Nov. 4, 1924. 1,514,359

C. F. YORK

FILLING AND MEASURING MACHINE

Filed Oct. 28, 1922 4 Sheets-Sheet 1

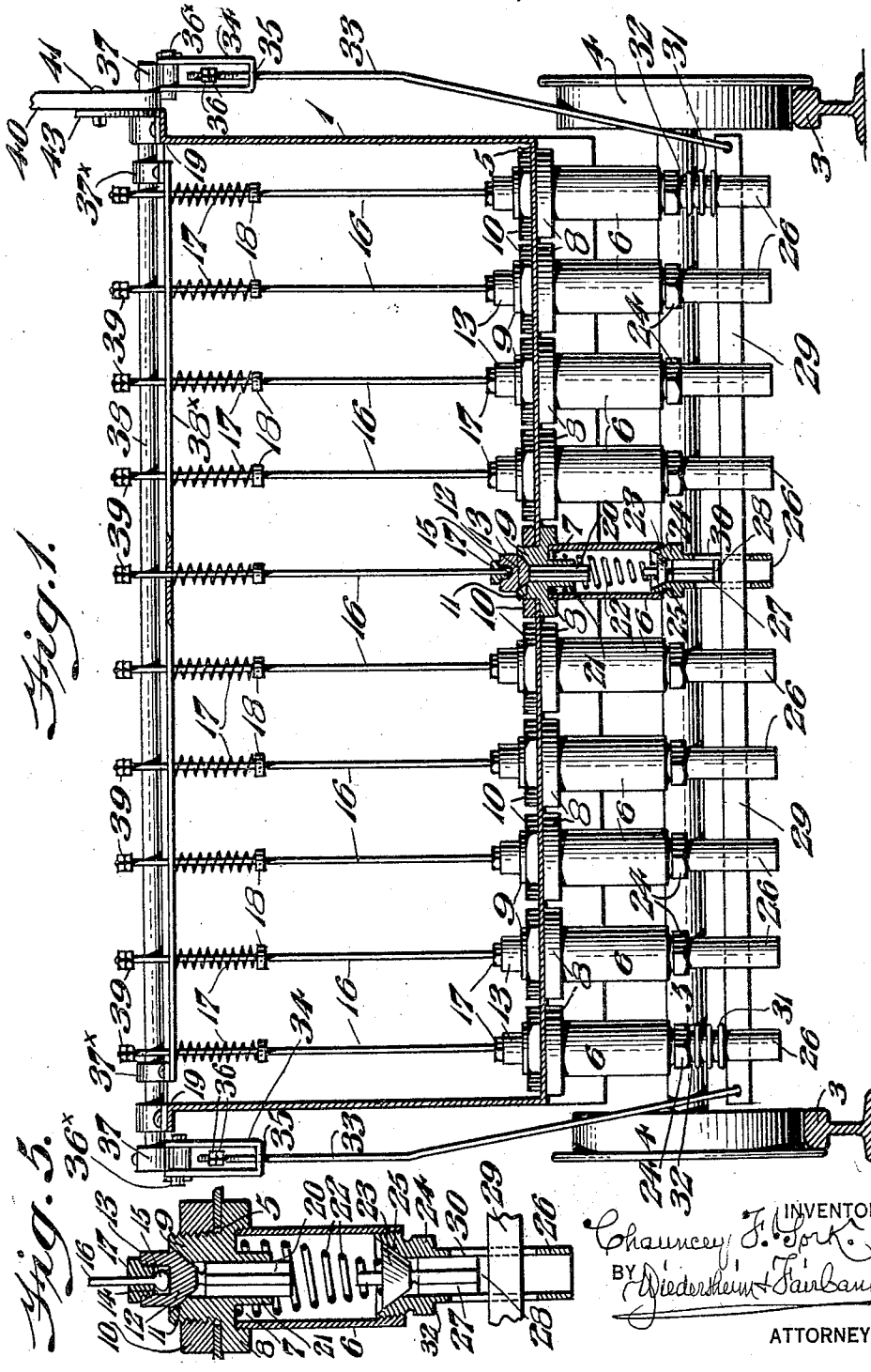


Fig. 1.

Fig. 2.

INVENTOR:
Chauncey F. York
BY Wiedersheim & Fairbank
ATTORNEYS.

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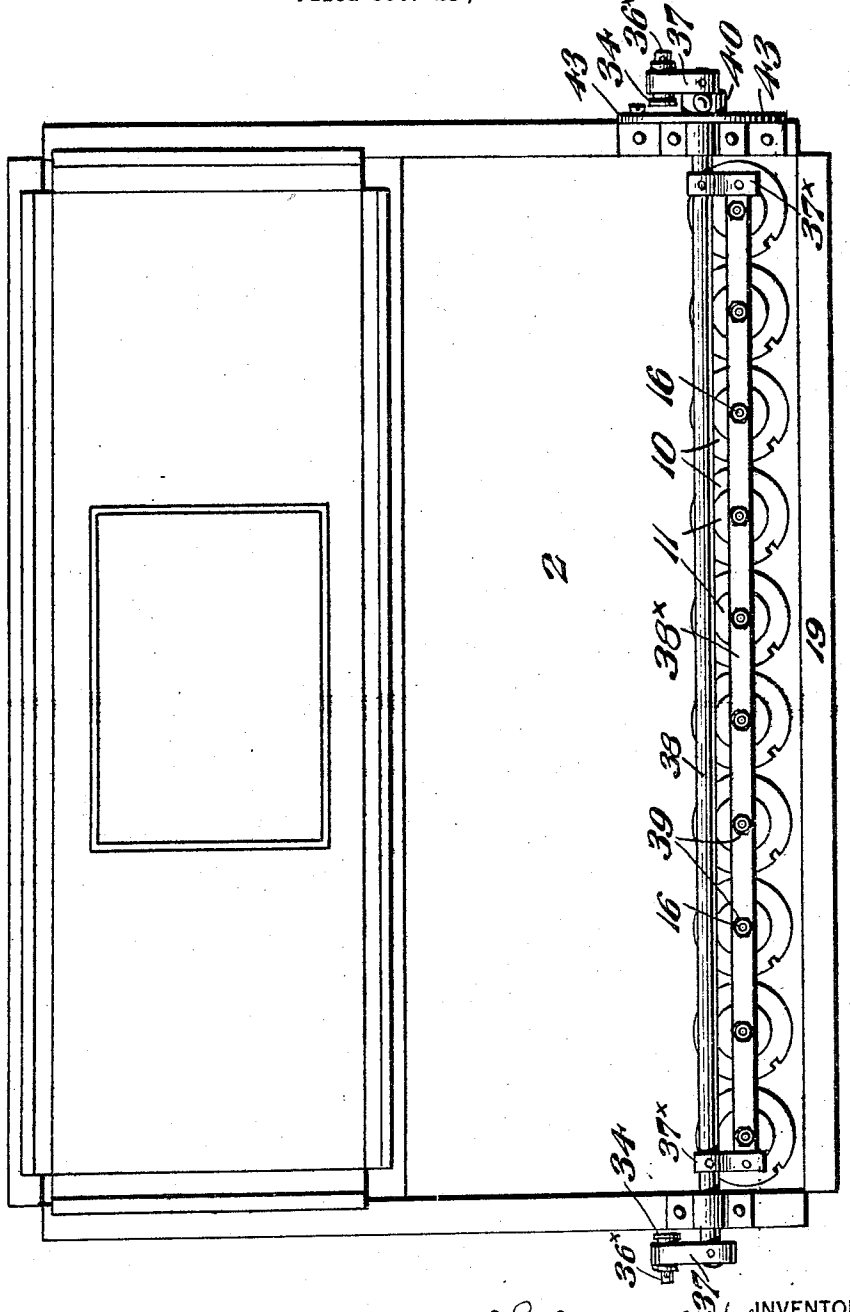


Fig. 2.

INVENTOR:
Chauncey F. York.
BY Wiedersheim & Fairbank
ATTORNEYS.

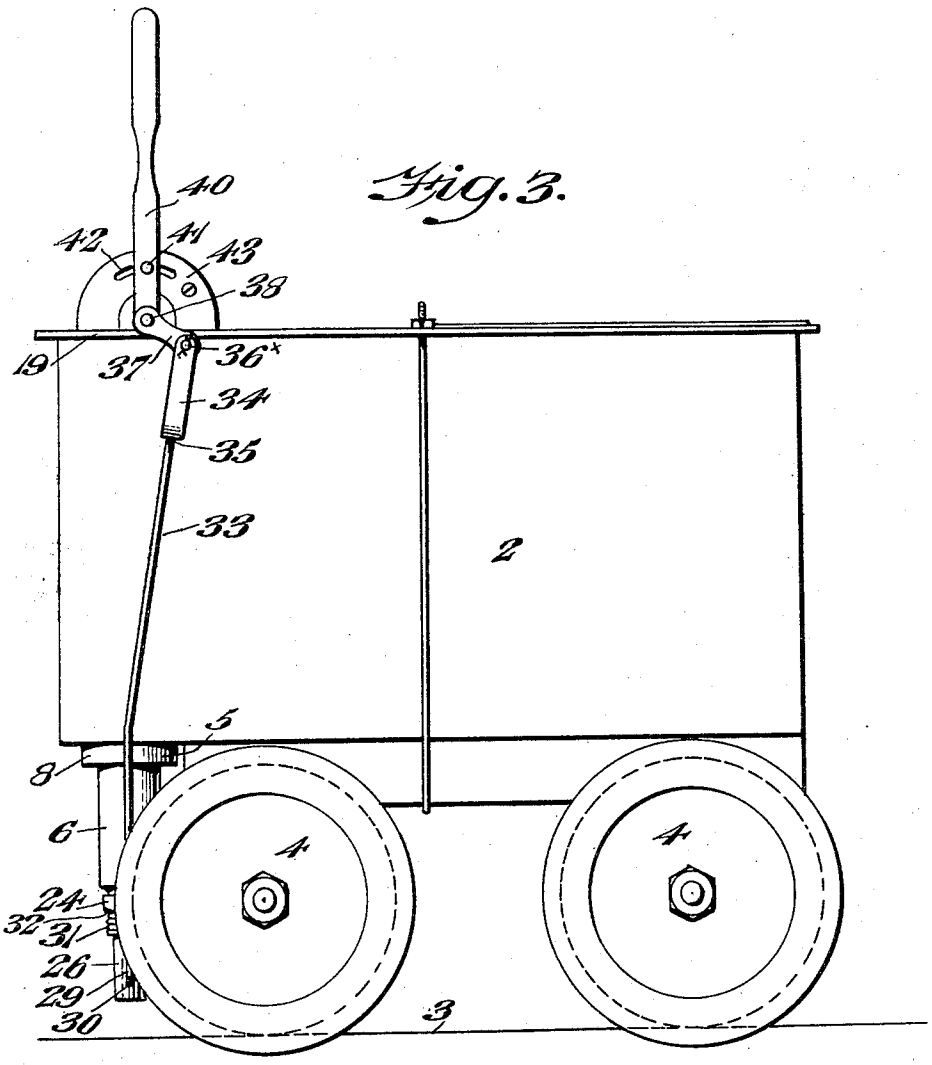
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C. F. YORK

FILLING AND MEASURING MACHINE

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Fig. 3.



INVENTOR:
Chauncey F. York.
BY Wiederhein & Fairbank
ATTORNEYS.

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C. F. YORK

FILLING AND MEASURING MACHINE

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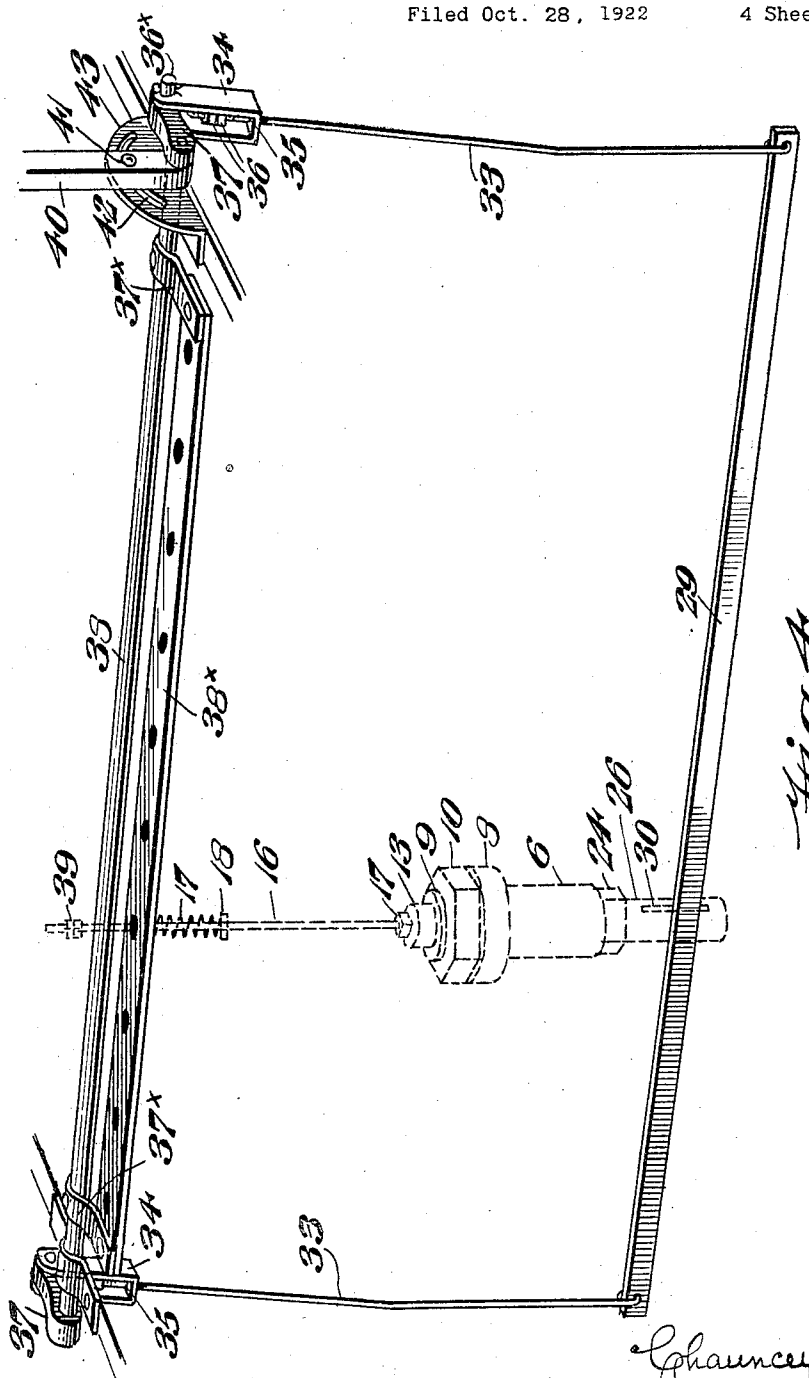


Fig. 4.

INVENTOR:
Chauncey F. York
BY Diederich, Heim & Fairbank
ATTORNEYS

Patented Nov. 4, 1924. 1,514,359

UNITED STATES PATENT OFFICE.

CHAUNCEY F. YORK, OF DETROIT, MICHIGAN.

FILLING AND MEASURING MACHINE.

Application filed October 28, 1922. Serial No. 597,655.

To all whom it may concern:

Be it known that I, CHAUNCEY F. YORK, a citizen of the United States, residing in the city of Detroit, county of Wayne, State of Michigan, have invented a new and useful Filling and Measuring Machine, of which the following is a specification.

My invention consists of a novel construction of a filling and measuring machine for filling boxes, bottles and all wide mouthed containers, provision being likewise made for measuring the liquid at the same time that said boxes, bottles or containers are filled, and provision being further made for controlling or varying the amounts to be measured by adjusting longitudinally, the bottom fittings of the measuring tubes, whose upper portions serve as valve seats for the lower valves, which are held to their seats and unseated in a novel manner.

It further consists in a novel construction of a container, provided with tubes or outlets at its bottom, the upper and lower portions of said outlets or tubes being provided with manually operated valves, which are arranged in horizontal alignment and are normally held against their seats by suitable tension devices, all of said upper row of valves being opened and closed simultaneously, and all said lower row of valves being also opened or closed simultaneously from a common valve actuating means.

My invention further consists of a novel construction of a container, having a plurality of outlets at its bottom, the upper and lower portions of said outlets being provided with spring actuated downwardly seating valves, a lower bar for simultaneously actuating the lower valves, and novel means for enabling said upper valves to be actuated in unison with a common valve operating means, one set of said valves serving as measuring valves and the other set serving as discharge valves.

It further consists of a novel construction of a conduit or tubular outlet member for the liquid to be dispensed and measured, the upper portion of said conduit being provided with a head forming a valve seat and the lower portion of said conduit being provided with a fitting, whose upper portion forms a valve seat, upper and lower valves on said seats and tension devices for holding said valves to their seats, and said lower fitting being adapted to be screwed into or out of the bottom of the tubular outlet for varying or controlling the quantity of the liquids to be measured.

It further consists of a novel arrangement and collocation of upper and lower valves and a single valve actuating lever, whereby either the row of upper valves or the row of lower valves may be actuated simultaneously or in unison.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings a form thereof which is at present preferred by me, since it will give in practice satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a front elevation of a filling and measuring machine for filling boxes, bottles or containers with liquids and simultaneously measuring the liquids, embodying my invention, a portion thereof being shown in section.

Figure 2 represents a plan view of Figure 1.

Figure 3 represents an end elevation of Figure 1.

Figure 4 represents a perspective view of the valve operating mechanism. Figure 5 represents on an enlarged scale a section of the measuring tube valves and their adjuncts.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings,

1 designates my novel measuring and filling machine, which comprises a large container 2, which is movable on a track or rails 3, on which the wheels 4 run. The measuring devices are secured to or depend from the bottom 5 of the container, and comprise the outlet conduits, tubes or tubular members 6, whose upper ends are threaded or secured in any suitable manner in the seat 7 of the head 8, which has the upwardly exteriorly threaded extension 9, which projects through the bottom wall 5

and is secured in position by the nut 10. The head 8 has at its upper portion the valve seat 11, upon which is supported the upper downwardly seating valve 12, which has the head 13, in which is formed the seat 14, for the lower enlarged end 15 of the valve rod 16, said valve rod end being secured in position by the nut or plug 17. The valve 12 is normally pressed downwardly upon its seat by the tension of the spring 17 on the collar 18, which is fixed to the rod 16, the upper end of said spring abutting against the bar 38^{x} above the container 2. The bottom of the valve 12 is provided with the depending guide wings 20, which are guided in the tubular extension 21, which is engaged by the upper end of the spring 22, whose lower end contacts with and exerts pressure on the lower downwardly seating valve 23.

24 designates a fitting, which is screwed into the bottom of the tube 6 and which varies or controls the quantity of the liquid to be measured by screwing it into or out of the tube 6. The top of the fitting 24 is beveled to form the valve seat 25 for the lower valve 23, said fitting having the depending tubular extension 26, in which the downwardly extending wings 27 of the lower valve 23 are guided, said wings terminating in the bottom head 28, which rests on the top of the horizontally positioned lower valve actuating bar 29.

As will be understood from Figure 1, I have shown ten of the measuring devices or tubes 6 and their adjuncts employed, having the lower valves 23 and as will be understood from Figure 2, I have shown ten of the upper valves 12, which are in vertical alignment with said lower valves, which number can be increased or diminished according to requirements. In each of the extensions 26 there is located in horizontal alignment the slots 30 in which the lower bar 29 is located and guided, said bar being retained in its lowest position by the tension of the springs 31, seen at the opposite ends of Figure 1, which surround the outer tubular extensions 26 and have their lower ends abutting on the top of the bar 29, while their upper ends abut against the shoulders 32 of the fitting 24, whereby it will be seen that said bar is held horizontally in its lowest position by said springs 31, and that any upward movement of said bar will simultaneously elevate or unseat all of said lower valves in unison.

33 designates links or lifting rods, located exterior to the ends of the container 2, whose lower ends are attached to the ends of the bar 29, the upper ends of said links passing through the bottom walls 35 of the yokes 34 and having the nuts 36 on said upper ends. The yokes 34 are pivotally connected by means of the pins 36^{x} with the rock arms 37, which are mounted on a rock shaft 38, which is mounted in suitable bearings above the top 19 of the container 2.

The rock shaft 38 is mounted to one side of the center line of the valve rods 16, as will be understood from Figure 2 and has attached to it the arms 37^{x}, whose outer ends are attached to the bar or rod 38^{x}, which is in vertical alignment with the row of upper valve rods 16, whose upper ends pass through said rod 38^{x}, and are provided with the nuts 39.

It will be seen that I employ on the upper ends of the lifting rods 33 and the upper ends of the upper valve rods 16 a plurality of the nuts as 36 and 39 respectively, which can be adjusted according to requirements, one of said nuts in each set acting as a lock nut, when the desired adjustment of the contiguous nut has been attained.

40 designates a lever fast to the rock shaft 38 and provided with a laterally extending pin 41, which projects through the curved slot 42 in the upright stationary plate 43, it being apparent that the extent of movement of the lever 40 is limited in each extreme direction by the contact of the pin 41 with the terminal wall at each end of the curved slot 42.

It will be apparent from the foregoing that I have provided at the bottom of the container 2 a plurality of tubular conduits composed of the members 6 and 26, which serve as measuring and discharge conduits. In the upper portion of each of the conduit 6, is located the upper valve 12 and its seat while in the upper portion 24 of the fitting or conduit 26 is located the lower valve 23, the upper valves 12 all being provided with valve rods 16, whose upper ends pass through the upper bar 38^{x}.

It will be apparent that by the provision of the springs 17, said upper valves will normally be seated, as seen in Figure 1, but upon the actuation of the lever 40 in the required direction through the medium of the connections 37^{x} common to the shaft 38 and the bar 38^{x}, when said lever 40 is actuated in the required direction, the rod 38^{x} will be lifted, thereby simultaneously lifting all of the valves 12, each of said valves being seated by its spring 17.

The construction and manner of actuating both of the upper and lower valves in all of the conduits 6 will be apparent from Figure 1 and the foregoing description will suffice for all.

In like manner when the lever 40 is moved in the required direction, by reason of the connections 37 and 34 and the lifting rods 33, an upward pull will be imparted to said rods, whereupon the lower bar 29 will be raised and by its contact with the heads 28 will raise or unseat all the lower valves 23 simultaneously and in unison, said valves

being seated by the tension of the springs 22. When the lever 40 stands in its vertical or upright position seen in Figure 3, both the upper valves 12 and the lower valves 23 are closed or seated and remain closed until the lever is moved to the right or to the left some twenty or thirty degrees.

When the lever is moved to the left beyond about the twenty or thirty degree limit, it will be apparent that one set of valves is open and when it is moved in the opposite direction beyond about the twenty or thirty degree limit, it will be apparent that the other set of valves is open.

When the upper row of valves 12 are open, the lower row of valves 23 are closed. When the upper row of valves 12 is open, the measuring chambers contained within the tubes 6 are filled with the liquid. When the upper valves 12 are closed and the lower valves 23 open, the liquid flows from the measuring tubes, thence into the boxes, bottles or other containers, so that it will be apparent that by the alternate action of the lever 40, rows of boxes, containers or bottles can be quickly and expeditiously filled and the whole machine comprising the container 2 can be moved over other rows of boxes, containers or bottles by moving it along its tracks to the proper distance or desired extent.

It will be apparent that all the lower valves or all of the upper valves will be actuated at one time alternately and simultaneously and in unison by the proper actuation of the lever 40. By screwing the fitting 24 into or out of the measuring tube 6 to a greater or less extent, it will be apparent that the capacity within said tube 6 will be increased or diminished and thus the exact amount of liquid to be measured, dispensed or discharged is controlled by the simple operation of threading the fitting or bottom 24 into or out of the bottom of its measuring tube or conduits 6.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the character stated, a container a row of tubes and upper and lower valves therefor, springs for said valves, a rock shaft mounted on said container, upper valve actuating means connected to said rock shaft, tubular guide extensions for the lower portions of said lower valves, slots in said extensions, a horizontal bar in said slots and adapted to contact with the bottoms of said lower valves, springs bearing on the outer ends of said bar for holding the latter normally in its lowest position and connections from said rock shaft to said bar for raising the latter, when said rock shaft is actuated.

2. In a device of the character stated, a container, a row of tubes and upper and lower valves therefor, springs for said valves, a rock shaft mounted on said container, upper valve actuating means connected to said rock shaft, tubular guide extensions for the lower portions of said lower valves, slots in said extensions, a horizontal bar in said slots and adapted to contact with the bottoms of said lower valves, springs bearing on the outer ends of said bar for holding the latter normally in its lowest position and connections from said rock shaft to said bar for raising the latter, when said rock shaft is actuated, in combination with a lever attached to said rock shaft, a pin on said lever and a plate in proximity to said lever and having a curved slot therein, whose walls are engaged by said pin, the terminals of said slot acting as stops to limit the extent of movement of said lever and pin.

3. In a machine of the class described, a container having a tube depending from the bottom thereof, a fitting comprising a valve seat for a lower valve threaded into the bottom of said tube, a valve seat for an upper valve on the upper end of said tube, downwardly seating upper and lower valves for said valve seats, springs for holding said valves to their seats, means for unseating said upper valve, means for unseating said lower valve, a single valve operating lever and connections from said lever to each of said upper and lower valve operating means.

4. In a machine of the class described, a container having a row of aligning tubes depending from the bottom thereof, fittings comprising lower valve seats for the lower ends of each of said tubes, valve seats for the upper valves formed on the upper ends of said tubes, downwardly seating upper and lower valves for said seats, springs for holding said valves normally to their seats, valve rods extending upwardly from said upper valves, an upper rod common to said upper valve rods, a lower bar common to said lower valves, an operating lever, and connections therefrom to said upper rod and lower bar for effecting the simultaneous actuation of said upper or lower valves.

5. In a machine of the class described, a container, a row of aligning tubes depending from the bottom thereof and forming measuring chambers, upper and lower valve seats formed upon said tubes, upper and lower valves for said seats, springs for normally holding said valves to their seats, valve rods extending upwardly from said upper valves, an upper horizontal rod through which the upper ends of said valve rods pass, nuts on the upper ends of said valve rods, depending tubular extensions for said tubes, slots in said extensions, a horizontal bar mounted in said slots, springs bearing on the outer ends of said bar to

hold the latter normally in downward position, a rock shaft mounted on said container, connections from said rock shaft to said bar, and connections from said rock shaft to said upper horizontal rod for actuating said upper and lower valves.

6. In a machine of the class described, a container, a row of aligning tubes depending from the bottom thereof and forming measuring chambers, upper and lower valve seats formed upon said tubes, upper and lower valves for said seats, springs for normally holding said valves to their seats, valve rods extending upwardly from said upper valves, an upper horizontal rod through which the upper ends of said valve rods pass, nuts on the upper ends of said valve rods, depending tubular extensions for said tubes, slots in said extensions, a horizontal bar mounted in said slots, springs bearing on the outer ends of said bar to hold the latter normally in downward position, a rock shaft mounted on said container, connections from said rock shaft to said bar and connections from said rock shaft to said upper horizontal rod for actuating said upper and lower valves, in combination with an operating lever mounted on said rock shaft, and stops for limiting the extent of movement of said lever and rock shaft in each of its extreme positions.

CHAUNCEY F. YORK.

Witnesses:
DELBERT JAMES,
MAME A. SLAGER.