

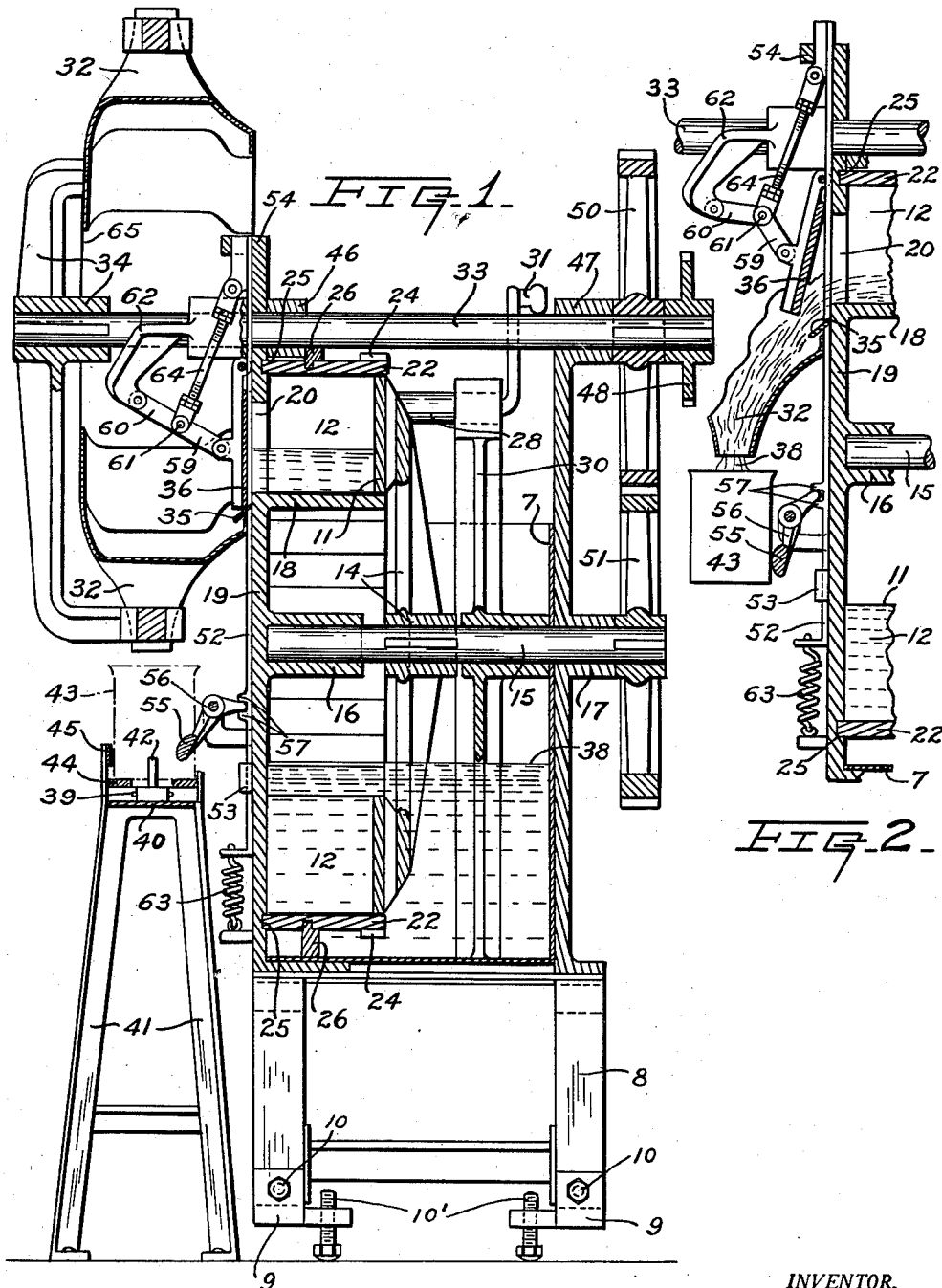
May 29, 1951

F. D. CHAPMAN
LIQUID FILLER

2,554,939

Filed April 3, 1946

3 Sheets-Sheet 1



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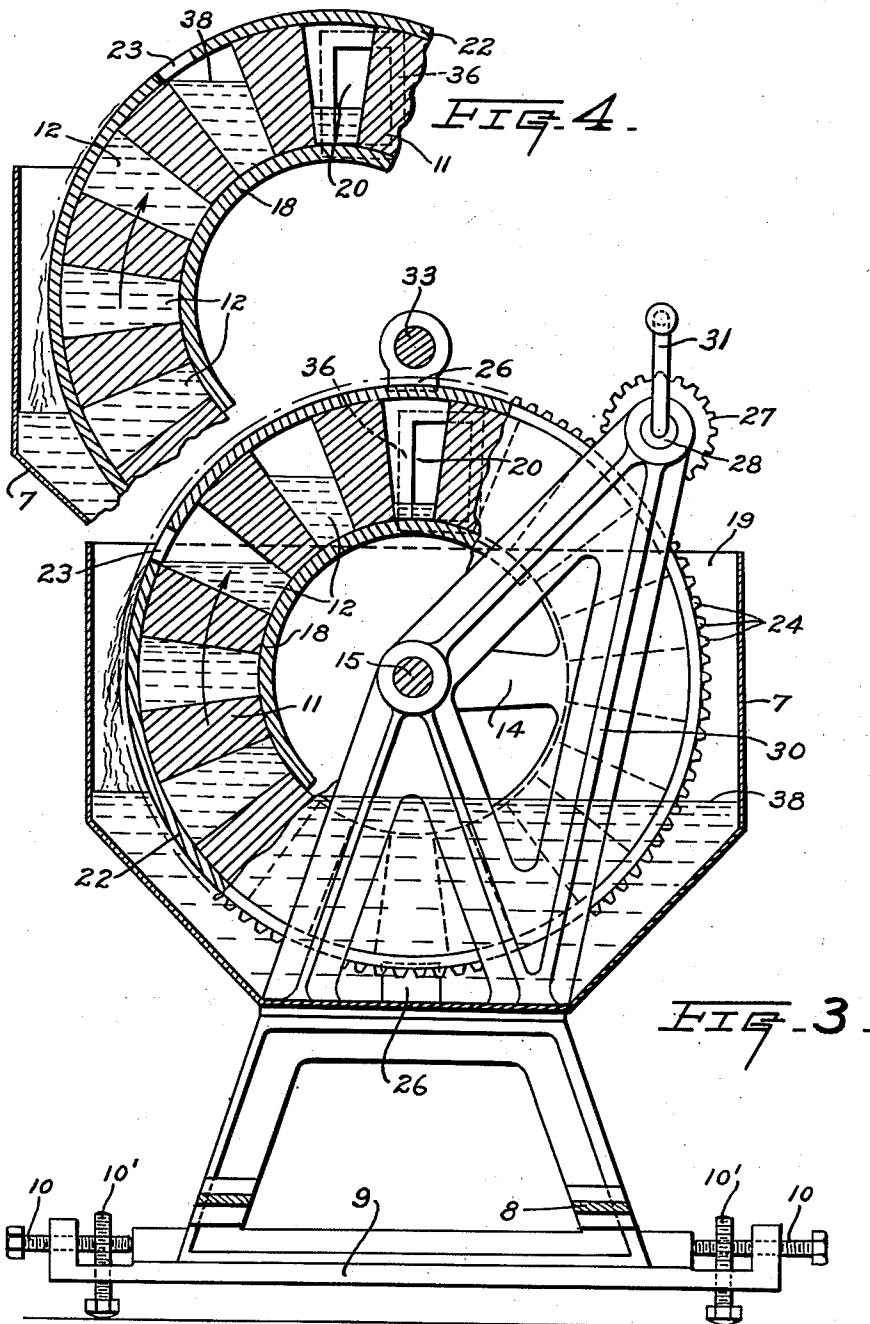
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3 Sheets-Sheet 3

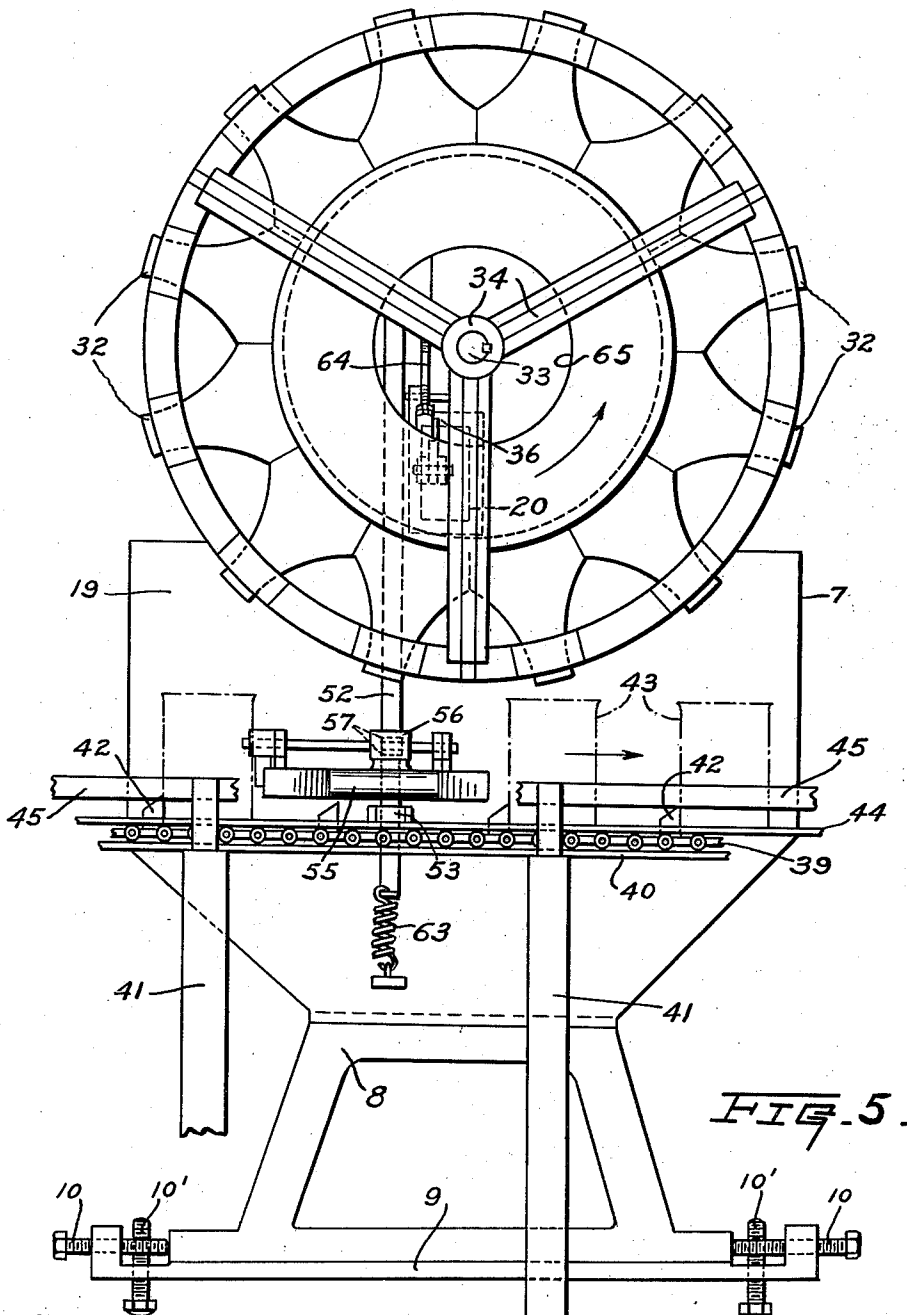


FIG-5.

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LIQUID FILLER

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20 Claims. (Cl. 226-104)

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This invention relates in general to improvements in commodity measuring and dispensing devices, and relates more specifically to improvements in machines for automatically pre-measuring and for delivering measured batches of liquid to a succession of receptacles travelling along a definite path.

The primary object of my invention is to provide an improved receptacle filling machine which is operable at any desired speed to deliver accurately pre-measured batches of fluent commodity such as liquid to a travelling series of cups or cans without waste.

Many different types of receptacle or can filling machines for delivering pre-measured batches of diverse commodities to successive cup-shaped containers advancing along definite paths, have heretofore been proposed and used commercially; and while some of these previous fillers are quite satisfactory so far as accuracy of performance is concerned, most of them are relatively complicated and operable only at rather slow speed especially when handling liquids. In the most reliable and accurate liquid fillers now in use, the receptacles are caused to traverse annular or irregular paths while receiving the pre-measured batches of commodity and thereafter until they are delivered from the machine, and when the liquid laden containers are thus revolved about an axis or irregularly advanced beyond a definite speed, some of the product spills over the brim of each receptacle and considerable waste results especially when the batches are of considerable volume. Then too, it was impossible with these prior fillers, to accurately adjust the deliveries so as to properly cooperate with straight line high speed can conveyors.

It is therefore a more specific object of the present invention to provide an improved liquid filler adapted to operate at high speed without danger of wasting commodity due to spillage, and wherein the successive receptacles receive the accurately pre-measured batches while travelling rapidly in a straight line.

Another specific object of this invention is to provide an exceedingly simple and reliable liquid batch measuring and dispensing mechanism for automatically and accurately pre-measuring a succession of charges of any predetermined volume, and for constantly delivering the successive batches from the machine.

A further specific object of the invention is to provide a compact and durable liquid batch dispenser especially adapted to deliver successive pre-measured charges to rapidly advancing cup-

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shaped receptacles such as open-topped cans, and which positively avoids delivery of batches when there are no cans in position to receive the same.

Still another specific object of my invention is to provide an improved can filling assemblage all parts of which are readily accessible for inspection and may be dismantled for cleaning, which may be conveniently assembled, and wherein the accurate pre-measurement of the batches or charges may be safely effected while the machine is in operation.

An additional specific object of this invention is to provide an improved liquid batch measuring and delivering unit adapted to be readily applied to and operated in conjunction with machines for automatically filling cans or other receptacles with mixtures of liquids and solids wherein the ingredients must be accurately proportioned.

These and other specific objects and advantages of the invention will be apparent from the following detailed description.

A clear conception of the several features constituting my present improvement, and of the mode of constructing and operating a typical liquid filler embodying the invention, may be had by referring to the drawings accompanying and forming a part of this specification wherein like reference characters designate the same or similar parts in the various views.

Fig. 1 is a somewhat diagrammatic longitudinal vertical section taken approximately through the center of the typical liquid filler, showing some mechanism in elevation in front of the plane of the section, and also showing a charge receiving receptacle in dot-and-dash lines but not in position to receive a measured batch of liquid;

Fig. 2 is a fragmentary view similar to that of Fig. 1, but showing the liquid batch delivery mechanism in action;

Fig. 3 is a likewise diagrammatic transverse vertical section through the machine, part of the section having been taken through the batch measuring pockets while another part has been taken in front of the batch volume measuring mechanism;

Fig. 4 is a fragmentary view similar to that of Fig. 3, but showing the measuring pocket assemblage adjusted so as to deliver successive batches having greater volume than in Fig. 3; and

Fig. 5 is a somewhat diagrammatic end view of the typical liquid filler showing a fragment of the straight line can conveyor which is as-

sociated with the machine, and also illustrating three of the receptacles in dot-and-dash lines.

While the invention has been shown rather diagrammatically as being advantageously applicable to an automatic liquid filler for a succession of open-topped sanitary cans, it is not my desire or intent to unnecessarily restrict the utility of the device by virtue of this specific and limited embodiment, and it is definitely contemplated to apply the improved liquid batch measuring and dispensing unit to machines for delivering mixed liquid and other materials in the form of successive charges to diverse receptacles and other zones of utilization.

Referring to the drawings, the typical liquid filler shown therein, comprises in general a liquid supply basin or tank 7 mounted upon normally fixed frames 8 which are adjustable along a supporting base 9 by means of positioning and clamping screws 10; a rotor 11 having therein an annular series of radial spaces or measuring pockets 12 revolvable within the tank 7, and being provided with a supporting and propelling spider and hub assemblage 14 keyed to a lower driving shaft 15 which is journaled in end bearings 16, 17 fixedly associated with the opposite end walls of the tank 7; a stationary arcuate or segmental flange 18 extending centrally within the rotor 11 coaxial with the shaft 15 from the tank end wall 19 which is provided with an upper outlet opening 20, the flange 18 sealing the inner ends of a limited number of the pockets 12; a normally fixed annular closure or ring 22 embracing the rotor 11 so as to seal the outer ends of all of the pockets 12 except for a spill slot or liquid return opening 23, the ring 22 having an annular series of peripheral teeth 24 and being journaled for rotary adjustment about the shaft 15 within a circular groove 25 and also being held in place by local clips 26; a ring adjusting pinion 27 meshing with the teeth 24 and being secured to an auxiliary shaft 28 mounted in bearings on the tank wall 19 and in a bracket 30 located within the tank 7, the shaft 28 being adjustably rotatable with the aid of a crank 31; an annular series of radially disposed revolving funnels 32 mounted upon an upper power shaft 33 by means of a spider and hub 34, and being communicable over a spout 35 secured to the wall 19 with the liquid batch discharge opening 20; a flap valve 36 pivotally suspended from the tank wall 19 and normally sealing the opening 20 but being periodically movable to uncover the liquid discharge opening so as to deliver measured batches of material into the successive funnels 32; and mechanism for driving the shafts 15, 33 and for periodically opening the valve 36.

The tank 7 should be of ample capacity to meet requirements and may be kept supplied with liquid 38 such as brine or syrup, from any suitable source and in any convenient manner, and the major portion of this tank may be formed of sheet metal while the upright end wall 19 should be formed rigid and of durable suitable material, see Figs. 1 and 3. A conventional straight-line receptacle conveyor 39 is preferably supported adjacent to the tank wall 19 beneath the path of revolution of the funnels 32, and this conveyor 39 is adapted to travel horizontally and at high speed upon a carrier plate 40 mounted upon brackets 41, see Figs. 1 and 5. The conveyor 39 is provided with propelling lugs or projections 42 which are spaced apart uniform distances equal to the distances between the discharge ends of the successive funnels 32, and which are adapted

to engage and to transport the successive receptacles or cans 43 along supporting strips 44 and a guide rail 45 also carried by the brackets 41; and the adjusting screws 10 which coact with the frames 8 and base sections serve to bodily shift and to position the liquid measuring and discharge unit so that the funnel outlets will properly cooperate with successive advancing cans 43 of different diameters. In order to cause the funnel outlets to properly cooperate with cans 43 of different heights without disturbing the standard straight line conveyor 39, the two sections of the base 9 are also provided with jack screws 10' as shown.

The conveyor 39 may be operated in any suitable manner to constantly advance the cans 43 at any desired speed, and the funnels 32 and rotor 11 should be timed to operate or revolve at corresponding speeds. The upper driving shaft 33 which carries the funnels 32 is journaled for rotation in bearings 46, 47 associated with the end walls of the tank 7, and this shaft 33 may be driven at the proper speed by means of a chain drive 48 or the like associated with the end of the shaft remote from the funnels 32. Rotary motion is transmitted from the upper power shaft 33 to the lower rotor driving shaft 15 by means of gears 50, 51 keyed to these shafts respectively, in order to simultaneously revolve the rotor 11 and the funnels 32 in the directions indicated by the arrows during normal operation of the machine, see Figs. 3, 4 and 5. The auxiliary shaft 28 should be rotatable for purposes of adjusting the ring 22 only, and should not be affected by the continued rotation of the shafts 33, 15; and when the shaft 28 is rotated with the aid of the crank 31 and pinion 27, the spill opening 23 may be raised or lowered to vary the quantity of liquid 38 confined in each pocket 12 when it reaches the final discharge opening 20.

While the flap valve 36 for periodically opening and sealing the liquid batch discharge opening 20 in the tank wall 19 may not be necessary in cases where it is desired to have the funnels 32 deliver successive measured charges of liquid without interruption; it is preferable to provide such a shut-off valve 36 when delivering measured batches of liquid 38 to a succession of receptacles or cans 43, in order to prevent waste of commodity in the event that no receptacle is in position to receive a liquid charge. A simple but highly effective no-can no-fill mechanism for controlling the flap valve 36 is shown in Figs. 1, 2 and 5, and comprises an upright slide 52 guided for vertical reciprocation by lower and upper guideways 53, 54 respectively, carried by the rigid tank wall 19; an elongated can engaging or contact bar 55 carried by one arm of a bell crank lever 56 which is pivotally suspended from the wall 19 and the other arm of which coacts with a pair of lugs 57 secured to the medial portion of the slide 52; a pair of toggle links 59, 60 pivotally connected by a pin 61 and swingably attached respectively by means of other pins, to the valve 36 and to a bracket 62 carried by the fixed wall 19, the central toggle pin 61 being connected to the upper end of the slide 52 by means of an adjustable link 64; and a tension spring 63 coacting with the lower extremity of the slide 52 and tending to constantly pull the slide downwardly and to thereby close the flap valve 36. While the valve 36, toggle links 59, 60, bracket 62, and link 64 are disposed within and normally concealed by the annular funnel rotor, this rotor is provided with a central outer opening 65

through which the link 64 is accessible for the purpose of varying its length so as to insure proper closing of the valve 36 and proper disposition of the can contacting bar 55.

During normal operation of the improved liquid filler, after the various parts have been properly constructed and assembled, suitable adjustments of the tank 7, rotor 11, and funnels 32 relative to the conveyor 39 with the aid of the adjusting screws 10, 10' and base 9, and proper adjustment of the length of the link 64 in order to insure closing of the valve 36 and correct disposition of the actuating bar 55, should first be made before the machine is set in motion. The supply tank 7 should also be provided with an abundance of the liquid 38 whereupon power may be applied to the sprocket 48 and to the conveyor 39, and successive cans 43 should be applied to the transporting lugs 42 of the conveyor; thus causing the measuring rotor 11 to revolve about the flange 18 and within the volume varying ring 22, and also causing the annular series of funnels 32 to simultaneously revolve in timed relation to the advancing cans 43.

As the measuring rotor 11 revolves and the lower open pockets 12 thereof become immersed within the liquid bath, the successive revolving pockets become completely filled with liquid 38 as illustrated in Figs. 1 and 2. The successive liquid filled pockets are sealed by the flange 18 as they rise from within the supply basin, and when they reach the spill opening 23 of the sealing ring 22, a definite amount of liquid 38 is returned from each pocket 12 through the opening 23 to the tank 7. Successive equal batches of liquid 38 are thus accurately measured, and the pre-measured batches are subsequently carried into open communication with the upper batch discharge opening 20. If the valve 36 is opened when the measured batches reach the opening 20, the successive charges will be discharged into the successive revolving funnels 32; but if the valve 36 remains closed, the pre-measured batches will remain confined within the pockets 12 until they are returned to the supply liquid 38 within the tank 7.

The actual volumes of the successive measured batches depends upon the elevation of the spill opening 23, and as this opening is lowered by rotary adjustment of the sealing ring 22, the volume of each charge will diminish. This action is clearly exemplified in Figs. 3 and 4, from which it will be apparent that lowering the opening 23 will reduce the batch volume, whereas raising this opening 23 will increase the volume of each batch. Such variation may be readily effected while the machine is operating, by merely revolving the ring 22 with the aid of the pinion 27 and hand crank 31, and when the desired adjustment has been effected each of the successive batches will have exactly the same volume.

When successive receptacles such as tin cans 43 are being supplied with batches of liquid 38, the successive cans are caused to gradually engage the valve of actuating bar 55, and as each can 43 advances along this swingable bar, it causes the bell-crank 56 to lift the slide 52 in opposition to the action of the tension spring 63. Each of these upward movements of the bar 52 causes the toggle links 59, 60 to be pulled out of alinement or at an angle to each other as clearly shown in Fig. 2, thus opening the valve 36 and permitting the adjacent measured batch of liquid 38 to escape from its confining

pocket 12 through the opening 20 and through the adjacent funnel 32 to the can 43 disposed beneath the funnel outlet. However, if the can series is interrupted for any reason, and no can 43 is brought in contact with the valve actuating bar 55, then the valve 36 will remain sealed, and no discharge of liquid will take place. In this manner, waste of material due to the absence of a can 43, is positively prevented, and since the cans 43 are constantly travelling in a straight line and their motion is not interrupted during delivery of a batch thereto, no spillage of liquid over the upper brims of the cans will occur. After each delivery of a batch to a can 43, the spring 63 quickly becomes effective to restore the bar 55 to the position shown in Fig. 1, and to simultaneously close the valve 36.

From the foregoing detailed description it will be apparent that my present invention provides an extremely simple, compact and durable liquid batch dispensing unit, which may be operated at high speeds to deliver accurately pre-measured batches of liquid to a succession of containers or zones of utilization. The improved batch measuring rotor 11 and the sealing ring 22 cooperating therewith, may be quickly and effectively adjusted to accurately vary the volumes of the successive batches measured, and such adjustment may be readily effected while the machine is operating at high speed. The simplified no-can no-fill mechanism eliminates possible waste of liquid due to the interruption of the can series, and the liquid which is spilled from each pocket 12 during measuring of the charges, is returned directly to the tank 7 thus positively eliminating waste of material. By virtue of the fact that the cans 43 constantly travel in a straight line and do not have their motion arrested when the liquid is being deposited therein, this improved filler may be operated at considerably higher speeds than was possible with prior liquid measuring and dispensing machines, and while the various parts of the mechanism are amply protected during normal operation, they are still readily accessible for adjustment, inspection, and cleaning. The provision of means for causing the improved filler to accurately cooperate with standard straight-line high speed can conveyors 39, and to also cooperate with cans 43 of different heights and diameters, is an important feature of my present invention, and such adjustments may be quickly and effectively accomplished by merely manipulating the screws 10, 10' and without in any manner disturbing the can conveyor 39. The adjusting screws 10 serve to bodily shift the funnel series along the conveyor 39 so as to insure proper cooperation of the funnel outlets with cans 43 of different diameters, while the jack screws 10' serve to bodily shift the funnel series toward or away from the conveyor so as to likewise insure proper cooperation of the funnels 32 with cans of different heights, thus adapting the filler for cooperation with receptacles of various sizes. The improved liquid filler may obviously be manufactured at moderate cost, and occupies very little space considering its capacity, and the liquid filling unit is well adapted to be associated with machines for measuring and delivering successive charges each comprising a mixture of liquid and other materials.

It should be understood that it is not desired to limit this invention to the exact details of construction, or to the precise mode of use,

herein shown and described, for various modifications within the scope of the appended claims may occur to persons skilled in the art.

I claim:

1. In a liquid filler, a liquid supply tank, a rotor having an annular series of batch measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, an arcuate flange for sealing each of said pockets after having been completely filled with liquid by said immersion, a sealing ring embracing said pockets and having a spillage opening and being adjustable to effect discharge of any predetermined quantity of liquid from each of said previously completely filled pockets, and means for thereafter effecting final delivery of each residual liquid batch from the successive pockets.

2. In a liquid filler, a liquid supply tank, a rotor having an annular series of batch measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, an arcuate flange for sealing each of said pockets after having been completely filled with liquid by said immersion, a sealing ring embracing said pockets and having a spillage opening for effecting discharge of a predetermined quantity of liquid from each of said previously filled pockets, means for adjusting said ring to raise or lower said spillage opening and to thus vary the quantity of liquid spilled from the successive pockets, and means for thereafter effecting final delivery of each residual liquid batch from the successive pockets.

3. In a liquid filler, a liquid supply tank, a rotor having an annular series of open ended batch measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, an arcuate flange for sealing the inner end of each of said pockets after having been completely filled with liquid by said immersion, a sealing ring embracing the outer ends of said pockets and having a spillage opening for effecting discharge of a predetermined quantity of liquid from each of said previously filled pockets, and means for thereafter effecting final delivery of each residual liquid batch from the sides of the successive pockets.

4. In a liquid filler, a liquid supply tank, a rotor having an annular series of batch measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, an arcuate flange for sealing each of said pockets after having been completely filled with liquid by said immersion, a sealing ring embracing said pockets and having a spillage opening for effecting discharge of a predetermined quantity of liquid from each of said previously completely filled pockets, means for constantly advancing equally spaced receptacles in series past said tank, and means for effecting delivery of the successive charges from said pockets to said receptacles after said spilling operations have been completed.

5. In a liquid filler, a liquid supply tank, a rotor having an annular series of measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, means for sealing each of said pockets after each immersion and complete filling thereof by liquid from said tank, means for subsequently effecting spillage of an equal amount of liquid from each pocket back into said tank, said last mentioned means being adjustable to

simultaneously vary the amounts spilled from all of the successive pockets, an annular series of funnels revolvable near said rotor, each of said funnels constantly revolving with the same pocket of said series, and means for delivering the finally measured batches of liquid from the successive complementary pockets of said series into the successive funnels.

6. In a liquid filler, a liquid supply tank, a rotor having an annular series of measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, means for sealing each of said pockets after each immersion and complete filling thereof by liquid from said tank, means for subsequently effecting spillage of an equal amount of liquid from each pocket back into said tank, said last mentioned means being adjustable to simultaneously vary the amount spilled from all of the successive pockets, an annular series of funnels revolvable near said rotor, each of said funnels constantly revolving with the same pocket of said series, means for delivering the finally measured batches of liquid from the successive pockets of said series into the successive complementary funnels, and means for transporting a series of equally spaced receptacles beneath the outlet ends of the successive revolving funnels.

7. In a liquid filler, a liquid supply tank, a rotor having an annular series of measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank, means for sealing each of said pockets after each immersion and complete filling thereof by liquid from said tank, means for subsequently effecting spillage of an equal amount of liquid from each pocket back into said tank, said last mentioned means being adjustable to simultaneously vary the amounts spilled from all of the successive pockets, an annular series of funnels revolvable near said rotor, each of said funnels being revolvable with the same complementary pocket of said series, means for delivering the finally measured batches of liquid from the successive pockets of said series into the successive complementary funnels, and means for simultaneously revolving said rotor and said funnels at speeds which will cause the successive complementary pockets to cooperate with the successive funnels.

8. In a liquid filler, a source of liquid supply, a rotor having an annular series of open ended measuring pockets radiating from the axis or rotation of the rotor and successively immersible within the liquid of said source, an arcuate wall for sealing the inner end of each pocket after complete filling thereof by said immersion, a sealing ring for the outer ends of said pockets having an opening for effecting spillage of an equal quantity of liquid from each filled pocket, an annular series of funnels revolvable adjacent to said rotor, each of said funnels constantly cooperating with the same pocket of said series, means for transporting equally spaced receptacles in a straight line beneath the outlet ends of said funnels, and means operable by the successive receptacles for effecting delivery of a measured batch of liquid from each pocket to each receptacle through one of said funnels.

9. In a liquid filler, a source of liquid supply, a rotor having an annular series of open ended measuring pockets radiating from the axis of rotation of the rotor and successively immersible within the liquid of said source, an arcuate wall

for sealing the inner end of each pocket after complete filling thereof by said immersion, a sealing ring for the outer ends of said pockets having an opening for effecting spillage of an equal quantity of liquid from each filled pocket, means for adjustably revolving said ring to vary the quantity of liquid spilled from each of said pockets, an annular series of funnels having equally spaced outlets and being revolvable adjacent to said rotor, means for transporting similarly equally spaced receptacles in a straight line beneath the outlet ends of said funnels, and means operable by the successive receptacles for effecting delivery of a measured batch of liquid from each pocket to each receptacle through one of said funnels.

10. In a liquid filler, a source of liquid supply, a rotor having an annular series of open ended measuring pockets radiating from the axis of rotation of the rotor and successively immersible within the liquid of said source, an arcuate wall for sealing the inner end of each pocket after complete filling thereof by said immersion, a sealing ring for the outer ends of said pockets having an opening for effecting spillage of an equal quantity of liquid from each filled pocket, an annular series of funnels having equally spaced outlets and being revolvable adjacent to said rotor, means for transporting similarly equally spaced receptacles in a straight line beneath the outlet ends of said funnels, a valve for controlling the delivery of measured batches of liquid from said pocket to said funnels, and receptacle actuated means for controlling the opening of said valve.

11. In a liquid filler, a source of liquid supply, a rotor having an annular series of open ended measuring pockets radiating from the axis of rotation of the rotor and successively immersible within the liquid of said source, an arcuate wall for sealing the inner end of each pocket after complete filling thereof by said immersion, a sealing ring for the outer ends of said pockets having an opening for effecting spillage of an equal quantity of liquid from each filled pocket, an annular series of funnels having equally spaced outlets and being revolvable adjacent to said rotor, means for transporting similarly equally spaced receptacles in a straight line beneath the outlet ends of said funnels, a toggle actuated flap valve for controlling the delivery of batches of liquid from said pockets to the successive funnels, and means operable by the successive receptacles for flexing the actuating toggle of said valve to open the same.

12. In a receptacle filler, a straight line receptacle conveyor for transporting a series of uniformly spaced receptacles along a definite path, means for measuring successive batches of material, an annular series of funnels having similarly uniformly spaced outlets and being revolvable in the plane of travel of the receptacles and cooperating with said measuring means to receive the successive batches in the successive funnels, means for effecting bodily adjustment of said funnel series toward and away from said path, and means for effecting bodily adjustment of said funnel series along said path.

13. In a receptacle filler, a straight line receptacle conveyor for transporting a series of uniformly spaced receptacles along a definite path, means for measuring successive batches of material, an annular series of funnels having similarly uniformly spaced outlets and being revolvable in the plane of travel of the receptacles and cooperating with said measuring means to re-

ceive the successive batches in the successive funnels, and means for effecting bodily adjustment of said funnel series toward and away from said path to cause the successive funnels to properly cooperate with receptacles of different capacities.

14. In a receptacle filler, a straight line receptacle conveyor for transporting a series of uniformly spaced receptacles along a definite path, means for measuring successive batches of material, an annular series of funnels having similarly uniformly spaced outlets and being revolvable in the plane of travel of the receptacles and cooperating with said measuring means to receive the successive batches in the successive funnels, and means for effecting bodily adjustment of said funnel series along said path to cause the successive funnel outlets to properly cooperate with the open tops of the successive receptacles being transported by said conveyor.

15. In a receptacle filler, a conveyor for transporting a succession of equally spaced receptacles along a definite straight horizontal path, means for measuring successive batches of material, an annular series of funnels having similarly spaced outlets and being revolvable about an axis so that the successive funnels receive the successive measured batches and the funnel outlets are brought into proximity with said receptacle path, and means for effecting bodily adjustment of said funnel series relative to said conveyor to cause the successive outlets to properly cooperate with the open tops of the successive equally spaced receptacles being transported by said conveyor.

16. In a liquid filler, a liquid supply tank, a rotor having an annular series of radial batch measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank to completely fill each pocket, a stationary arcuate member for sealing the inner end of each advancing pocket after said complete filling thereof, a stationary sealing ring coacting with the outer ends of said pockets and having therein a spillage opening above the level of the liquid in said tank, said ring being adjustable about said axis to effect spillage of any predetermined quantity of liquid from each of said previously filled advancing pockets, and means for thereafter effecting delivery of each remaining liquid batch from a side of the successive pockets.

17. In a liquid filler, a liquid supply tank, a rotor having an annular series of batch measuring pockets revolvable about a horizontal axis and successively immersible within the liquid in said tank to completely fill each pocket, a stationary arcuate member for sealing each advancing pocket after said complete filling thereof and while still immersed within said liquid, a stationary sealing element coacting with said pockets remote from said member and having therein a spillage opening above the level of the liquid in said tank, means for effecting adjustment of said element to cause said opening to return any predetermined quantity of liquid from each of said pre-filled advancing pockets to said tank, and means for thereafter effecting delivery of each remaining liquid batch from the successive pockets.

18. In a liquid filler, a liquid supply tank, a rotor having an annular series of radial batch measuring pockets revolvable about an axis and successively immersible within the liquid in said tank to completely fill each pocket, a stationary member for sealing the inner ends of the advancing pockets after complete filling thereof and

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while immersed within said liquid, a stationary sealing element coacting with the outer ends of said pockets and having therein a spillage opening, said element being adjustable to vary the elevation of said opening and to cause the latter to discharge any predetermined quantity of liquid from each of said pre-filled pockets, and means for thereafter effecting delivery of each residual liquid batch from the successive advancing pockets.

19. In a liquid filler, a liquid supply tank, a rotor having an annular series of batch measuring pockets revolvable about an axis and successively immersible within the liquid in said tank to completely fill each pocket, a stationary member for sealing each completely filled pocket while still immersed within said liquid, a stationary element coacting with said pockets remote from said member and having therein a spillage opening above the level of the liquid in said tank, said member being adjustable to effect discharge of any predetermined quantity of liquid from each of said pre-filled pockets, and means for thereafter effecting delivery of each residual liquid batch from the successive pockets.

20. In a liquid filler, a liquid supply tank, a rotor revolvable about an axis and having an annular series of radial batch measuring pockets successively immersible within the liquid in said

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tank during revolution of the rotor, a stationary member for sealing the inner end of each of the advancing pockets after having been completely filled with liquid by said immersion, a stationary sealing element for the outer ends of the pockets having a spillage opening adjustable to effect discharge of any desired quantity of liquid from each of said pre-filled advancing pockets, and a stationary wall normally enclosing the corresponding sides of all of said pockets and having an opening for effecting final delivery of each remaining liquid batch from the successive pockets.

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