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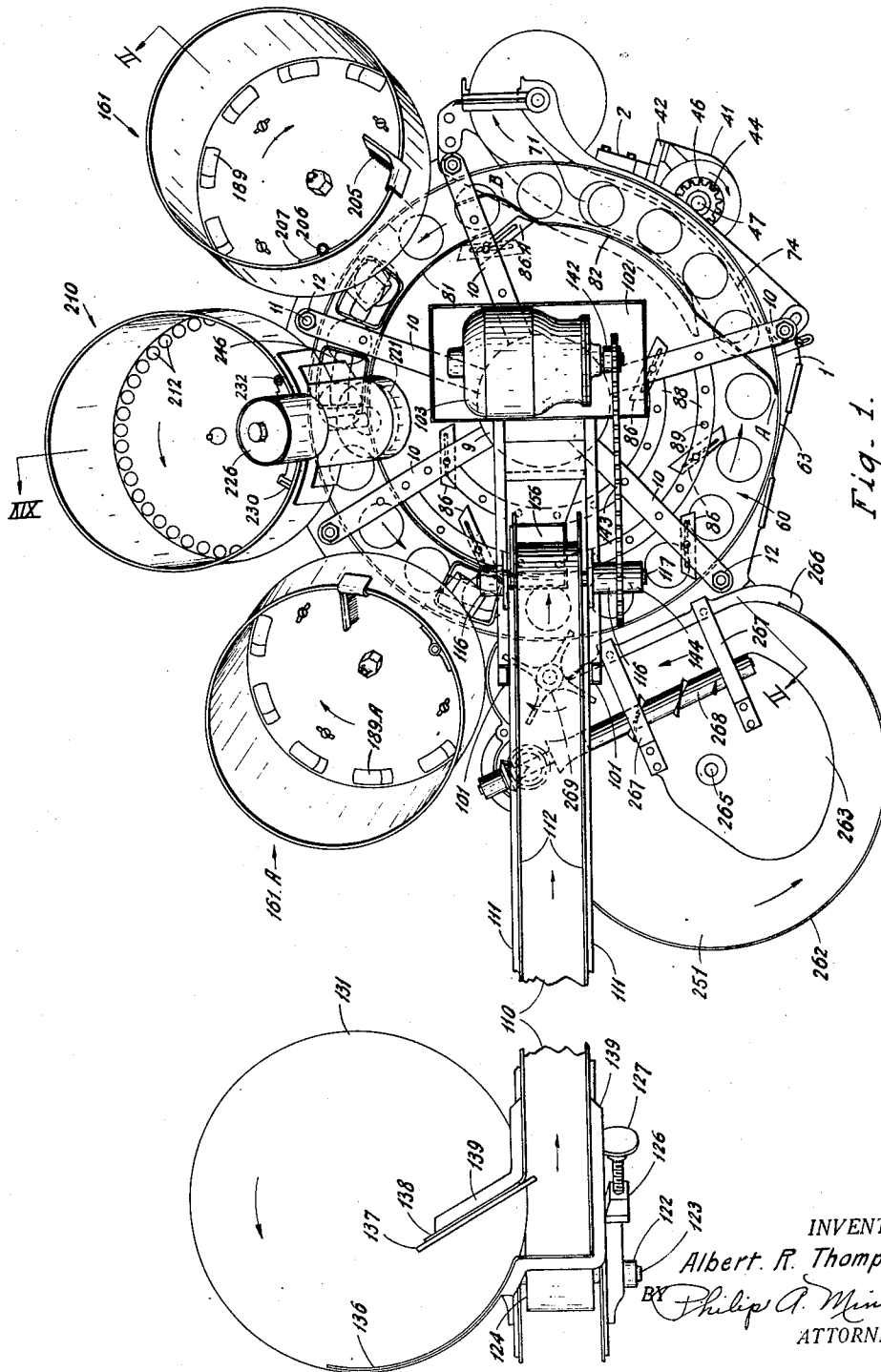
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2,196,403

FILLING MACHINE

Filed April 22, 1936

6 Sheets-Sheet 1



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FILLING MACHINE

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6 Sheets-Sheet 2

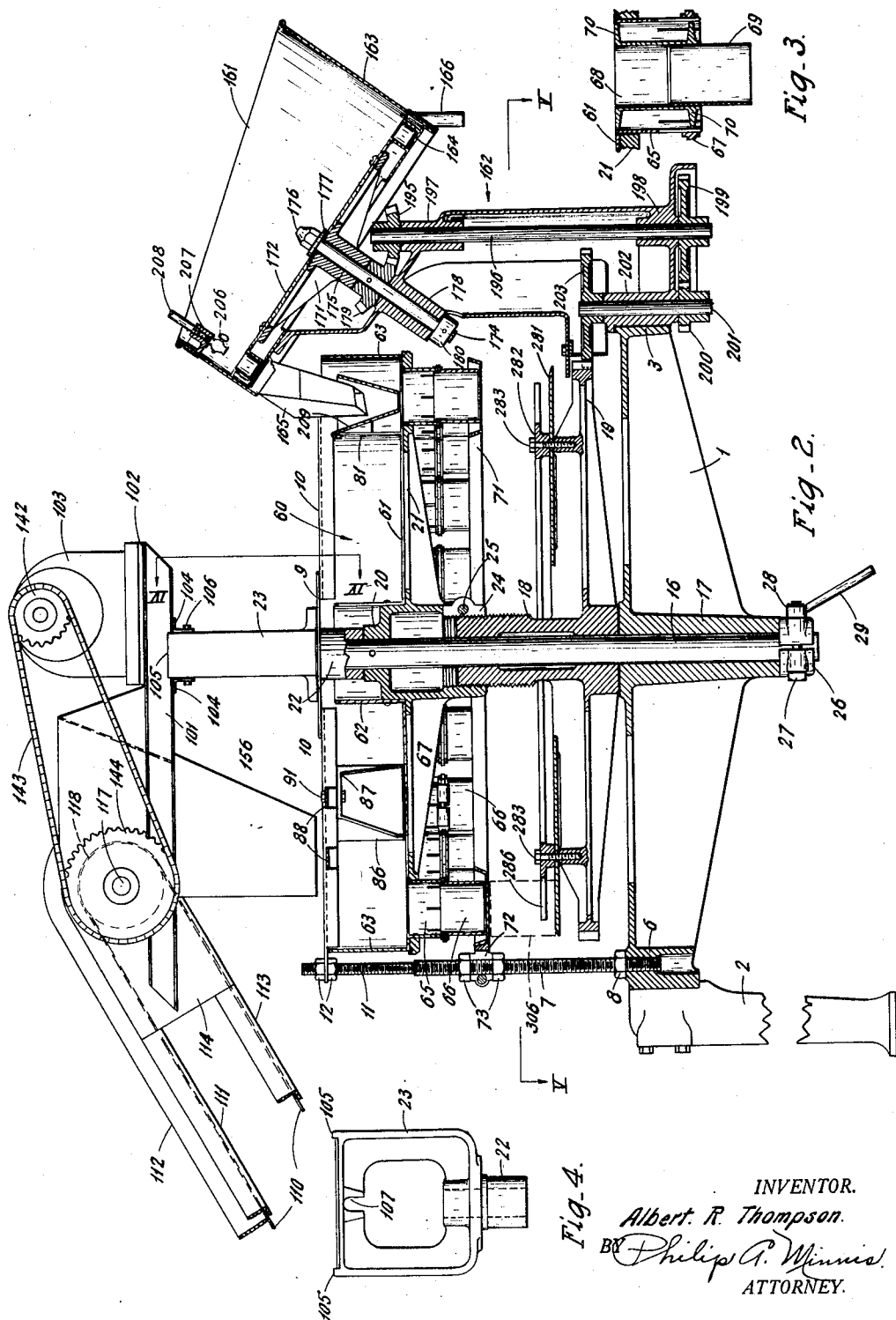


Fig. 4.

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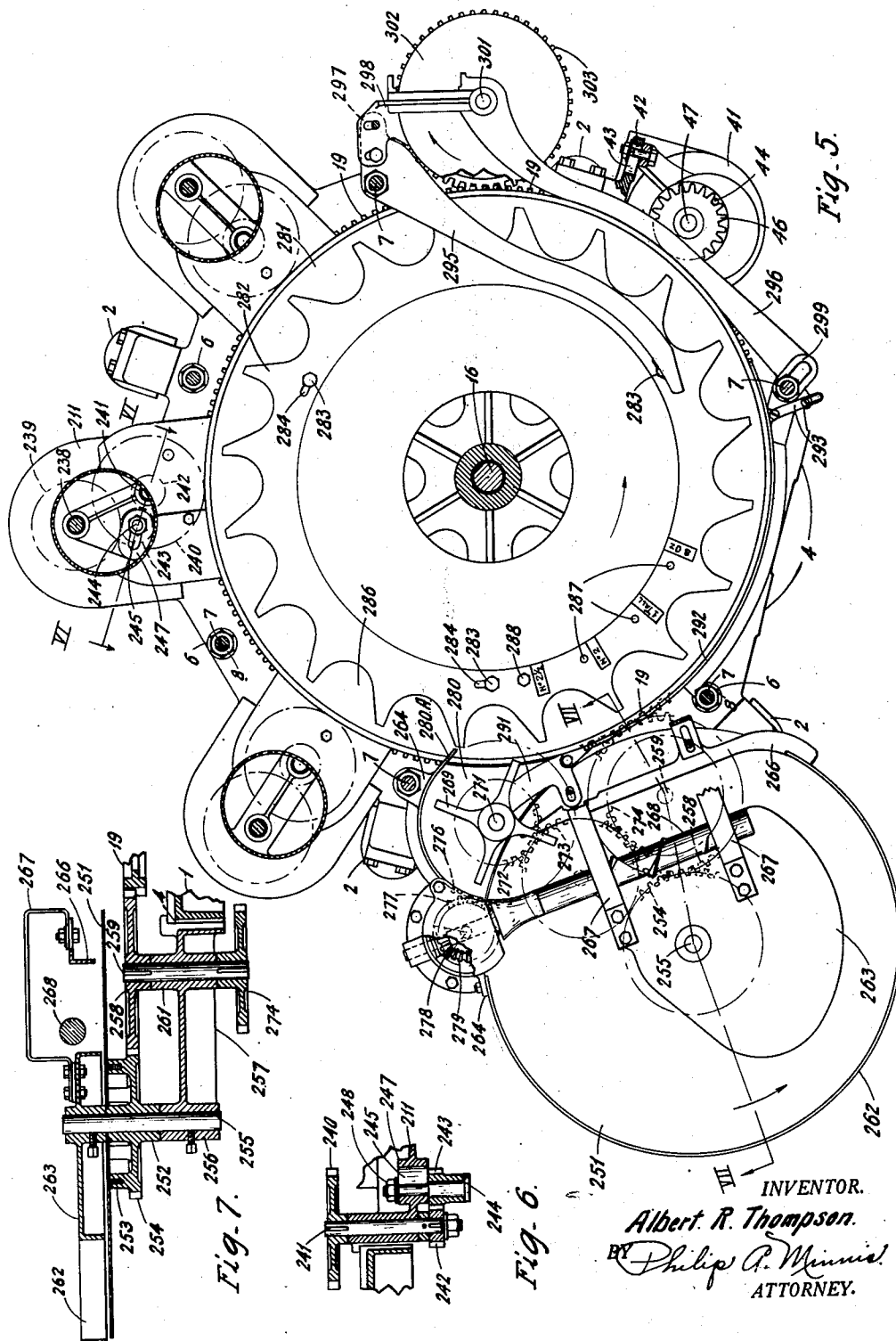
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FILLING MACHINE

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6 Sheets-Sheet 3



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6 Sheets-Sheet 4

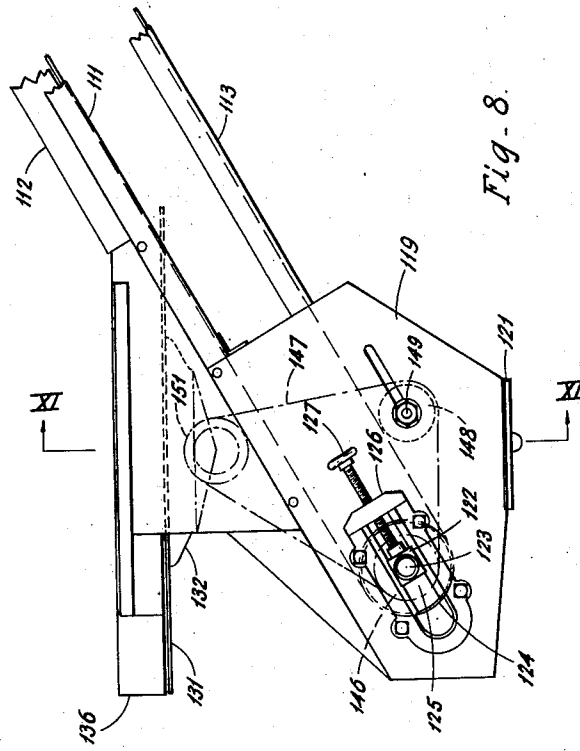


Fig. 8.

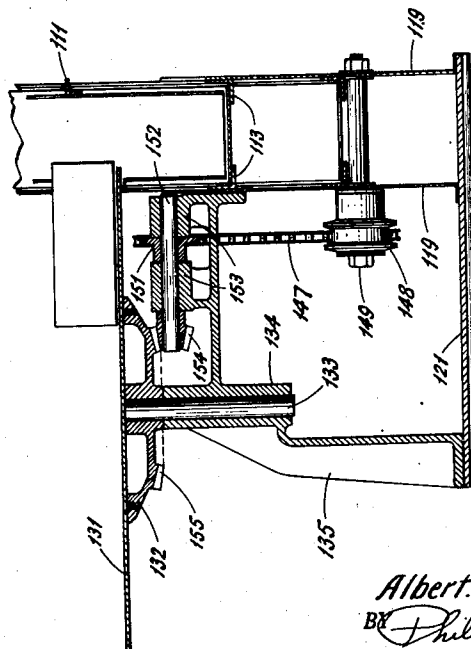


Fig. 9.

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6 Sheets-Sheet 5

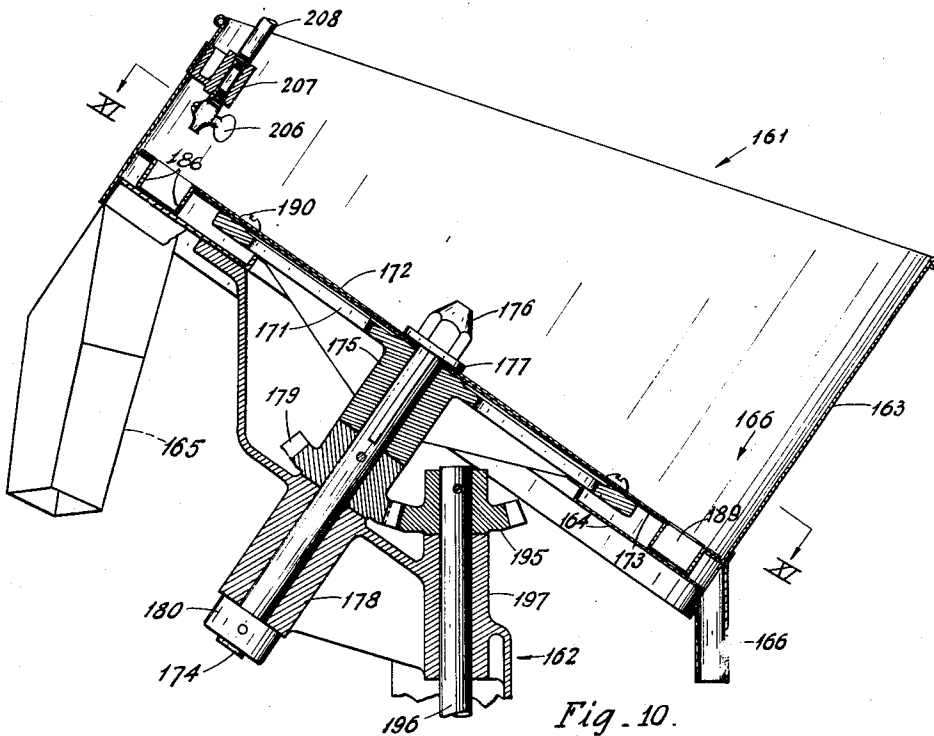


Fig. 10.

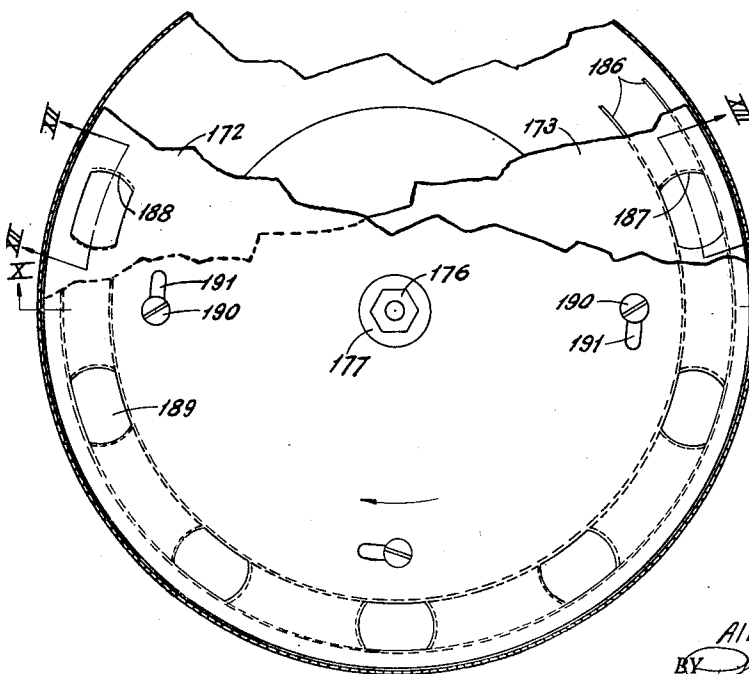


Fig. 11.

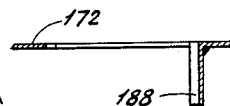


Fig. 12.

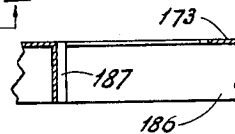


Fig. 13.

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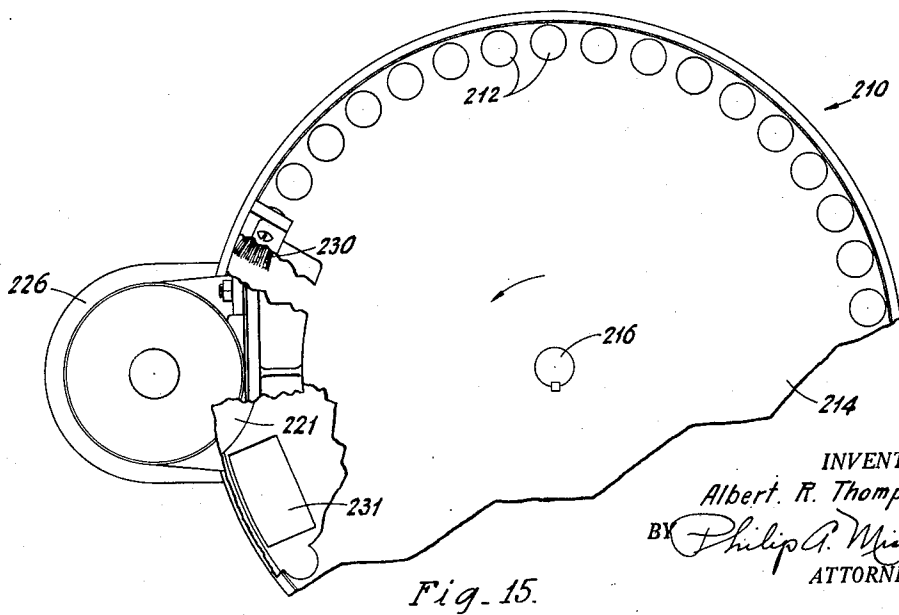
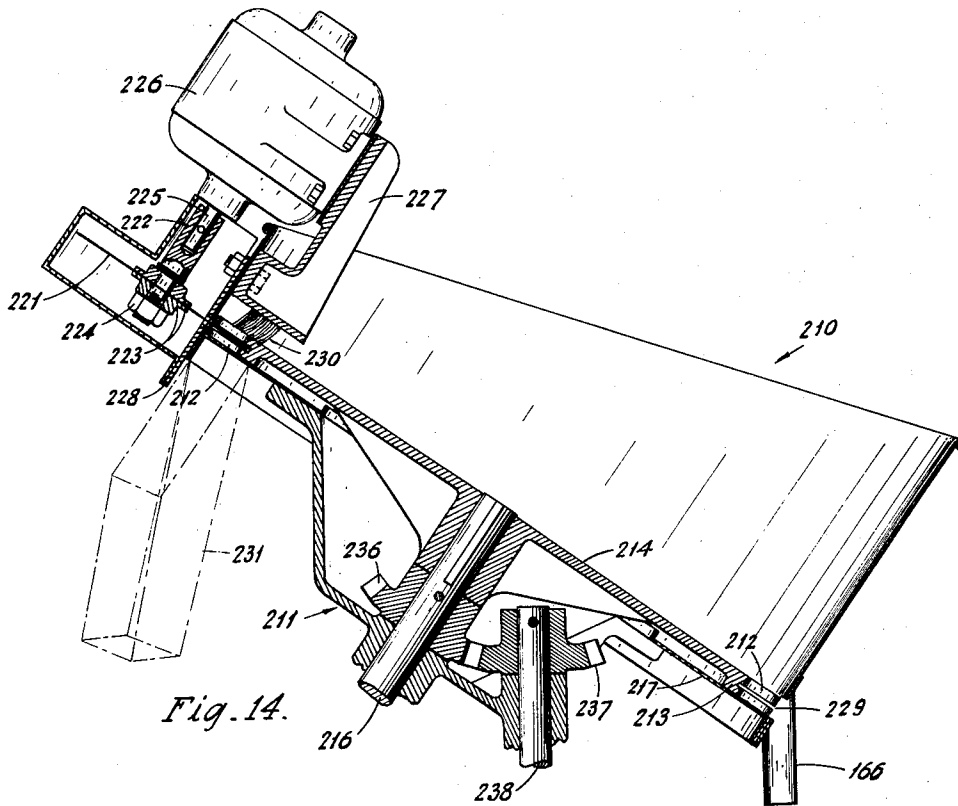
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FILLING MACHINE

Filed April 22, 1936

6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

2,196,403

FILLING MACHINE

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Application April 22, 1936, Serial No. 75,661

29 Claims. (Cl. 226—96)

This invention relates to machines for and a method of filling containers with a mixed charge of fruits, vegetables, or the like, in which a plurality of stocks are fed into the machine which deposits each different stock in the desired proportion in the containers therefor.

More particularly the invention provides for classification of the various stocks into individual or selected stocks and bulk stock and includes means for continuously measuring the exact quantity of each individual stock for each container and means for completing the charge for each container with the bulk stock.

The invention is especially useful in preparing fruit cocktails and the like which are made up of expensive stocks such as cherries, grapes, pineapple and the like, and bulk stock, such as pears and peaches.

It is an object of the invention to provide a machine of the character referred to, for automatically preparing for a container a mixed charge of a plurality of stocks which contains a selected proportion of each stock.

Another object of the invention is to provide a machine of the character referred to, in which the selected stock is first placed in the receptacles which are subsequently filled with the bulk stock.

Another object of the invention is to provide a machine of the character referred to, in which certain stocks are mixed together to form a bulk stock for depositing in the receptacles, and in which other selected stocks are added individually.

Another object of the invention is to provide a machine of the character referred to, in which the various parts can be assembled readily in various positions in accordance with the requirements of each user.

Another object of the invention is to provide a machine of the character referred to, which can be adjusted easily to deposit the required amount of stock for various sizes of containers.

Another object of the invention is to provide a machine of the character referred to, in which the proportions of the various stocks in the charge can be varied to suit the individual requirements of the user.

Another object of the invention is to provide a machine of the character referred to which can be used to fill containers of various different sizes.

Another object of the invention is to provide a machine of the character referred to, in which a measured amount of stock is discharged positively into each receptacle.

Another object of the invention is to provide a machine of the character referred to, in which

the stock is prepared automatically and discharged into the receptacles.

Another object of the invention is to provide a simple and advantageous method for preparing a mixed charge for containers including measured amounts of various stocks.

Another object of the invention is to provide a method of preparing a mixed charge for containers which includes depositing premeasured amounts of individual stock in the receptacles which are subsequently filled with bulk stock.

Another object of the invention is to provide a stock feeder for a machine of the character referred to, which can be adjusted to measure and feed any desired amount of stock.

Another object of the invention is to provide a stock feeder which prepares and feeds the stock.

Another object of the invention is to provide a stock feeder which both counts and prepares individual units of the stock and feeds the desired number of units into each receptacle.

Other objects will appear as the description progresses with reference to the accompanying drawings, where I have shown a preferred embodiment of the invention especially designed for filling containers with a fruit cocktail.

In the drawings:

Fig. 1 is a plan view of the machine showing the filling unit and the elevator unit in assembled position with respect thereto.

Fig. 2 is a vertical section through the filling unit, taken in planes indicated by line II—II in Fig. 1, with a portion of the elevator unit shown in elevation. Certain parts of the machine which lie back of the section shown are omitted to clarify the view.

Fig. 3 is a fragmentary section illustrating an adapter for a receptacle to adjust the receptacle for use in filling a small size container.

Fig. 4 is a fragmentary elevational view of the mounting bracket for the elevator unit, the view being taken as indicated by the line IV—IV of Fig. 2.

Fig. 5 is a horizontal section through the filling unit taken in the plane indicated by the line V—V in Fig. 2, certain of the parts being broken away to illustrate details of construction.

Fig. 6 is a fragmentary vertical section taken in the plane indicated by the line VI—VI in Fig. 5.

Fig. 7 is a vertical section through the container feed means taken in planes indicated by the line VII—VII in Fig. 5.

Fig. 8 is an elevational view of the mixer and feeder for the elevator unit.

Fig. 9 is a sectional view of the mixer and

feeder for the elevator unit taken in a plane indicated by the line IX—IX in Fig. 8.

Figs. 10 through 13 illustrate one form of stock feeder for feeding measured amounts of stock to the charge receiving receptacles.

Fig. 10 is a vertical sectional view of the feeder enlarged from the similar view of the feeder in Fig. 2.

Fig. 11 is a sectional view of the feeder taken in a plane indicated by the line XI—XI in Fig. 10.

Figs. 12 and 13 are fragmentary sections illustrating the construction of the measuring pocket taken in respective planes indicated by the lines XII—XII and XIII—XIII in Fig. 11.

Figs. 14 and 15 illustrate another form of stock feeder which prepares the stock and feeds measured amounts thereof to the charge receiving receptacles.

Fig. 14 is a vertical section of the stock feeder taken similarly to Fig. 10. The plane of the view is indicated by the fragmentary line XIV in Fig. 1.

Fig. 15 is a plan view of the stock feeder shown in Fig. 14, certain parts being broken away to illustrate the construction more clearly.

As stated above, the instant invention is concerned with a machine for preparing and placing in a container a mixed charge in measured amounts of a plurality of stocks, some of which because of their expensive nature or the character of ingredient are selected to form a small part of the contents of the containers, and others of which because of their inexpensive nature or because they are desired in larger quantities are selected to form the bulk of the contents of the containers. Such invention will be described as it is embodied in a machine which is adapted especially for preparing a fruit cocktail in which ingredients such as maraschino cherries, grapes and pineapples are employed as the individual stocks and in which ingredients such as diced pears and peaches are employed as the bulk stock.

Generally, the machine comprises a filling unit having an endless series of receptacles, preferably in the form of pockets, with which are associated a plurality of individual stock feeders for dispensing measured amounts of the stocks contained therein into each receptacle, together with a stock mixer and feeder which receives bulk stock from an elevator unit and fills the receptacles from the stock contained therein.

All of the stock feeders are driven in synchronism with the series of receptacles, which also has synchronously related therewith during one part of its travel, an endless chain of containers, such as cans or the like, into which the receptacles are emptied during their travel and thereby made ready for subsequent refilling. All of the parts of the machine are adjustable to accommodate various size containers, as well as to vary the proportion of any stock in the charge for a container.

The filling unit of the machine includes a frame for supporting the various parts of the machine, certain of which are supported adjustably to provide for accommodation of various sizes of containers, such as cans or the like. The frame includes base plate 1 (Fig. 2), supported by a plurality of legs 2, and having similar sets of pads 3 and 4, (Figs. 2 and 5) formed thereon to support parts of the machine which are not bodily adjustable. To provide an adjustable support for other parts of the machine,

base plate 1 has a plurality of internally threaded bosses 6 spaced about its periphery in which threaded standards or posts 7 have threaded engagement, being locked in assembled upright position on plate 1 by respective nuts 8. Posts 7 are connected at the top by a vertically adjustable spider assembly including annular center plate 9 (Figs. 1 and 2) and radially disposed arms 10 which may have their inner ends secured to plate 9 as by welding, and their outer ends apertured to engage over reduced threaded ends 11 of respective posts 7. A pair of nuts 12 on each post end 11 are associated with each arm 10 to secure the spider assembly in its vertically adjusted position on posts 7.

Associated with the above described frame, is a central spindle or standard which provides an axis of rotation for certain parts of the machine as well as serving to maintain such parts in assembled position on the frame. Central spindle or standard 16 (Fig. 2) is journaled by suitable bushings in central boss 17 of base plate 1 and extends upwardly therefrom through hub 18 of drive gear 19, hub 20 of plate 21 which supports the bulk stock mixer and feeder as well as the charge receiving receptacles, and through hub 22 of elevator unit mounting bracket 23. Spindle 16 is keyed to hub 20 of plate 21 which is mounted for vertical adjustment by split threaded end 24 thereof which has threaded engagement with hub 18 and is locked in adjusted position thereon by clamping bolt 25. Hub 18 is supported by boss 17 of base plate 1, so that relative adjustment of hubs 18 and 20 also causes spindle 16 to move in boss 17. Hubs 18 and 20 and spindle 16 are held in assembled adjusted position on base plate 1 by split collar 26 adjustably clamped on spindle 16 adjacent the lower end thereof by bolt 27 and nut 28, and engaging boss 17 to maintain the parts in the selected adjusted relation. Nut 28 has handle 29 to facilitate adjustment of collar 26 on spindle 16.

The various parts of the machine mounted on the frame, including the driving means, the charge receiving receptacles, the bulk stock mixer and feeder, the bulk stock elevating unit, the individual stock feeders, and the container or can feeding means, will now be described in detail. All elements of these parts which can come in contact with the stock are made preferably of non-corrosive metal, such as "stainless" steel.

Driving means

The driving means of the filling unit includes a source of power and a central driving element which can be driven at selected speeds from the source of power and from which a plurality of individual drives are taken to various parts of the filling unit which are driven in synchronism with each other.

The source of power comprises electric motor 41, (Figs. 2 and 5) which is secured to pad 42 on one of supporting legs 2 for lateral adjustment by means of suitable bolts engaging horizontal slots 43, (Fig. 5) in pad 42. Only one of slots 43 is illustrated. Motor 41 is connected by suitable reducing gears and shear pin 44 (Fig. 5) with driving pinion 46 removably mounted on drive shaft 47 of the motor. Pinion 46 meshes with drive gear 19, which as described above is mounted on spindle 16.

Gear 19 comprises the main driving element of the filling unit and can be driven at selected speeds from motor 41 by selecting pinions 46 of

different pitch diameter which are meshed properly with gear 19 by lateral adjustment of motor 41. If desired, a handwheel (not shown) can be associated with motor 41 to operate the machine slowly in providing the proper timing of the various parts. As described more fully hereinafter, the various speed drives of gear 19 are provided to adjust the machine drive in accordance with the capacity of other machines which may be used in conjunction with the machine disclosed herein, such as a stock dicer, a syruper, and the like, to provide for uninterrupted operation of all such machines. Usually, the machine will be operated at a higher speed with the smaller sizes of containers. The drive connections from gear 19 are described in connection with particular parts of the machine which are driven thereby.

Bulk stock hopper and charge receiving receptacles

The charge receiving and transferring means includes a series of receptacles which are moved successively past the discharge openings of the various individual stock feeders and thereafter through a discharge area in the bulk stock hopper or mixing bowl and into registry with the containers, which for a part of the travel of the receptacles move in synchronism therewith as described hereinafter. Preferably the receptacles are in the form of open ended telescopic cylinders carried by the bulk stock hopper and having a closure element associated with the lower ends thereof during the filling phase of their travel to form pockets.

Referring to Fig. 2, the bulk stock hopper 60 includes base 21 which is adjustably mounted on drive gear 19 for rotation therewith, as described above. The hopper is formed on base 21 by bottom wall 61, and inner and outer cylindrical walls 62, 63, respectively, which are secured to base 21, preferably by welding. Bottom wall 61 and base 21 are provided adjacent their peripheries with a plurality of equally spaced apertures to mount the charge receiving receptacles, each of which has upper section 65 which may be secured at its upper end by welding to wall 61 and base 21, and lower section 66 telescoped within the slotted lower end of upper section 65 and held therein by clamp 67. By adjusting sections 65 and 66 telescopically, the amount of stock delivered by the receptacles to the associated containers can be varied. Sections 65 and 66 are of a diameter slightly less than the diameter of the largest container with which the machine can be used. To adapt the receptacles for use with containers of smaller size, an adapter is provided comprising telescopic sections 68, 69 (Fig. 3), which are fitted in upper section 65 with lower section 66 removed. Upper adapter section 68 is provided with vertically spaced annular flanges 70 which fit closely within section 65, upper flange 70 being positioned to continue the plane of bottom wall 61 of the hopper, while lower flange 70 is held in the slotted end of section 65 by clamp 67. Such an adapter may be provided for each size of container smaller than the largest size. The closure element for the receptacles comprises annular channel shaped element 71 mounted for vertical adjustment on posts 7. For this purpose, element 71 has a plurality of slotted bosses 72, each boss 72 being clamped on a post 7, between nuts 73 by a suitable bolt. By loosening the

clamping bolts and turning nuts 73, the closure element can be adjusted vertically and spaced in close cooperative relation with the lower open end of section 66 to retain the charge in the receptacles during filling thereof. Closure element 71 (Fig. 1) has elongated arcuate opening 74 to provide for discharge of the contents of the receptacles into the respective containers moving in synchronism therewith as described hereinafter.

Associated with the rotatable bulk stock hopper are a plurality of stationary elements which cooperate with the hopper to mix the bulk stock thoroughly and deliver it to a discharge area while keeping the bulk stock away from the filling area for the individual stock feeders. Certain of such elements divide the area defined by outer wall 63 of the hopper into compartments for mixing and feeding the bulk stock, for feeding the individual stocks, and for discharging the mixed charge from the receptacles. Arcuate wall or fence 81 (Figs. 1 and 2) is secured as by welding to arms 10 and depends therefrom to space its lower edge in close cooperative relation with bottom wall 61 of the hopper. In the embodiment shown, wall 81 extends for substantially 180° adjacent the individual stock feeders to provide an annular space between wall 81 and outer wall 63 of the hopper which is free of the bulk stock, and in which the individual stocks are fed into the receptacles. Levelling fence or wall 82 is mounted similarly to wall 81 and extends from outer hopper wall 63 inwardly at A just above the end of opening 74 in closure element 71, then arcuately to a point adjacent wall 81 from whence it bends outwardly at B into the space between walls 63 and 81 for a purpose later described. The annular space between wall 82 and outer wall 63 provides a discharge area in the hopper free of any stock to provide for discharge of the receptacle charges into the associated containers. The compartment defined by walls 81 and 82 and inner and outer walls 62, 63 of the hopper, provides the bulk stock mixing and feeding area, in which the bulk stock is deposited as later described. An annular segment of this area over closure element 71 between end A of wall 82 and the adjacent end of wall 81 forms the filling area for the receptacles as described hereinafter.

In order to provide for proper distribution and mixing of the bulk stock in the hopper, a plurality of adjustably mounted mixing and spreading members are associated with the hopper. Each member comprises a vertically disposed plate 86 (Figs. 1 and 2) having slotted horizontal flange 87 along its upper edge for engagement with one of arms 10 or one of arcuate supporting members 88 which may be welded or otherwise secured between arms 10 adjacent the filling area of the hopper. All of arms 10 and members 88 are provided with a plurality of apertures 89 forming fastening stations to receive the fastening bolts 91 of plates 86. By proper adjustment of plates 86, the bulk stock in the hopper can be mixed thoroughly as the hopper rotates and thereafter moved into the filling area and into the receptacles.

It is to be noted that walls 81, 82 and mixing and spreading members 86 are adjustable vertically with the framework comprising members 88 and arms 10 of the spider assembly to provide for cooperative relation thereof with hopper 60 in any vertically adjusted position thereof.

Bulk stock elevator unit

The elevator unit includes a mixing and feeding disc which receives the bulk stock, such as diced pears and peaches or the like, and an elevator which receives the mixed stock from the disc and delivers it to the bulk stock hopper, common driving means being provided for the disc and the elevator. The discharge end of the elevator is mounted for rotation and for vertical adjustment on the filling unit of the machine so that it can be placed in the most convenient location to the user.

The mounting means for the discharge end of the elevator unit includes a framework comprising spaced channels 101 (Figs. 1 and 2) which are connected by suitable cross members including platform 102 for motor 103 and angles 104 (Fig. 2). To mount the frame work removably on mounting bracket 23, channels 101 are spaced apart to fit between ears 105 (Figs. 2 and 4) of bracket 23, while angles 104 (Fig. 2) fit on either side of bracket 23. To maintain the elevator unit in assembled position on bracket 23, angles 104 are apertured to receive bolt 106 which extends through recess 107 (Fig. 4) of bracket 23. As described previously, bracket 23 is supported for vertical adjustment by the engagement of hub 22 thereof with vertically adjustable hub 20 of plate 21, and can rotate about spindle 16 when it is desired to vary the angular position of the elevator unit with respect to the filling unit.

The elevator proper is preferably in the form of an endless rubber belt 110 (Figs. 1 and 2) which extends about suitable drums and a supporting frame therefor. The frame is comprised of spaced apart top angles 111 having side plates 112 secured thereto in overlapping relation with belt 110, and similarly spaced apart bottom angles 113, all of said angles 111, 113 having a flange positioned to support and guide belt 110. At the discharge end of the elevator unit, respective side plates 114 are secured to respective pairs of angles 111 and 113 as by welding and support bearings 116 for shaft 117 having drum 118 secured thereon in any convenient manner. Similarly at the pickup end, side plates 119 connect angles 111, 113 and are mounted on base plate 121 (Figs. 8 and 9) of the elevator unit. Intermediate their ends angles 111, 113 are connected by suitable vertical and transverse braces (not shown). Bearings 122 (Figs. 1 and 8) for shaft 123 of lower drum 124 are similar, and each bearing 122 is mounted for sliding movement in a slot 125 of a bracket 126 secured on the associated side plate 119. Adjusting screw 127 has threaded engagement with bracket 126 and engages the associated bearing 122 to provide for adjustment of the tension on belt 110.

At the pick-up end of belt 110 (Figs. 1 and 9), mixing and feeding disc 131 is provided to receive the bulk stock, perform a mixing operation thereon, and discharge it onto the belt. Disc 131 is mounted detachably on hub member 132 which is journaled on shaft 133 and engages boss 134 of bracket 135 in which shaft 133 is secured. Above disc 131, guide members are provided for the stock in the form of extension 136 of one side plate 119, and plate 137 secured to extension 138 of the other side plate 119, suitable reinforcing angles 139 (Fig. 1) being provided for extensions 136, 138.

Common drive means is provided for the elevator and the disc including electric motor 103 (Figs. 1 and 2) mounted on platform 102. Motor 103, through drive sprocket 142, chain 143 and

driven sprocket 144 on drum shaft 117, drives belt 110 in the direction indicated by the arrows in Fig. 1. The drive for disc 131 is transmitted through belt 110 to lower drum shaft 123 which carries sprocket 146 (Fig. 8). Sprocket 146 is engaged by chain 147 (Figs. 8 and 9) which extends over idler 148 on shaft 149, and sprocket 151 (Fig. 9) on shaft 152. Shaft 149 is adjustably mounted in suitable slots in side plates 119 to provide adjustment of the tension on chain 147. Shaft 152 is journaled in spaced bosses 153 of bracket 135 and carries bevel pinion 154 meshing with bevel gear 155 on hub member 132. The drive is such that disc 131 is rotated in a counterclockwise direction, as indicated by the arrow in Fig. 1, to carry any stock placed thereon between arcuate guide extension 136 and guide plate 137 and onto belt 110. When the stock reaches the discharge end of belt 110, it is discharged through funnel member 156 (Fig. 1) into the bulk stock hopper.

Stock feeder with adjustable pockets

One form of stock feeder disclosed herein includes means operable in synchronism with the charge receiving receptacles for measuring and discharging a uniform amount of stock into each receptacle as a part of the charge carried thereby, such amount being adjustable to correspond to the size of can being filled or to vary the proportion of the stock for different charges. To obtain this end, a series of adjustable pockets are provided which register successively with the discharge opening through which the measured amounts of stock are discharged positively.

The stock feeder includes hopper 161 (Figs. 2 and 10) of sheet metal detachably mounted in an inclined position on bracket 162 (Figs. 2 and 5) which is secured to one of pads 4 of base plate 1 by suitable fastening means. Hopper 161 comprises cylindrical side wall 163 (Fig. 10), annular bottom wall 164, discharge spout 165 at the high side of the hopper, and drain pipe 166 at the low side of the hopper, all the parts being suitably secured together as by welding. The upper edge of side wall 163 is formed at an angle to the axis of the hopper with the longer length at the lower side of the hopper to provide stock receiving portion 166.

The bottom of the hopper is closed by a measuring and feeding mechanism including a series of adjustable measuring pockets to measure and feed the stock to the discharge opening provided at spout 165. Such mechanism includes base plate 171 (Fig. 10) and respective upper and lower discs 172, 173 which are secured in assembled relation on shaft 174 extending through hub 175 of plate 171. Discs 172, 173 are clamped against hub 175 by nut 176 and washer 177. Shaft 174 is journaled in boss 178 of bracket 162 and is held in position with respect thereto by gear 179 pinned on shaft 174 between hub 175 and boss 178, and collar 180 pinned on shaft 174 and engaging the lower end of boss 178.

The endless series of measuring pockets are formed by cooperating parts of discs 172, 173 which are relatively adjustable to vary the size of the pockets. For this purpose, lower disc 173 (Figs. 10 and 11) has axially spaced concentric strips 186 secured to the bottom side thereof as by welding and having their lower edges spaced in close cooperative relation with bottom wall 164 of hopper 161. Disc 173 is apertured at equally spaced intervals between strips 186, and at one end of each aperture, a depending plate 187 (Figs. 75

10 and 13) is secured to disc 173 and between strips 186 as by welding and similarly spaced in close cooperative relation with bottom wall 164 of the hopper. Upper disc 172 is also apertured at similar equally spaced intervals to coincide with the apertures of disc 173, and, at the opposite end of each aperture from plate 187, has similar depending plate 188 (Figs. 11 and 12) welded thereto and positioned between strips 186 and in close cooperative relation therewith and with bottom wall 164 of the hopper. Thus, each associated pair of plates 187, 188 and the portions of strips 186 located therebetween form a measuring pocket 189 in the bottom of the hopper. By adjusting upper disc 172 with respect to disc 173, the size of such pockets can be varied uniformly by the movement of plates 188 with respect to plates 187. To provide for such adjustment, disc 172 is connected to disc 173 by clamping screws 190 (Fig. 11) threaded in plate 171 and extending through suitable apertures in disc 173 and arcuate slots 191 in disc 172. By releasing nut 176 and screws 190, disc 172 can be adjusted rotatably to obtain the desired size of measuring pocket.

Drive means is provided for moving the series of measuring pockets successively through the stock receiving portion of the hopper and past the discharge opening, means being provided to remove any surplus stock from the pockets and to positively force the measured amounts of stock through the discharge opening. The drive means includes gear 179 (Fig. 2) which meshes with and is driven from gear 195 on shaft 196 journaled in spaced bosses 197, 198 of bracket 162. At its lower end, shaft 196 carries spur gear 199 meshing with spur gear 200 on shaft 201 which is journaled in boss 202 of bracket 162 and at its upper end carries spur gear 203 meshing with main drive gear 19. The above described drive train moves the series of measuring pockets in a clockwise direction as viewed in Fig. 1. Thus, the stock feeder is driven in synchronism with the drive for the charge receiving receptacles so that each measuring pocket of the stock feeder will register with the discharge opening at the proper time to place its contents in one of the receptacles.

To insure the proper measured amount of stock in each pocket, brush 205 (Fig. 1) is removably clamped on side wall 163 of the hopper just ahead of the discharge opening of spout 165 so that any surplus stock carried by a measuring pocket is wiped off and returned to the stock receiving portion. To provide for complete discharge of the stock in each pocket, nozzle 206 (Figs. 2 and 10) is mounted in aligned relation with discharge spout 165 by bracket 207 on wall 163. Pipe 208 also connected to bracket 207 leads from a suitable source of fluid pressure to provide a pressure jet of fluid, such as air or steam, to force each measured amount of stock out of a measuring pocket, through spout 165 and funnel 209 (Fig. 2) into the associated receptacle. Funnel 209 is removably mounted on wall 81 and serves to center the discharged stock with respect to the receptacle. In order to obtain efficient transfer of the stock therethrough, both spout 165 and funnel 209 are preferably provided with a rectangular cross section. The longer dimension of the rectangle is parallel to the path of a receptacle moving under the rectangular discharge opening of funnel 209 so that the greatest effective area of the receptacle is available to receive stock. For the same purpose, the lateral dimension of the

opening is preferably made slightly smaller than the smallest diameter receptacle to cut off the side segments of the circular receptacle opening which register with the funnel for the shortest period of time. Preferably, the relatively timing of measuring pockets 189 and receptacles 65-66 is such that discharge from a pocket 189 occurs immediately after a receptacle has passed by funnel 209, so that stock in such pocket will fall onto wall 61 and into the leading side of the next receptacle, the stock on wall 61 being raked off into such receptacle by funnel 209. This timing is desirable to prevent cutting of stock between funnel 209 and the trailing edge of the receptacle opening.

The left hand stock feeder 161A as viewed in Fig. 1 is similar in construction and operation to that described, except that pockets 189A are usually of a different size than pockets 189 for handling different stock. For example, the measuring pockets of one stock feeder may be adapted for use with grapes, while those of the other stock feeder may be adapted for handling diced pineapple.

Stock feeder with counting and preparing means

A stock feeder of special construction is provided to prepare and measure a class of stock of the type such as pitted cherries and the like, which are preferably sliced into halves before being discharged into the receptacles, a definite number of the cherries or the like being counted for each receptacle. Generally, the feeder includes a hopper having an endless series of counting pockets with which a cutter is associated to cut the units of stock carried by the pockets before discharge thereof.

Hopper 210 (Figs. 1 and 14) is generally similar to hopper 161 described above and is mounted similarly by bracket 211 secured on a pad 3 of base plate 1. Bracket 211 is similar in construction to bracket 152 except as to certain details of construction referred to hereinafter.

The series of counting pockets are provided by equally spaced apart apertures 212 (Figs. 14 and 15) in enlarged rim 213 of disc 214 which forms the bottom of the hopper and is mounted on shaft 216 for rotation therewith. Disc 214 may be formed of brass or other suitable non-corrosive material. Apertured rim 213 has its bottom surface spaced in close cooperative relation with annular bottom wall 217 of the hopper, so that apertures 212 form an endless series of pockets, the size of which is preferably selected to hold one unit only of the stock being handled.

A cutter is associated with the series of pockets for halving the units of stock carried in the pockets before discharge thereof from the hopper. Disc cutter 221 (Fig. 14) is secured on the reduced end of sleeve 222 between collars 223 by means of nut 224. Sleeve 222 is pinned on drive shaft 225 of electric motor 226 mounted by bracket 227 on hopper 210. Cutter 221 extends through suitable slots formed in hopper 210 and plate 228 secured thereon and into annular slot 229 formed midway between the surfaces of rim 213 and extending inwardly beyond apertures 212. It is to be noted that cutter 221 extends entirely across an associated aperture 212 so that the unit of stock carried thereby will be halved completely. Cutter 221 is positioned between brush 230 for removing excessive units of stock from any aperture and discharge spout 231 having pressure fluid nozzle 232 (Fig. 1) aligned therewith. I have found that the units of stock, such

as pitted cherries, will roll as they are elevated by movement disc 214, and that such rolling takes place about the stem-blossom axis with substantially all units of stock. Consequently, such units are presented to cutter 221 in a position to be halved through the stem-blossom axis.

The number of units of stock which are halved and discharged into the charge receiving receptacles is counted by selective timing of the rotation of disc 214 and pockets 212 with respect to the receptacles, and for this purpose a plurality of selected speed drives for disc 214 from drive gear 19 is provided. Shaft 216 (Fig. 14) carrying disc 214 is rotated through gears 236, 237 from shaft 238 having spur gear 239 (Fig. 5) at its lower end. Gear 239 is driven from drive gear 19 through gear 240, shaft 241, gear 242 carried thereby, and removably mounted gear 243 meshing with gears 242 and 239. Gear 243 (Fig. 6) is journaled on the lower end of shaft 244 above an end flange thereof, the reduced upper end of shaft 244 being adjustably positioned in slot 245 formed in boss 247 of bracket 211. Slot 245 is of less width than the lower end of shaft 244 so that nut 248 threaded on the upper end of shaft 244 serves to maintain the selected adjustment thereof. By selecting the pitch diameter of gear 242 and adjusting shaft 244 in slot 245 to obtain the proper engagement between the gears, the speed of disc 214 can be adjusted to deliver one or more halved units of stock to each receptacle as it passes under spout 231 and funnel 246 (Fig. 1) associated therewith.

From the above description, it is seen that the described form of stock feeder serves to both prepare and count the units discharged into each receptacle. It is to be noted that the slicing of the units is performed in the preferable manner along the stem-blossom axis.

Container feed

The containers for receiving the mixed charge of stock from the receptacles are moved through the filling unit in synchronism with the movement of the receptacles by feeding means which is adjustable to accommodate different sizes of containers. The feeding means includes a detachable container feeding unit for delivering containers to the filling unit, which comprises a feed disc which conveys the containers through adjustable guide members to a timing screw from which the containers are delivered through a star wheel in timed relation to the container feed of the filling unit. Feed disc 251 (Figs. 5 and 7) is secured on hub 252 (Fig. 7) and annular pad 253 of gear 254 journaled on shaft 255, which is secured by a suitable set screw in boss 256 of bracket 257. Bracket 257 is mounted on one of pads 4 of base plate 1 in accordance with the most convenient location for disc 251. Gear 254 is driven through gear 258 from drive gear 19, gear 258 being secured on shaft 259 journaled in boss 261 of bracket 257. Thus feed disc 251 (Figs. 5 and 7) is rotated in a counter-clockwise direction to feed empty containers placed thereon between outer guide strip 262 which extends around part of the periphery of disc 251 and inner guide member 263 which may be made as a casting and secured on shaft 255 above disc 251. Guide strip 262 (Fig. 5) has one end secured to gear housing 264 which is mounted on bracket 257 and a post 7, and has its other end secured to guide member 266 which is supported adjustably by suitable bolt and slot con-

nections with spaced brackets 267 (Figs. 5 and 7) mounted on guide member 263. Such adjustment of guide member 266 provides for proper positioning thereof with respect to timing screw 268 having one end journaled in housing 264, and the other in guide member 263. Screw 268 is of conventional construction and is driven synchronously with drive gear 19 as later described to deliver containers successively to star wheel 269 on shaft 271 mounted in housing 264. Wheel 269 is driven through gears 272, 273, 274, and 258 from gear 19. The above train of gears also serves, through shaft 271, gears 276, 277 (Fig. 5) and bevel gears 278, 279, to drive timing screw 268. Thus, both screw 268 and star wheel 269 are driven synchronously from drive gear 19 to feed empty containers from disc 251 over plate 280 formed integrally with housing 264 below star wheel 269 and past arcuate guide 280A which may be formed integrally with plate 280 to the container feed proper of the filling unit. If desired, container feed disc 251, bracket 257 and associated parts can be mounted on the second set of pads 4 illustrated in Fig. 5.

The container feeder of the filling unit is driven in synchronism with the charge receiving receptacles, and moves the containers in vertical alignment therewith for a part of their travel to receive therefrom the mixed charge of stock. The container feed as shown is adapted especially for cans and includes disc 281 (Figs. 2 and 5) supported on drive gear 19 and turret 282 supported in spaced relation on disc 281, both disc 281 and turret 282 being held in assembled position by cap screws 283 extending through suitable apertures in disc 281 and through respective slots 284 in turret 282 (Fig. 5) to provide for adjustment thereof for a purpose later described. Turret 282 has a series of recesses 286 (Figs. 2 and 5) equal in number to the number of receptacles and positioned to receive the containers from star wheel 269 and to center the containers under their associated receptacles to receive the charge therefrom, as shown in dotted lines in Fig. 2. To provide for accurate centering of the receptacles with any selected size of container, disc 281 and turret 282 are each provided with a plurality of aligning apertures 287 (Fig. 5) to cooperate with aligning pin 288. Apertures 287 in disc 281 are unequally spaced with respect to apertures 287 of turret 282 so that alignment of any selected pair of apertures 287 by pin 288 results in adjusting turret 282 for the can of corresponding size. As shown in Fig. 5, the four pairs of apertures 287 adjust turret 282 for 8 oz., No. 1 Tall, No. 2, and No. 2½ sizes of cans.

Guide members are associated with the container feeding turret to maintain the containers in the recesses thereof, the guide members being adjustable to cooperate with different sizes of containers. As each container is moved from plate 280 onto disc 281 and into a recess 286 of turret 282 it is guided by guide member 291 (Fig. 5) pivoted at one end on shaft 271 at one end and having a slotted extension adjacent the other end to provide an adjustable connection with the adjacent bracket 267. After the containers move beyond guide member 291, they are maintained in recesses 286 of turret 282 by arcuate guide strip 292 which has an end pivoted to guide member 291, and has its other end adjustably connected to a post 7 by slotted link 293 pivoted to strip 292 and adjustably connected by a clamping bolt with end 299 of a guide member 296. During the filling phase of their travel, the

containers are carried between inner guide member 295 and outer guide member 296. Inner guide member 295 has an end pivoted about a post 7 and is connected adjustably by suitable fastening bolts to slotted flange 297 of bracket 298. Inner guide member 295 is curved adjacent such end to extend inwardly over turret 282 to move the filled cans off disc 281. Outer guide member 296 has slotted end 299 adjustably connected to a post 7 and at its other end is pivoted on shaft 301 of discharge disc 302 which receives the filled containers from disc 281 and turret 282. Thus, both inner and outer guide members 295 and 296 which cooperate with the containers while they are being filled and discharged from the filling unit are adjustable to cooperate with various sizes of containers.

Discharge disc 302 and shaft 301 are mounted by a suitable bracket (not shown) on base plate 1, and shaft 301 carries gear 303 meshing with drive gear 19 to provide the drive connection for discharge disc 302.

From the above description, it is seen that the containers are fed through the machine in synchronized relation to the movement of the charge receiving receptacles. Also, the containers are maintained in the proper path of movement by guide members which are adjustable to cooperate with different sizes of containers.

Operation

The operation of the filling unit in placing the mixed charge in the receptacles will now be described. It will be understood that the bulk stock, such as diced pears and peaches, are fed into the bulk stock hopper which is revolving so that spreader blades 86 (Fig. 1) serve to work the stock back and forth to provide thorough mixing and to deliver the stock to the receptacles at the proper time. Also, individual stocks, such as grapes, pitted cherries, and diced pineapple, are placed in the hoppers of the respective stock feeders.

If desired a small amount of bulk stock can be first deposited in the receptacles, and this is effected by positioning the spreader blade 86A (Fig. 1) mounted adjacent the adjoining ends of walls 81, 82 in the dotted line position thereof so that a small amount of bulk stock can pass through the opening between walls 81, 82 and into the receptacles as they pass part B of wall 82. If such action is not desired, spreader blade 86A is left in the full line position shown in Fig. 1 to close the opening between walls 81 and 82.

As each receptacle travels beyond part B of wall 82 in the direction of the arrows, such receptacle passes under discharge spout 165 of hopper 161 just after a measuring pocket 189 filled with the desired number of grapes is aligned with spout 165, so that the measured amount of grapes is blown through spout 165 and funnel 209 into the receptacle by the jet of steam or the like from nozzle 206. As pointed out previously, the timing is preferably such that the discharge from pocket 189 begins at about the time the opening of a receptacle passes beyond funnel 209.

Thereafter, such receptacle passes under discharge spout 231 and funnel 246 to receive the sliced cherry halves blown therethrough, the number of cherries placed therein being determined by the number of pockets 212 which pass over spout 231 while the receptacle is in registry with spout 231 through the associated funnel. Subsequently, such receptacle receives its meas-

ured amount of diced pineapple from hopper 161A as described in connection with grape hopper 161.

After the measured amounts of individual stock have been placed therein, the receptacle moves beyond wall 81 into the bulk stock filling area where spreader blades 86 work the bulk stock back and forth over the receptacle to complete the filling action. In the continued motion of the receptacle, it passes under leveling wall 82 which removes any surplus bulk stock to finish the receptacle filling operation. Thereafter, such receptacle moves over aperture 74 of closure element 71 into registry with a container entrained in container feeding turret 282 and discharges its contents into such container. This cycle of operation is continuous in the series of receptacles, so that an endless series of cans are fed through the filling unit in synchronism with the receptacles by feed disc 251, turret 282, and discharge disc 302.

As referred to in various parts of the description, the machine is adjustable to accommodate various sizes of containers and as shown in the drawings, the machine is conditioned to fill No. 2½ size cans.

The various adjustments of the machine to accommodate a smaller size can includes the lowering of closure element 71 (Fig. 2), bulk stock hopper 60, and the spider assembly including arms 10 so that the closure element will be positioned immediately above the cans 306 on disc 281, and the receptacles with suitable adapter sections 68 and 69 in close cooperative relation with closure element 71, and with mixing and spreading plates 86 and walls 81, 82 in close cooperative relation with bottom wall 61 of the hopper. Also turret 282 is adjusted to place aligning bolt 288 in the aligned apertures for the 8 oz. size can for example, and the various guide members are moved inwardly to confine the cans to the proper space. Also a drive gear 46 of the proper pitch diameter to obtain the desired number of filled cans per minute is selected and installed, as well as the proper drive gear 243 for stock feeder 210 so that the desired number of sliced cherries will be deposited in the receptacle.

In addition, the measuring pockets 189 and 189a of stock feeders 151 and 151a are adjusted to the desired size can. Thus the machine can be easily conditioned for operation with any size container within the range of sizes provided by the adjustments of the machine.

While I have shown my invention in a preferred embodiment thereof, and have described such embodiment as being specially adapted for use in filling cans with a fruit cocktail mixture, it is to be understood that such invention can be embodied in other forms, and can be used for preparing other mixed charges than that described. My invention, therefore, is to be limited only by the scope of the appended claims.

I, therefore, claim as my invention:

1. A machine for filling containers, comprising a frame, a container feeder mounted on said frame, a hopper, a plurality of open-ended receptacles carried by said hopper for filling containers entrained with said feeder, means mounting said hopper and said receptacles on said frame above said feeder and for vertical adjustment with respect thereto, a stationary closure element for said receptacles, and means mounting said closure element on said frame in close cooperative relation with the lower ends of said receptacles and for vertical adjustment with respect thereto.

2. A machine for filling containers, comprising a base, a plurality of upright posts on said base, a drive element mounted for rotation on said base, a container feeder mounted on said drive element for rotation therewith, a hopper mounted for vertical adjustment on said drive element and for rotation therewith, a plurality of open-ended receptacles carried by said hopper for filling containers entrained with said feeder, a closure element mounted for vertical adjustment on said posts and positioned in close cooperative relation with the lower ends of said receptacles, and mixing and spreading means mounted for vertical adjustment on said posts and positioned in said hopper.
3. A machine for filling containers, comprising a base, a plurality of upright posts on said base, a drive element mounted for rotation on said base, a container feeder mounted on said drive element for rotation therewith, a hopper mounted for vertical adjustment on said drive element and for rotation therewith, a plurality of open-ended receptacles carried by said hopper for filling containers entrained with said feeder, a closure element mounted for vertical adjustment on said posts and positioned in close cooperative relation with the lower ends of said receptacles, a mixing and spreading means mounted for vertical adjustment on said posts and positioned in said hopper, a stock feeder for feeding stock to said receptacles, and a funnel carried by said mixing and spreading means for delivering stock from said feeder to said receptacles.
4. A machine for filling containers, comprising a base, a plurality of upright posts on said base, a drive element mounted for rotation on said base, a container feeder mounted on said drive element for rotation therewith, a hopper mounted for vertical adjustment on said drive element and for rotation therewith, a plurality of open-ended receptacles carried by said hopper for filling containers entrained with said feeder, and a closure element mounted for vertical adjustment on said posts and positioned in close cooperative relation with the lower ends of said receptacles.
5. A machine for filling containers, comprising a frame, a container feeder mounted on said frame, a hopper mounted for vertical adjustment with respect to said feeder, a plurality of open-ended receptacles carried by said hopper for filling containers entrained with said feeder, and stationary closure means mounted for vertical adjustment on said frame and positioned in close co-operative relation with the lower ends of said receptacles.
6. In a machine for filling containers, a hopper, an endless series of receptacles associated with said hopper, a feeder for delivering bulk stock to said hopper, a fence defining an area in said hopper free of bulk stock and in the path of movement of said receptacles, and an individual stock feeder for delivering stock to receptacles in said area.
7. In a machine for filling containers, a hopper, an endless series of receptacles associated with said hopper, a feeder for delivering bulk stock to said hopper, a fence defining an area in said hopper free of bulk stock and in the path of movement of said receptacles, and a plurality of stock feeders for delivering individual stocks successively to receptacles in said area.
8. In a machine for filling containers, a hopper, an endless series of receptacles associated with said hopper, a feeder for delivering bulk stock to said hopper, a fence defining an area in said hopper free of bulk stock and in the path of movement of said receptacles, an individual stock feeder for delivering stock to receptacles in said area, and feeding means associated with said hopper for delivering bulk stock from said hopper to said receptacles in another area of said hopper.
9. In a machine for filling containers, a hopper, an endless series of receptacles associated with said hopper, a feeder for delivering bulk stock to said hopper, a fence defining an area in said hopper free of bulk stock, an individual stock feeder for delivering stock to receptacles in said area, a second fence defining a second area in said hopper free of bulk stock, and container feed means for placing containers in co-operative relation with receptacles in said second area.
10. A filling machine for depositing a mixed charge of stock in containers, comprising a rotatable hopper, bulk stock feeding means associated with said hopper, a stock feeder for dispensing measured amounts of an individual stock, a receptacle carried by said hopper, and drive means for said hopper, for moving said receptacle into cooperative relation with said individual stock feeder to receive a measured amount of stock therefrom and for subsequently moving said receptacle into cooperative relation with said feeding means to receive the bulk stock completing the mixed charge of the receptacle.
11. A filling machine for depositing a mixed charge of stock in containers, comprising a rotatable hopper, bulk stock feeding means associated with said hopper, a stock feeder for dispensing measured amounts of an individual stock, a plurality of receptacles carried by said hopper, and drive means for said hopper, for moving said receptacles successively into cooperative relation with said individual stock feeder to receive measured amounts of stock therefrom and for subsequently moving said receptacles successively into cooperative relation with said feeding means to receive the bulk stock completing the mixed charges of the receptacles.
12. A filling machine for depositing a mixed charge of stock in containers, comprising bulk stock feeding means, a plurality of stock feeders, each stock feeder operating to dispense a measured amount of an individual stock, a receptacle, and means for moving said receptacle into successive cooperative relation with said stock feeders and then with said feeding means.
13. A filling machine for depositing a mixed charge of stock in containers, comprising bulk stock feeding means, a plurality of stock feeders, each stock feeder operating to dispense a measured amount of an individual stock, a plurality of receptacles, means for effecting discharge of charges from said receptacles, and means for moving said receptacles successively into successive cooperative relation with said stock feeders, then with said feeding means, and thereafter with said discharge effecting means.
14. A filling machine for depositing a mixed charge of stock in containers, comprising a rotatable hopper, an endless series of receptacles carried by said hopper through a path of movement, closure means associated with said receptacles to maintain said receptacles closed during travel thereof through one part of said path and for opening said receptacles during travel thereof through another part of said path, an individual stock feeder associated successively with said receptacles in said one part of said path, bulk stock feeding means operatively related to said hopper and associated successively

with said receptacles in said one part of said path, and container feed means for associating containers with said receptacles in said another part of said path.

5 15. A machine for filling containers, comprising a base, a drive element mounted for rotation on said base, a feed turret mounted on said drive element for rotation therewith, a hopper mounted on said drive element for rotation therewith, and a plurality of receptacles carried by said hopper for filling containers entrained with said turret.

10 16. A machine for filling products into containers, comprising a main hopper having measuring pockets associated therewith to receive products thereupon, separate apportioning hoppers surrounding the main hopper for apportioning predetermined quantities of separate products into said measuring pockets, and means for discharging the total measured charges of said

20 pockets into containers.

17. A machine for filling containers, comprising a base, a post mounted centrally on said base, a drive element mounted for rotation on said base about the axis of said post, a hopper mounted on said drive element for rotation therewith, and means associated with said post for maintaining said element and said hopper in assembled position on said base.

25 18. A machine for filling containers, comprising a base, a post mounted centrally on said base, a drive element mounted for rotation on said base about the axis of said post, a hopper mounted on said drive element for rotation therewith, a unit for delivering stock to said hopper, and means mounted on said post for supporting said unit.

19. The method of filling containers with a mixed charge of an individual stock and bulk stock, which includes the steps of placing a small amount of bulk stock in the charge, thereafter placing a measured amount of the individual stock in the charge, and subsequently completing the charge with bulk stock.

45 20. In a machine for filling containers, a frame, a hopper mounted for movement on said frame, and a plurality of mixing members adjustably mounted on said frame and positioned in cooperative relation with the bottom wall of said hopper.

50 21. In a machine for filling containers, a frame, a hopper mounted for movement on said frame, a plurality of mixing members for cooperative relation with the bottom wall of said hopper, and mounting means supporting said members on said frame for simultaneous adjustment with respect to said hopper.

22. In a machine for filling containers, a frame, a hopper mounted for movement on said frame, a plurality of mixing and spreading blades operatively associated with said hopper, a framework adjustably mounted on said frame, and adjustable connections between said blades and said framework.

23. In a machine for filling containers, a stock hopper, a framework adjacent said hopper, a stock moving member operatively associated with the bottom wall of said hopper, and means mounting said member for both angular and endwise adjustment on said framework.

24. In a machine for filling containers, a stock hopper, a framework adjacent said hopper, a stock moving member operatively associated with said hopper, a plurality of mounting stations on said framework, and means for connecting said member to any selected one of said stations.

25. In a machine for filling containers, a stock hopper, a framework adjacent said hopper, a plurality of stock moving members operatively associated with said hopper, a plurality of mounting stations on said framework, and connecting means for mounting said members in selected mounting stations.

26. In a machine for filling containers, a receptacle for receiving a charge for a container, and a telescopic adapter mounted in said receptacle to vary the size of the charge measured thereby.

27. In a machine for filling containers, a frame having a plurality of similar mounting pads, a plurality of stock feeders, and a bracket for mounting each stock feeder on one of said pads, each bracket being formed for cooperation with any selected one of said pads.

28. In a machine for filling containers, a frame having a plurality of similar mounting stations, a plurality of stock feeders, common drive means on said frame for said feeders, and mounting means for securing said feeders on said frame in any selected order and operatively associated with said drive means.

29. In a machine for filling containers, a container support, a turret connected to said support, a plurality of spaced apart connecting stations on said support, a plurality of spaced apart connecting stations on said turret having a spacing different from the spacing of said stations on said support, and a connecting member for cooperation with a selected pair of said support and turret connecting stations.

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