 and transferred to the cans C, that are being filled.

To automatically bring into this machine tank 56 sufficient brine to compensate for the brine taken out of the tank and carried into the cans being filled, I provide an automatically operating mechanism as follows: The liquid is allowed to slowly pass into the chamber within the upstanding central tube 50 as through several small ports 50*a* in the sides of said central tube 50 close to its lower end. Within this central tube 50 is placed a cylindrical float casing 57, four outwardly extending vanes 58 extending from the cylindrical wall of the float casing 57 out to the adjacent inner surface of the large central tube 50. The said float casing encloses and guides a float 59 which may be a cylindrical hollow sphere similar to the float in a toilet flush tank, and having an upwardly standing float spindle 60 which in its upward extension is guided by extending first through a central guiding aperture in the conical top 61 of the float casing and then through another guide opening in the outer end of the float guide arm 62 suitably held in place as by being fastened to the upper end of one of the horns or posts 45. Upon the portion of the spindle 60 above the float guide arm 62 is a setting disk 63 suitably and adjustably mounted as by being screw-threaded on the float spindle 60 with its disk engaging the bifurcated outer end a switch arm 64 suitably pivoted upon a vertical standard 65 which may upstand from said float guide arm 62 and carries beyond its pivoted point a mercury switch 68 which as shown in Fig. 2 has the mercury in the left hand end of said switch and in the "off" position of said switch relative to the switch wires 66 and 67 of an electrical circuit which is closed by the said mercury switch being moved from its position in Fig. 2 to the reverse position as is caused by the descending of the float 59 a short distance by the depletion of the brine in the tank 56 which movement of the mercury switch to an "on" position closes a circuit as through a coil 69 of an electrically operated valve (not shown) so as to open said valve controlling the gravity flow of brine to the tank 56. The delivery end of the pipe or brine inlet 70 for bringing in the incoming brine is shown in Fig. 2 as delivering the brine downwardly into the upper part of the chamber in the large central tube 50 close to the conical top 61 of the float casing. In the cylindrical side of the float casing are several small holes to allow the liquid to come in to the chamber within said float casing in which the float 59 is suspended.

I will now describe the brine supply system by which the brine is lifted from the brine tank 56 (see Figs. 5 and 6) by a brine cup 71 for each measuring tube 40 as seen particularly in Fig. 5. The brine cup 71 is slidingly mounted upon a brine pipe 72 which is mounted on the lower measuring plate 38 as by a reinforced screw-threaded hole being provided in the lower measuring plate 38 which hole and the open end of the brine pipe 72 placed therein are in alignment, at certain times in the rotation of said lower measuring plate as will be hereinafter explained, with the brine slots 73 and the discharge port 37 shown in Fig. 3, a plan view of said lower valve plate. As appears in Fig. 5, the brine pipe 72 a little ways down from its upper end has there two oppositely disposed ports 72*a*. For a little above and below these ports 72*a* is placed a centrally located baffle 72*b* to deflect the incoming brine downward. In operation the brine cup is first lowered on the brine pipe so that the brine overflows the top of the brine cup and substantially fills the brine cup and then on the raising of the brine cup 71 upon said brine pipe the brine pours through the brine slots 72*a* into the inside of the brine pipe 72.

It will be understood that an annular short length of bushing is interposed between the short tubular downwardly extending portion of the

brine cup and the said brine pipe 72 for the purpose of maintaining this sliding joint liquid tight. A part of the mechanism for so raising each brine cup 71 is shown in Fig. 6, wherein the brine cup 71 has shown a brine cup bridge 74 spanning the inside of the brine cup. Pivotally connected at the center of said bridge to the bifurcated left hand arm of a walking beam 75 which walking beam as shown in said Fig. 6 has its right hand end pivotally mounted upon a fixed member 76 and an intervening portion of said walking beam is pivotally connected to the upper end of a vertically mounted brine shaft 77. This brine shaft appears in the general vertical sectional view Fig. 2 as being enclosed on its upper length within a pipe-like guide 78 upstanding from the lower measuring plate 38 through the tank 56 so as to keep said shaft from contact with the brine in the said brine tank with the lower portion of the brine shaft extending down through the large central opening in the lower valve plate 35 and through a suitable small clearance opening 79 in the can plate 30 and through a similar clearance opening 28*a* in the main gear 28. It will be understood that said parts so pierced by this brine shaft 77 namely, the lower measuring plate 38 and the can plate 30 and the large gear 28 are all rotating in unison with the central rotating mechanism including the four sets of measuring tubes 40, so that said brine shaft 77 is maintained in its vertical position.

The foot of this brine shaft 77 is securely set into the hole 80 in the sliding member 81 (see Fig. 7) the wings 82 of which member 81 are set into and slide up and down vertically in the guide 83, a pair of which guides 83 are mounted every 90° about the periphery of the revolving cam slide plate 27 keyed to the lower part of the quill shaft immediately below the large main gear 28.

On the stub shaft 84 projecting radially relative to the whole machine from the sliding member 81 is a roller 85 which once in each rotation of these internal mechanisms engages the high part on the brine shaft cam 86 mounted on the base plate 21 and so pushes the brine shaft 77 upwards to move the said walking beam and so raise the brine cup upwards to lift its load of brine so that it can escape through the ports 72*a* to the inside of said pipe 72.

From these ports 72*a*, the brine is guided downwardly by the baffle plate 72*b* set in said pipe 72 midway between the two outlet ports 72*a*, all as seen in Fig. 5. As shown in said Fig. 5 the upward motion of the brine cup 72 has raised a measure of the brine above the general level in the tank surrounding the brine cup, so that the brine goes into the ports 72*a* by gravity and down the brine pipe 72 through one and then the other brine slot 73 in the lower valve plate into the passageway 31*a* provided in a thickening on the underside of the brine transfer plate 31 and across the little upstanding lip 104 at the bottom of brine porthole 105 in the wall of the chamber and finally into the connecting chamber 34 provided as already described in the brine transfer plate in line with the measuring tube. This provides some of the brine to go into the can as it is being filled and some more over the top of the can and over the upwardly mounting mass of food therein coming down through the connecting chamber 34 after the can has been filled and into the rounding up mass of material at the top of the can as suggested in dotted lines in Fig. 5.

This putting of extra material rounded up over the top of an apparently filled can is so that there will be enough food on hand to fill a can, say of cut string beans even after the beans have been agitated or jolted down into the ultimate close packing that is required of such things. As seen in Fig 9 which is a horizontal section on line 9—9 of Fig. 5, this connecting chamber 34 is projected downwardly from the brine transfer plate 31 for the very purpose of providing a chamber for the placing of this extra food over the top of the normally filled can and has a wide clearance doorway 87 for which there is a correspondingly shaped door 88 completely closing the clearance doorway in this connecting chamber 34 while produce is going down into the can but which door is swung open as shown in dotted lines in said Fig. 9 by said door having a mutilated or partial small gear wheel 89 mounted on a pivot 90 with said pivot meshing with a corresponding sized partial small pinion 91 mounted on its pivot pin 92. This pinion 91 has a strong outstanding ear 93 whereby as the set including this connecting chamber 34 comes to the position where the can should be delivered, the said ear 93 engages a stop 94 suitably fastened on an adjacent part of the machine whereby the pinion 91 is rotated in an anticlockwise direction so as to communicate clockwise motion to the pinion 89 upon which is mounted the door 88 which is swung wide open to something like the dotted line position therefor shown in Fig. 9 so that the can C even yet with its upwardly bulging load of food may be removed from the can plate 30 without the upwardly bulging food being scraped off by any part of the machine which would otherwise occur unless this clearance doorway was provided with a movable door to be opened at the proper time. After the doorway 88 has been opened to where the removal of the over full can has been accomplished as just above mentioned by ordinary means well known in the art and so not necessary to be further shown or described, it will be understood that there are appropriate means provided to close the door 88.

As shown in the right hand half of the general sectional view Fig. 2, the can plate 30 has at each position where a can is to be placed a circular aperture 95 in which is reciprocatingly and vertically mounted an agitation head 96 on a shaft 97 guided by passing through a suitable sized hole in the main large gear 28. At the bottom of each of these agitation shafts is mounted a small roller 98 adapted to engage the agitating cam 99 (see Fig. 2), which has gently raising cam surfaces 100 to gently push cam roller up, followed by a sharp step downward 101 which in an obvious manner communicates a sharp downward jolt to the food in the over full can on its agitation head 96. As best seen in the left side of Fig. 2 a strong coiled spring 102 compressed above by yoke 102*a* is mounted about the upper half of said agitation shaft 97 in such a manner as to impart to the agitation shaft a sharp downward motion quicker than would be obtained by the gravity action on the said shaft and its agitation head. It will be understood that the cam having the cam surface 100 and the drop 101 extends for only enough of the circle traveled by the can to accomplish the purpose of jolting the contents of the over-filled can

sufficiently down into the can so that the can may thereafter be removed. In practice the putting of the can top in place and pressing it down adds the final pressure to the contents of the can so that even with such irregular shaped produce, as cut string beans, these materials will be well packed within the can.

As far as I am aware, my machine is the first one which affirmatively provides a space above the top of the empty can and below the measuring tube and its usual accompanying lower valve plate. This space I have described and illustrated as the communicating or connecting chamber **34**. When shelled beans or shelled peas are being canned they will drop from the measuring tube into the can and with little assistance required from the agitation or vibrating head to make them lie compactly in a well filled can, but in filling cut beans this vertical space of about two inches will be filled with cut beans. The feeding of the liquid into this communicating chamber helps to aid the cut beans in settling down and fitting together. I claim that this is new for a machine to have a little extra space over the top of a can which can be filled and the material from which extra space can settle down into the can as the can is being agitated and the brine fed thereto. There is virtue also in supplying the brine or liquid into this same connecting chamber at the same time so that the irregular vegetables, like cut beans, can have the brine or other liquid as a lubricant to allow the beans to settle down more solidly or compactly in the can under the influence of the vibrating or jolting mechanism described. This connecting chamber also provides the basis as shown in Fig. 9 for the wide clearance door **87** which as above mentioned is swung open just before the cans which I have described as being "over-filled" are to be removed from the can plate so that these over filling vegetables, such as cut beans, will not be swept off from the top of the can and wasted.

Referring again to the agitation or jolting cam **99** it may be said that this begins, say at the relative position of A on the separate plan view of the top or upper valve plate **43** as shown in Fig. 4 and extends clockwise to about the point indicated by B by which time the can has been filled and is soon after taken off the machine.

Referring again to the brine shaft cam **86** as appears in the right hand lower part of Fig. 2, it will be understood that the machine requires only one of these separate parts **86** to form the high spot of a cam but the foundation **86***a* upon which the removable part **86** is mounted conveniently extends all the way about the machine and rests upon the center or diaphragm portion of the base plate **21**. This brine shaft cam **86** simply has to raise the brine shaft **77** once in the complete rotation of each vertical set of mechanisms about the circle following substantially the path of the cans although a little farther in than the cans. In other words, this cam operates only once on rotation of each submechanism. It will be understood that the brine shaft cam **86** is stationarily fastened upstanding from the base plate **21** and the rollers **85** are brought thereagainst as the cam slide base **27** of Fig. 7 makes its rotation about the big circle of the machine.

As seen by the plan view Fig. 4 of the upper valve plate **43**, the discharge port **46** therethrough is extended about thirty degrees of a circle beyond the elongated outlet **47***a* in the bottom of the hopper **47**. This extension bearing the numeral **46***a* appears in solid lines in Fig. 1 where dotted

lines show the extent of the cover **106** (removed in Fig. 1). In Fig. 11 which is a cross sectional view on line **11**—**11** of Fig. 1 but with the cover **106** in place over the extension **46***a*, it will be seen that the cover is recessed on its lower side, thus in effect increasing the vertical height of the extension **46***a*. The purpose and effect of this extension is to eliminate the shearing and crushing of the vegetables that would occur if the edge at the left rearward side of the opening in the upper measuring plate made a contact with the relatively forwardly facing edge of the valve plate in line with the similar edge of the hopper. By reference to Fig. 12 it will be seen that no such shearing action can take place when the point **107** moves past the spaced point **108** on account of the said spacing by cutting away metal being increased by the cover recess on its bottom. And when the point **107** on the top measuring plate comes opposite the point **109** on the top valve plate no shearing can take place because the food has been dropped from the space before the point **109** is reached by point **107**.

What I claim as new and desire to secure by Letters Patent is:

1. In a can filling machine, the combination of a rotated circle of equally spaced, vertically placed measuring tubes, means for so rotating said circle of measuring tubes, a stationary food-containing hopper over one portion of said circle of tubes, a top stationary circular valve plate located immediately over the upper ends of said measuring tubes and normally closing said upper ends of said measuring tubes and normally closing said upper ends but having one feed port therethrough adapted to allow the food to drop therethrough from said hopper into a tube in register with that feed port, a lower stationary circular valve plate normally closing the lower ends of said measuring tubes but having a discharge port spaced part of said circle from the feed port and adapted to allow the food to pass through said port when a measuring tube is brought into register with said discharge port, a circular can-supporting plate spaced down below said lower valve plate and rotating in unison with said measuring tubes, a circular brine-distributing plate immediately below the lower valve plate and rotating in unison with said measuring tubes and having communicating chambers respectively in alignment with said measuring tubes and periodically receiving food therefrom and then and later receiving brine from said brine distributing plate, a brine-holding tank surrounding said measuring tubes and bottomed by said lower measuring plate and separate means for each measuring tube and its communicating chamber for conducting brine from said brine tank to said measuring tube and its communicating chamber, said means including a vertically movable brine cup located in said brine tank and adapted to be filled therefrom in its lowered position and in its upper position to cause brine to flow therefrom to this tube's parts of the brine-distributing plate and means for vertically moving said brine cup.

2. In a can filling machine, having a set of measuring tubes rotating in a circle and delivering the food to cans placed therebelow, a common brine-holding tank surrounding said circle of tubes and including the space between the tubes and inside the circle, a brine-distributing plate having a chamber between each tube and its can, and means for measuring out brine from said common brine tank to the separate tubes and

their respective chambers, including a separate vertically movable brine cup in said tank for each tube adapted on being lowered to take brine from said tank and on being raised to cause this brine to move to its tube and its chamber.

3. In a can filling machine, a plurality of rotatable measuring tubes, a tank for holding brine enclosing said measuring tubes, cups mounted in said tank for measuring brine, means connected with said cups for raising the same, whereby to discharge said brine therefrom, a plate located below said measuring tubes for holding cans, spring pressed members mounted in said plate, and a notched cam for agitating said members, whereby to shake said cans.

4. In a can filling machine, a plurality of rotatable measuring tubes, a tank for holding brine enclosing said measuring tubes, cups mounted in said tank for measuring brine, a cam mounted

in said machine for elevating said cups to discharge brine, a plate located below said measuring tubes for holding cans, movable members mounted in said plate for agitating said cans, and cam means connected with said members for elevating said members, whereby to agitate said cans.

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