July 3, 1928. 1,675,741

O. I. WARING

FILLING MACHINE

Filed Oct. 17, 1924 3 Sheets-Sheet 1

Fig. 1.

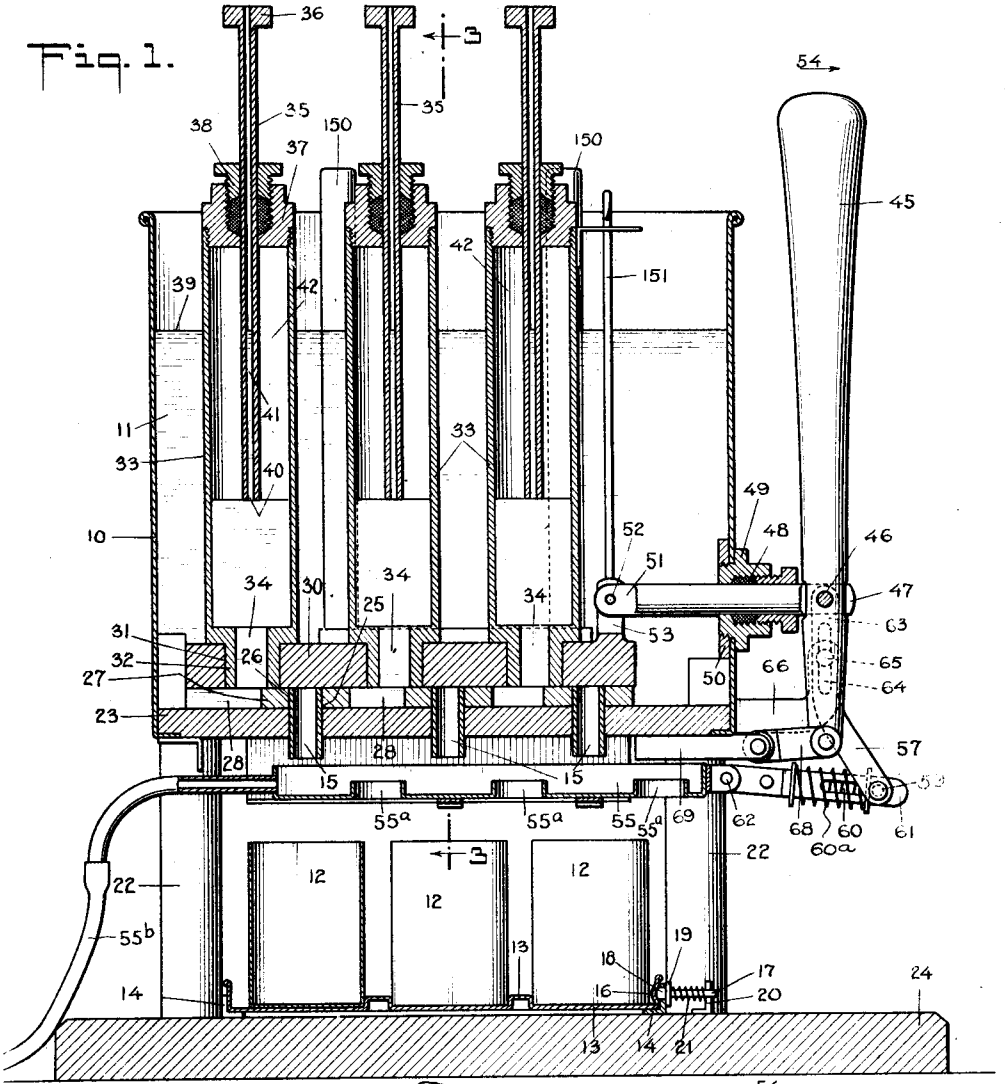
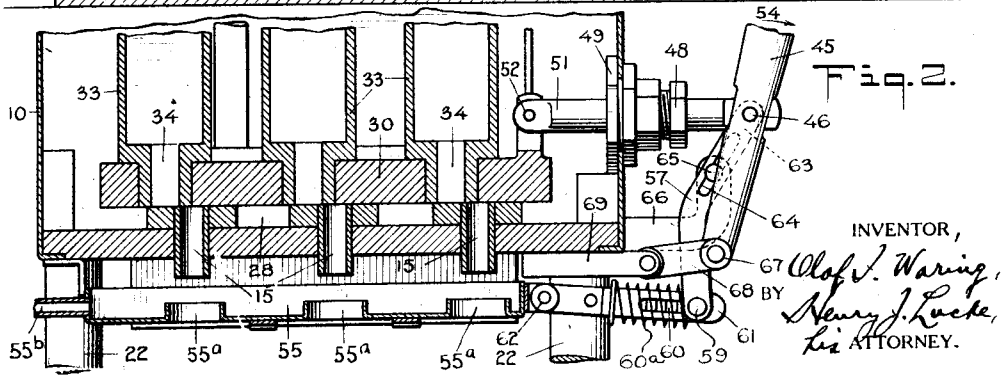


Fig. 2.



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Filed Oct. 17, 1924 3 Sheets-Sheet 2

Fig.3.

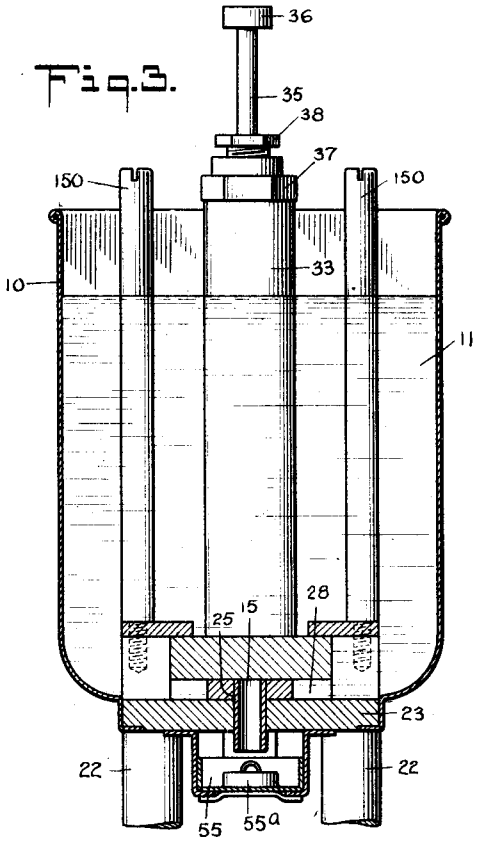


Fig.4.

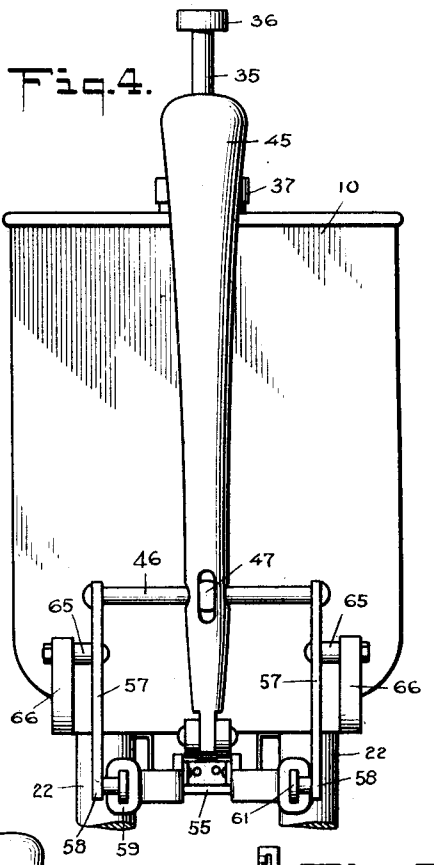


Fig.5.

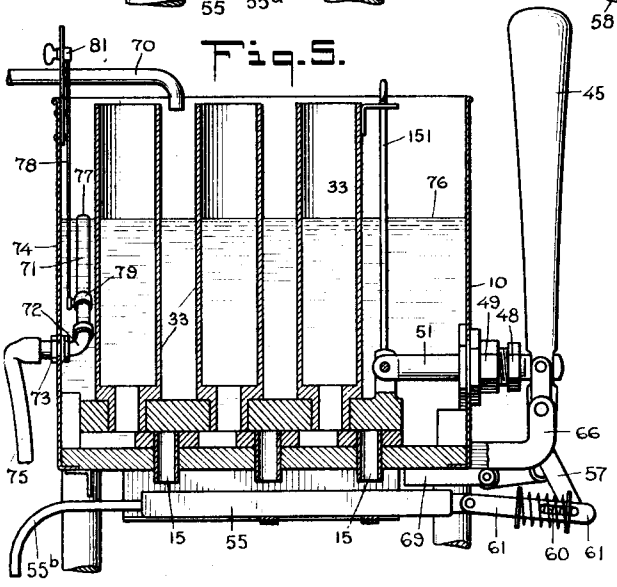
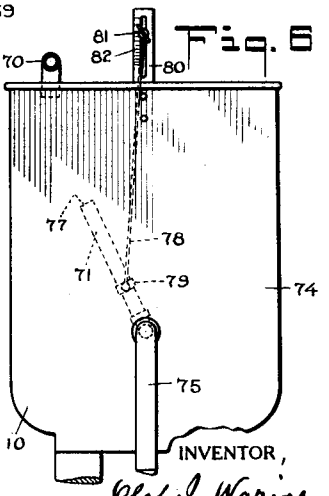


Fig. 6



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July 3, 1928. 1,675,741

O. I. WARING

FILLING MACHINE

Filed Oct. 17, 1924 3 Sheets-Sheet 3

Fig. 7

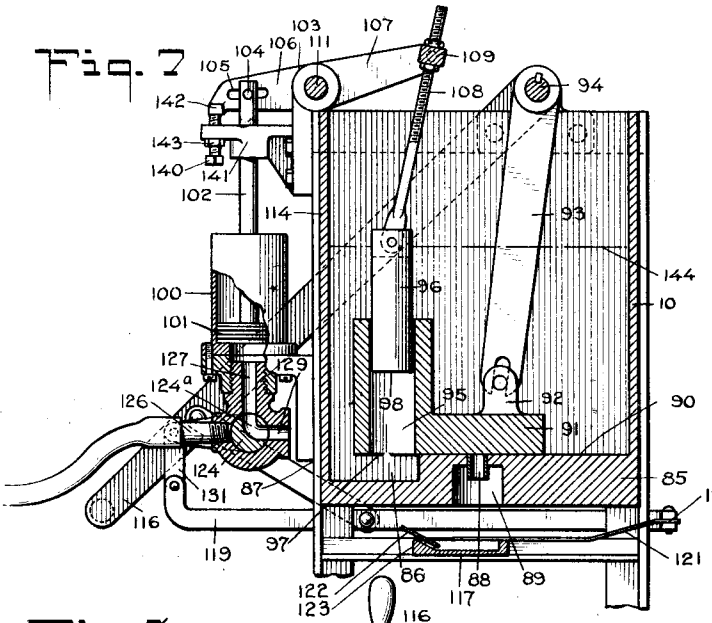


Fig. 8.

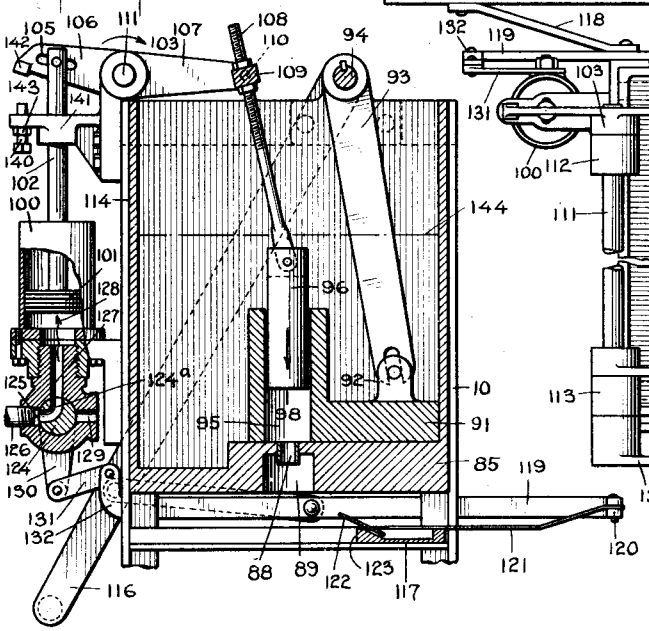
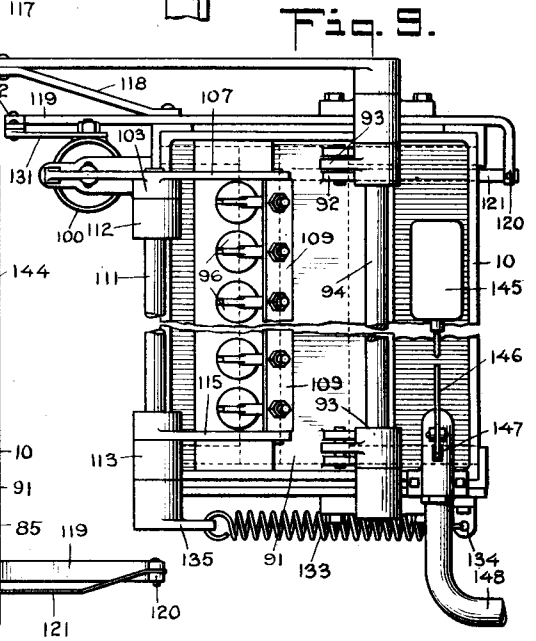


Fig. 9.



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Patented July 3, 1928. 1,675,741

UNITED STATES PATENT OFFICE.

OLAF I. WARING, OF LONG ISLAND CITY, NEW YORK.

FILLING MACHINE.

Application filed October 17, 1924. Serial No. 744,252

This invention relates to multiple filling machines.

Pursuant to the invention, the multiple filling machine comprises a tank or other receptacle provided with a set of discharge openings, a corresponding number of chambers or other separate means for determining the amounts of liquid or other fluid for discharge through the respective discharge openings and means effecting the filling of such determining means at a stage while in communication with the fluid in the receptacle and the discharge of the fluid through the respective discharge openings of the receptacle at a stage when the determining means is not in communication with the fluid in the receptacle.

Pursuant to one preferred form of my invention, the discharge openings are located in the bottom of the receptacle, the determining means in the form of a series of chambers respectively having openings adjacent their bottoms, a set of air vents respectively for such chambers for determining the amounts of liquid or other fluid received through said bottom openings during the filling stage and manually operable means for locating said bottom openings in communication with the interior of the receptacle during the filling stage and for effecting register of said bottom openings with the discharge openings of the receptacle during the discharging stage. Such form of my invention preferably includes a pan for collecting the drippings from the discharge openings and automatically shifted out of operative relation with the discharging openings during the discharging stage and into operative relation with the discharging openings during a non-discharging stage.

Other forms of my invention comprise a receptacle provided with a set of discharging openings, a block bored to provide recesses serving as the determining chambers with or without suitable ejectors for the respective chambers, and manually operative means for moving the block out of register with the discharging openings and into communication with the interior of the receptacle during the filling stage, and into register with the discharging openings respectively and out of communication with the interior of the receptacle during the discharging stage.

By the provision of an opening at the bottom of each determining chamber for the entry of the fluid therethrough during the filling stage and the provision of openings in the bottom of the tank or other receptacle with which the bottom openings of the individual determining chambers communicate during the discharging stage, I am enabled to employ determining chambers of any desired height and thereby attain a multiple filling machine of a wide range of determined individual amounts of fluid discharged from my multiple filling machine.

Further features and objects of the invention will be more fully understood from the following detail description and the accompanying drawings, in which—

Fig. 1 is a vertical sectional elevation of a multiple filling machine provided with my invention, showing the chambers in filling position;

Fig. 2 is a vertical sectional elevation similar to Fig. 1, but showing the chambers in position at a stage approaching the discharging stage;

Fig. 3 is a sectional elevation on line 3—3 of Fig. 1;

Fig. 4 is an end elevation of Fig. 1;

Fig. 5 is a vertical sectional elevation similar to Fig. 1, but showing a modification and on a somewhat reduced scale;

Fig. 6 is an end elevation of Fig. 5, as viewed from the left;

Fig. 7 is central vertical section of a further modification, showing the parts in filling position;

Fig. 8 is a sectional elevation similar to Fig. 7, but showing the parts in discharging position; and

Fig. 9 is a top plan view of Fig. 7.

Referring to the form of my invention shown in Figs. 1 to 4, inclusive, of the drawings, the tank or other receptacle 10 may be of any form and dimension as may be desired, and of a material suitable for the liquid or other fluid desired to be discharged in measured quantity from the receptacle into the desired containers or the like.

In the drawings, I have indicated the containers desired to be filled with the fluid 11 enclosed within the receptacle 10 as a plurality of sets of vessels 12 removably carried on a suitable tray 13, arranged to be slidable along suitable guides, 14, 14, located below the receptacle 10, thus affording the tray 13 to be moved along a determined path under the receptacle 10 to position the

respective sets of vessels 12 under the discharging openings. The successive trays may thus carry the desired number of sets of vessels 12, each set corresponding to the number of discharge openings 15 of the receptacle 10 of the filling machine, and, accordingly, for a three compartment machine there may be provided 3, 6, 9, etc. containers on each tray. Preferably, each tray 13 is provided with a series of notches 16, see Fig. 1, coacting with a positioning bolt 17, the head 18 of which is arranged to enter a depression 16. The head 18 is rounded to afford ready withdrawal of the head 18 upon manual or automatic displacement of the tray 13 along the guides 14, 14. The positioning bolt 17 is shown mounted in the spaced brackets 19, 20, and biased by a coiled, expansive spring 21.

The receptacle 10 is suitably mounted on legs 22, located at the corners of its bottom 23, and a base 24 may be provided to receive the lower ends of the legs 22.

The discharge openings 15 may be formed in any suitable manner. As one example of construction, each discharge opening 15 may comprise a pipe passing through a perforation 25, see Fig. 1, in the base 23, the pipe extending interiorally of the receptacle 10 to be received within the opening 26 of a collar 27. By forming each collar 27 of the same thickness, the levels of the upper openings to the discharge pipes 15 are substantially in alignment. The collars 27 may be integral with one another as by perforating a plate of suitable length and thickness to provide for the openings 26 and other openings 28 disposed between the perforations 26 and the sides of such plate 27 to afford communication between the determining chambers and the interior of the receptacle, as will appear more fully hereinafter.

Upon the collars or perforated plate 27, is disposed the plate 30 provided with perforations 31 for receiving the open ends 32 of the chambers 33. The openings 34 of the open ends 32 are spaced from one another in correspondence to the spacing of the openings of the discharge pipes 15, whereby the openings 34 are brought into register with the discharge pipes 15 when the chambers 33 are moved to discharging position. The chambers 33 as shown in Fig. 1 are in filling position whereat the opening 34 of each chamber is in communication through a clearance 28 with the interior of the receptacle 10, thereby affording free passage of the liquid 11 in the container 10 through the openings 34 and into the interior of the chambers 33.

As one suitable means for determining the quantity of liquid entering each chamber 33, I provide an air vent tube 35 having a knurled head 36 mounted in the removable stopper 37 and preferably through a removable gasket 38. It will be observed, assuming the liquid in the container 10 to be at any given height indicated at 39, see Fig. 1, that the liquid enters the respective compartments 33 when in filling position to a height determined by the height of the bottom opening 40 of any tube 35 within its compartment 33 and the bore 41 of the tube 35 for a height corresponding approximately to the level 39, but does not enter the annular space 42 between the tube 35 and the walls of such compartment 33 substantially above the bottom opening 40 of its tube 35. Accordingly, upon emptying each compartment 33 as described more fully hereinafter, the amount of liquid discharged from any compartment corresponds to the setting of its tube 35 with respect to the position of its bottom opening 40 plus the amount of liquid of relatively small but fixed quantity entering the bore 40 of the tube. By employing tubes 35 of substantially the same internal bore for the respective compartments 33, the amount of liquid discharged by the respective compartments for the same setting of determining tubes is substantially uniform. In general, the setting of the determining tube of any compartment controls the amount of liquid discharged from such compartment.

As indicated above, the several determining compartments may be mounted on a block 30, and in the form of the invention shown in Figs. 1 to 4, inclusive, such block 30 is mounted to be slidable within the tank 10, to effect register of the openings of the several compartments with the discharge outlets of the tank when in discharging position and to effect communication of the openings of the several determining compartments with the interior of the tank when in filling position.

As one means of effecting such relative movements of the mounting block 30, I provide the hand lever 45 pivoted by a suitable pin 46 on the slide rod 47, passing through the gasket 48, positioned in the sealing collar 49 of the opening 50, in one side wall of the tank 10. The opposite end 51 of the arm 47 is suitably and preferably pivotally connected at 52 to the lug 53 of the sliding block 30. Upon oscillating the hand lever 45 in the direction of the arrow 54, see Figs. 1 and 2, the slide block 30, as indicated in Fig. 2, is moved from the position shown in Fig. 1, towards the right, and when the slide block 30 is in its extreme right-hand position, each opening 34 of the respective compartments 33 is brought into register with a discharge opening 15 of the tank 10, to empty the contents of the respective compartments 33 into the corresponding vessels 12.

Preferably, I co-ordinate with the dis-

charge openings 15; a pan 55 for catching the drip from the discharge openings 15 effective after the discharge of the contents of the respective determining compartments 33 into the respective vessels 12. As one means of carrying out such coaction, I mount the pan 55 in sliding relation similar to the sliding of the slide block 30 of the determining compartments 33, and by joint operation of the hand lever 45, but co-ordinated so that the pan 55 will be brought in effective relation with the discharge openings 15 of the tank 10 immediately after the openings 34 of the determining compartments 33 are moved out of register with the discharge openings 15 and while out of register with the discharge openings 15, and to move the pan 55 into effective relation with the discharge openings 15 when the openings 34 of the determining compartments 33 are again brought into register with the discharge openings 15.

As one convenient means of such arrangement, I provide the arm 46, see Fig. 4, connected at its opposite ends to the links 57, respectively carrying at their lower ends 58 the headed pins 59, each entering through a slot 60, see Figs. 1 and 2, in its link 61, connected at 62 pivotally at spaced locations with the pan 55. The pins 59 are respectively cushioned by the springs 60^a, as appears in Figs. 1 and 2; such springs 60^a may be coiled about the respective links 61, 61. For convenience, each arm 57 is bent angularly outwardly at its upper portion 63, see Figs. 1 and 2, and each upper portion 63 is provided with a slot 64 for receiving a pin 65; the pins 65 serve jointly for the links 57. Each pin 65 is carried by an upwardly turned bracket 66, secured to and projecting at one side of the tank 10.

To increase the rate of movement of the pan 55 by the hand lever 45 relative to the rate of movement of the slide block 30 and the compartments 33, the hand lever 45 is fulcrumed at its lower end 67 to the link 68, pivotally supported by the block 69, which may be secured to the end face of the bottom 23 of the tank 10.

The modification shown in Figs. 5 and 6 corresponds generally in respect to the construction of the tank, the determining chambers and their sliding mounting within the tank, and like parts are designated by the same reference numbers.

However, in this modification, the level of the liquid is regulated automatically of uniform contact for each determining chamber 33 and without the use of setting tubes 35, which result is attained by the provision of a filling pipe 70 and a discharge pipe 71. The discharge pipe 71 communicates with the L-nipple 72, passing through the gasket 73 in a suitable opening in a lower portion of the wall 74 of the tank 10, and the nipple 72 discharges into the hose or other suitable piping 75 into a reservoir (not shown) or the like containing the liquid desired to be measured and discharged by my multiple filling tank. The liquid from the reservoir is pumped by any suitable means into the filling pipe 70, thereby maintaining circulation of the liquid and preserving a substantially fixed level 76 of the liquid within the tank determined by the position of the inflow opening 77 of the discharge pipe 71.

If desired, the discharge pipe 71 may be mounted to be adjustable within the tank 10, to thereby regulate the height of the level 76, and as one means for carrying out such purpose, the discharge pipe 71 may be set by means of the link 78 connected at its lower end to the collar 79 fixed to the pipe 71, and by providing a dock plate 80, as at the upper edge of the wall 74 of the tank 10, co-operating with the clamping nut 81 carried at the upper end of the link 78. The lock plate 80 may be graduated by scale markings 82, if desired.

In the modification shown in Figs. 7, 8 and 9, the tank 10 corresponds in construction to the tank 10 shown in Figs. 1 to 4, inclusive; however, the bottom plate 85 is stepped downwardly, as indicated at 86 on its inner face, adjacent one side wall 87 of the tank 10 and the discharge openings 88 are arranged directly within the bottom 85. For the purpose of reducing the amount of drip, for relatively large openings 88, the clearances 89 about the respective discharge opening 88 are provided. If desired, the discharge pipes 88 may be continued through the bottom plate 85 for the purpose of entering the vessels 12 as closely to their bottoms as may be desired, as when filling preparations of heavy pastes or the like which are advantageously deposited in a vessel or tube from the bottom upwardly. Such vessels or tubes 12, or the tray carrying the same, may be moved downwardly at the stage of filling and at the proper speed commensurate with the rate of filling.

Co-acting with the smooth upper face 90 of the bottom plate 85, I arrange the slide block 91 connected by its lug 92 to one or more links 93 pinned or otherwise fixed to the shaft 94, oscillated, as described more fully hereinafter, to effect communication and non-communication of the determining chambers respectively with the discharge openings 88 of the tank 10 and with the interior of the tank.

To attain rigidity and also convenience of manufacture, assembly and cleaning and inspection, the determining compartments 95 may be formed by boring a block, which may be integral with the slide block 91 or otherwise fixedly secured thereto. Coacting with the aforesaid, I arrange a set of ejectors 96 for expediting the discharge of the

liquids from the respective determining chambers 95, which coaction is highly advantageous with the use of heavy or highly viscous or paste-like preparations.

Suitable means are provided for moving such ejectors 96 to their upper positions within the respective determining compartments 95 when the determining compartments are in filling position, at which time the openings 97 of the respective filling compartments 95 are in communication with the interior of the tank 10, to thereby determine the quantity to be subsequently discharged from each compartment.

I find it advantageous that such ejectors 96 be not tight fitting with the interior of the bore of the determining compartments 95, thereby eliminating friction between the contacting surfaces and reducing the wear otherwise resulting from a tight fit.

This type of my invention may be operated manually, but under commercial conditions it is advantageous to employ compressed air or the like for effecting movement of the determining compartments toward and to discharging position while operating the ejectors to positively expel the contents of the preparations from the respective determining compartments when in fully discharging position and for returning the compartments from discharging position to a position in communication with the interior of the tank while moving the ejectors 96 upwardly within the respective determining compartments 45 to permit the preparation of the tank to fill the compartments 95 to the level of the bottoms 98 of the ejectors 96. As one such arrangement, I provide the compressed air chamber 100, having a piston 101, connected to the pitman 102 to the lever 103 as by means of the pin 104 carried by the pitman 102 and received within the slot 105 in the arm 106 of the lever 103. The opposite arm 107 of the lever 103 is connected to the links 108 of the ejectors 96, as by the provision of the bar 109, pivoted at its end 110 to the arm 107. The lever 103 is keyed or otherwise fixed to one end of the shaft 11, carried in the opposite bearings 112, 113, mounted on suitable brackets adjacent the upper end of the wall 114 of the tank 10. The lever 115 is keyed to the shaft 103 and the lever 115, is connected to the opposite end of the bar 109.

The shaft 94 for operating the slide block 91 may be operated manually, as by the provision of the hand lever 116 keyed to the shaft 94. It will be noted that the lever arm 93 is preferably duplicated adjacent the opposite ends of the tank 10, for connection with the slide block 91, namely through duplicate lugs 92, whereby upon downward movement of the manual lever 116, the sliding of the block 91 is effected by operation of the spaced links 93 at spaced pivotal connections with the block 91.

The tray 117 is preferably operated jointly with the slide plate 91 by the manual lever 116, as by link connection therewith, comprising the arm 118 secured to the slide rod 119 pivoted at its one end 120 to the arm 121 connected to the pan 117, the linkage being arranged to move the pan 117 into position below the discharge openings 88 when the measuring compartments 95 are in filling and non-discharging position, and to move the pan 117 out of operative relation with the discharge openings 88, namely to the right as viewed in Fig. 7 and as shown in Fig. 8, upon effecting the beginning of registration of the openings of the measuring compartments 95 with the respective discharge openings 88, and finally upon discontinuance of discharge of the measuring compartments 95 to move the pan 117 into operative relation with the discharge openings 88, whereby to catch any drip substantially immediately upon cessation of the discharge. Preferably, the pan 117 is formed to have a catch plate 122 projecting materially beyond the forward side 123 of the pan 117 and extending slantingly above and spaced from the upper edge of the side 123, whereby upon the catch plate 122 encountering any drops dripping from the discharge openings 88, each drop is segragated into two or more drops, some of which may run down the upper face of the catch plate 122 and others on the under face of the catch plate 122 and by both paths collected within the pan 117.

It is advantageous to control the compressed air actuator 100 for the elevated and depressed actuation of the ejectors 96, simultaneously under control of the manual lever 116, and for such purpose, the three-way valve 124 is provided, having the port 125 connected by the piping 126 to any suitable supply of compressed air, the port 127 leading to the interior of the casing 100, as indicated by the arrow 128, and the third port 129 open to the atmosphere.

The arm 130 of the valve 124 is pivotally connected by the link 131 to the end 132 of the slide arm 119. In the position of these parts as indicated in Fig. 7, the curved passage 124^a of the movable valve 124 affords communication from the port 127 through the port 129 and thus to the atmosphere, at which stage the manual lever 116 is at its extreme left-hand position, the measuring compartments 95 in their filling positions, the ejectors 96 in fully elevated position and the compressor piston 101 in its lowermost position; at this stage the pan 117 is below the discharge openings 88.

The retractile spring 133 is provided for returning the shaft 111 to its neutral position, and thereby also for forcing the com-

pressor piston 101 downwardly in its casing 100 and elevating the ejectors 96 to their maximum positions. The retractile spring 133 is shown connected at its one end to the lug 134 and at its opposite end to the crank block 135, keyed to the shaft 111. It will be noted that at this stage the valve 124 has its valve passage 124ª in the position for connecting the port 127 with the atmosphere port 192, thereby facilitating the return of the compressor piston 101.

Upon operation of the manual lever 116, the slide block 91 is moved toward the right from its position shown in Fig. 7, until the measuring chambers 95 attain their positions as indicated in Fig. 8, at which stage the link 131 will have rotated counterclockwise the arm 130 of the movable valve 124, namely, to its position shown in Fig. 8, and to permit the port 125 of the compressed air piping 126 to communicate with the port 127 leading to the compressor casing 100, whereby the compressed air flowing through the valve passage 124ª raises the compressor piston 101, its pitman 102 and the lever 103 and thereby depressing the ejectors 96 to cause the discharge of the preparation from the measuring chambers 95 through the respective discharge openings 88.

It will be noted that the pan 55, shown in Figs. 1 and 2, is formed with spaced openings 55ª corresponding to the spacings of the discharge openings 15, to permit discharge through the pan openings 55ª when discharging the proportion or other content from the measuring chambers 33 to the respective vessels 12. The liquid collected in the pan 55 drains through the pipe 55ᵇ.

As a simplified form of securing simultaneous adjustment of the ejectors 96 for regulated amounts of filling of the measuring compartments 95, I provide the set nut 140 suitably secured to or extending through a suitable opening in the bracket 141 and cooperating with the abutment piece 142 carried by the arm 106 of the lever 103. The set nut 140 is locked by a clamping nut 143 in the desired set position.

As is noted in Figs. 7 and 8, the preparation or other liquid may be of any level within the tank 10, that is, above the upper ends of the measuring chambers 95, as for example at the level indicated at 144, which may be had by manual filling; however, it is advantageous to maintain any desired level 144 by automatic control, namely, by a float 145 connected by its arm 146 to the stop valve 147 of the piping 148, leading from any suitable pressure supply of the preparation or other liquid.

It will be understood that duplicate rows of determining chambers such as the chambers 33 in the form of my invention shown in Figs. 1 to 6, inclusive, or like the chambers 95, in the form shown in Figs. 7, 8 and 9, may be arranged within the tank, and unitarily mounted on common slide means, and corresponding duplicate sets of discharge openings in the tank, whereby duplication of the operations of the respective parts of my several forms of filling machines may be had. It will also be appreciated that in lieu of borings in an integral block, as in the formation of the determining chambers 95 in the modification shown in Figs. 7, 8 and 9, a set of cylinders of corresponding construction and arrangement may be mounted upon the slide block 91.

My present invention is an improvement of my invention set forth in my U. S. Patent No. 1,294,579, dated February 18th, 1919.

The present forms of my invention are applicable for use on a large scale for filling B-batteries for radio sets or dry cells for general electrical application and the like, and the design illustrated in the drawings are applicable for such particular purposes, as well as for general measuring and filling purposes.

Whereas I have described my invention by reference to specific forms thereof it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:—

1. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated quantities of the fluid, means for determining the amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual means to effect at one stage the simultaneous communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect register of said openings of said individual means respectively with said predetermined discharge openings of the receptacle to afford discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

2. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated quantities of the fluid, means for determining the amount of fluid flowing into said individual receiving means and for ejecting

the segregated fluid in said individual receiving means when in discharging position, each of said individual receiving means having an opening for the passage of the fluid, means for reciprocating said individual means to effect at one stage communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect register of said openings of said individual receiving means respectively with said predetermined discharge openings of the receptacle to afford discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

3. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated quantities of the fluid, plungers for determining a uniform amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual means to effect at one stage communication of their respective said opening with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect simultaneous register of said openings of said individual receiving means respectively with said predetermined discharge openings of the receptacle to afford the simultaneous discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

4. The combination of a receptacle arranged to contain a fluid, and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated quantities of the fluid, variable means for determining the amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual means to effect at one stage the simultaneous communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect register of said openings of said individual receiving means respectively with said predetermined discharge openings of the receptacle to afford the simultaneous discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

5. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated quantities of the fluid, variable means for determining the amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, each of said individual receiving means having an opening for the passage of the fluid, means for reciprocating said individual means to effect at one stage communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect register of said openings of said individual receiving means respectively with said predetermined discharge openings of the receptacle to afford discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

6. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated uniform quantities of the fluid, common means for controlling the amount of fluid segregated in said individual receiving means, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual receiving means to effect at one stage simultaneous communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid simultaneously into said individual receiving means and at another stage to effect simultaneous register of said openings of said individual receiving means respectively with said predetermined discharge openings of the receptacle to afford the simultaneous discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

7. The combination of a receptacle ar-

ranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated uniform quantities of the fluid, variable common means for controlling the amount of fluid segregated in said individual receiving means, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual receiving means to effect at one stage simultaneous communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid simultaneously into said individual receiving means and at another stage to effect simultaneous register of said openings of said individual receiving means respectively with said predetermined discharge openings of the receptacle to afford the simultaneous discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

8. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings located at predetermined spacing, a plurality of individual means for receiving segregated quantities of the fluid, variable common means for controlling a uniform amount of fluid segregated in said individual receiving means, each of said individual receiving means having an opening for the passage of the fluid, receiving means for moving said individual receiving means to effect at one stage simultaneous communication of their respective said openings with the interior of the receptacle to afford the flow of the fluid simultaneously into said individual receiving means and at another stage to effect simultaneous register of said openings of said individual receiving means respectively with the said predetermined discharge openings of the receptacle to afford the simultaneous discharge therethrough of said individual receiving means, and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

9. The combination of a tank provided at a certain location with a plurality of openings at predetermined spacing, a set of individual compartments disposed within said tank, said individual compartments having openings respectively disposed at said predetermined spacing from one another, means disposed within said tank for determining the amount of fluid received within said individual compartments respectively, means for movably supporting said individual compartments within said tank, said supporting means being provided with clearances for affording the communication therethrough between said openings of said individual compartments with the interior of said tank and means for moving said individual compartments jointly within said tank to move said openings of said individual compartments respectively into communication with said openings of said tank, said supporting means being provided with openings communicating jointly with said openings of said individual compartments and said openings of said tank respectively.

10. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings, a plurality of individual means for receiving segregated quantities of the fluid, plungers for determining the amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual receiving means to effect at one stage communication of said openings respectively with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect the simultaneous register of said openings respectively with said discharge openings of the receptacle to afford discharge therethrough of said individual receiving means, and common means for operating said plungers and said individual receiving means moving means.

11. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings, a plurality of individual means for receiving segregated quantities of the fluid, plungers for determining the amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, common means for adjusting said plungers, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual receiving means to effect at one stage communication of said openings respectively with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect the simultaneous register of said openings respectively with said discharge openings of the receptacle to afford discharge therethrough of said individual receiving means, common means for operating said plungers and said individual receiving means moving means, and means provided with clearances for affording com-

munication therethrough between said openings of said individual means with the interior of said receptacle.

12. The combination of a receptacle arranged to contain a fluid and provided at a certain location with discharge openings, a plurality of individual means for receiving segregated quantities of the fluid, plungers for determining the amount of fluid flowing into said individual receiving means and for ejecting the segregated fluid in said individual receiving means when in discharging position, variable common means for adjusting said plungers, each of said individual receiving means having an opening for the passage of the fluid, means for moving said individual receiving means to effect at one stage communication of said openings respectively with the interior of the receptacle to afford the flow of the fluid into said individual receiving means and at another stage to effect the simultaneous register of said openings respectively with said discharge openings of the receptacle to afford discharge therethrough of said individual receiving means, common means for operating said plungers and said individual receiving means moving means and means provided with clearances for affording communication therethrough between said openings of said individual means with the interior of said receptacle.

In testimony whereof I have signed this specification this 27th day of September, 1924.

OLAF I. WARING.