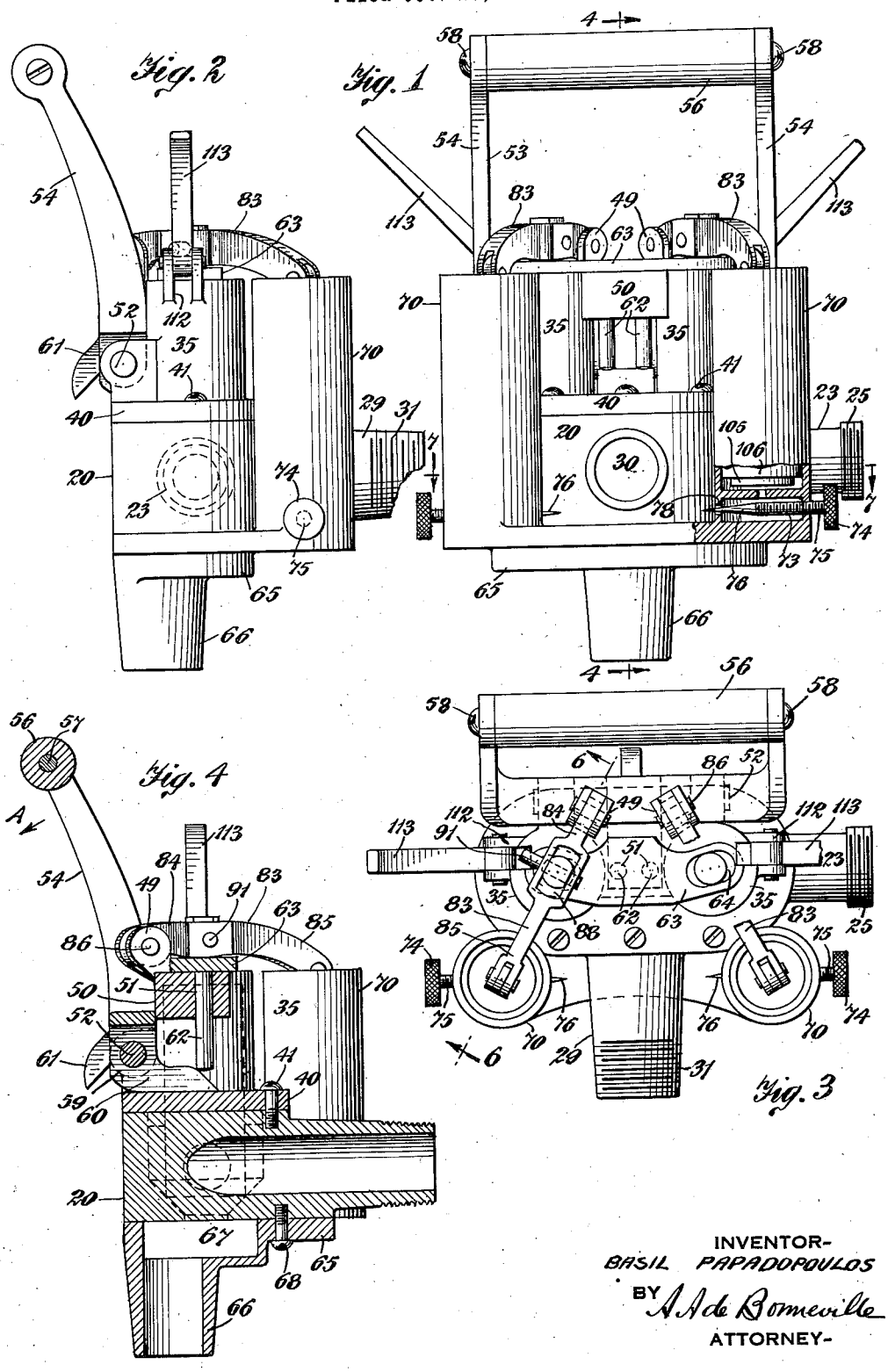
Aug. 20, 1935. B. PAPADOPOULOS 2,012,107

MULTIPLE DISPENSING AND MEASURING APPARATUS

Filed Oct. 20, 1933 2 Sheets-Sheet 1



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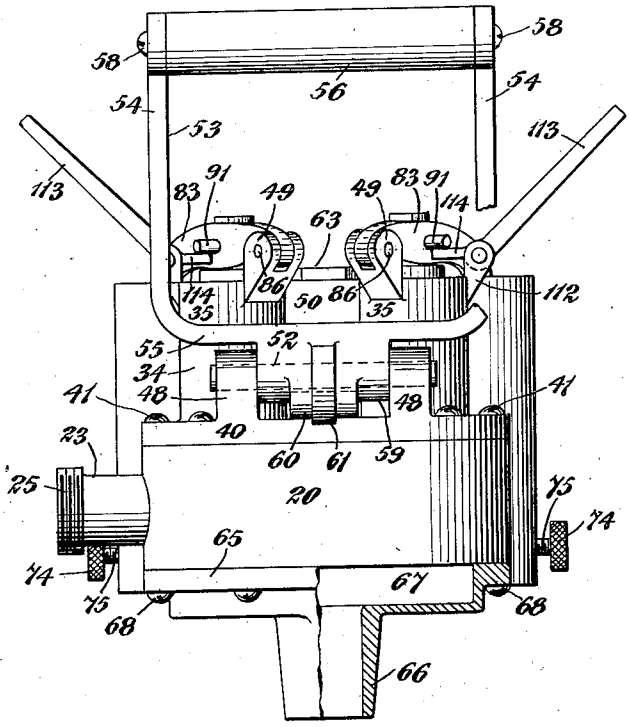

Fig. 5

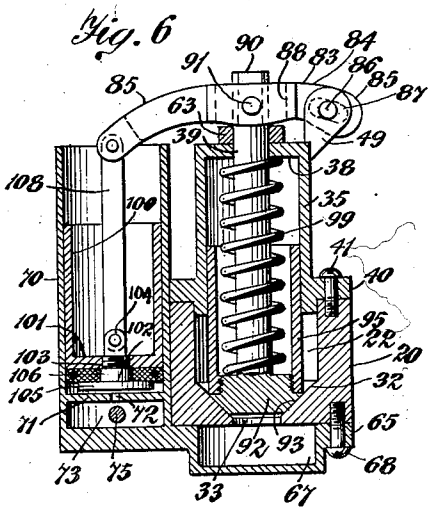

Fig. 6

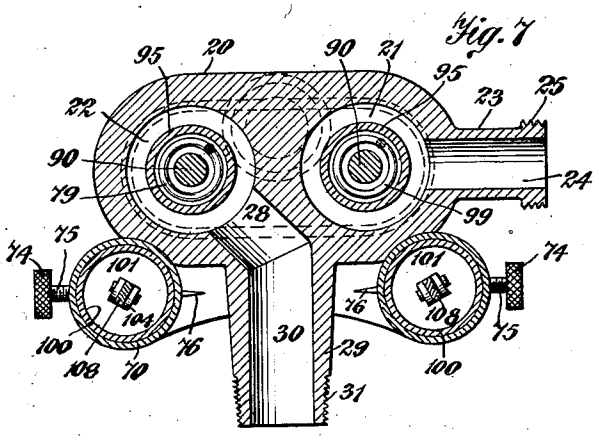

Fig. 7

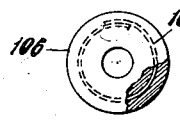

Fig. 8

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MULTIPLE DISPENSING AND MEASURING APPARATUS

Basil Papadopoulos, Brooklyn, N. Y.

Application October 20, 1933, Serial No. 694,381

4 Claims. (Cl. 225—26)

This invention relates to a multiple dispensing and measuring device.

The object of the invention is the production of a device, by means of which a pair of fluids of equal or different volumes can be easily mixed and simultaneously discharged therefrom, or which fluids can be independently discharged from said device.

The second object of the invention is the production of a dispensing and measuring device for fluids, in which the volumes of a pair of fluids dispensed can be varied at the will of the operator.

The third object of the invention is the production of a dispensing device for multiple fluids, which are automatically mixed in predetermined proportions.

This invention is an improvement of the applicant's U. S. Letters Patent #1,725,930, dated August 27, 1929 and entitled Dispensing device.

Fig. 1 represents a front view of a multiple dispensing and measuring device; Fig. 2 shows a left hand side view of Fig. 1; Fig. 3 shows a top view of Fig. 1; Fig. 4 shows a section on the line 4, 4 of Fig. 1; Fig. 5 represents a rear view of the dispensing device; Fig. 6 indicates a section on the line 6, 6 of Fig. 3; Fig. 7 shows a section on the line 7, 7 of Fig. 1 and Fig. 8 represents a top view of a detail partly broken away.

The body portion of the multiple dispensing device is indicated in its entirety by the numeral 20. The said body portion is indicated with the valve chambers 21 and 22. The body portion 20 has extending therefrom the inlet nozzle 23 for the valve chamber 21. The nozzle 23 is shown with the port 24, and the thread 25 at the outer end thereof. The body portion 20 has indicated therein the port 28 inclined to the longitudinal axis thereof, which leads to the valve chamber 22. A second inlet nozzle 29 having the port 30 extends from the body portion 20 at right angles to the longitudinal axis thereof and has the thread 31 at its outer end. The port 30 leads to the port 28. At the lower ends of each of the valve chambers 21 and 22 is indicated the beveled valve seat 32 and the outlet opening 33.

Upon the top face of the body portion 20 is detachably secured the head 34. Said head comprises the similar cylindrical shaped hoods 35. Each of said hoods has integral therewith the top wall 38 with an opening 39 coaxial with the longitudinal axis of its hood. A bottom wall 40 is integral with the lower ends of the hoods 35 and covers the top face of the body portion 20 to which it is secured by the screws 41. Journal lugs 48 are integral with the bottom wall 40 and the hoods 35 and journal lugs 49 extend from the upper portion of each of said hoods 35. A connecting portion 50 extends between the upper portions of the hoods 35 and guide openings 51 extend through the portion 50. A shaft 52 has its end portions supported in the journal lugs 48. An operating handle 53 comprises the arms 54, which at their lower ends are connected by the connecting member 55, and the upper ends of the said arms have positioned between them the operating bar 56. The said bar is indicated with the metallic core 57, which is engaged by the screws 58. A supporting lug 59 extends from the connecting member 55. The shaft 52 extends through an opening in the lug 59 with a tight fit. An operating lug 60 and a stop lug 61 extend from the supporting lug 59. Operating pins 62 are slidably supported in the openings 51 of the connecting portion 50. An operating plate 63 with elongated openings 64 is positioned upon the top walls 38, of the hoods 35.

To the lower face of the body portion 20 is positioned the bottom cover 65, which has integral therewith the discharge nozzle 66 and the mixing chamber 67. The cover 65 is secured to the body portion 20, by means of the screws 68. Controlling cylinders 70 extend up from the bottom cover 65 and are each provided with the bottom partition 71 having the vent opening 72. Between the bottom cover 65 and the partition 71 is formed the chamber 73. Needle valves 74 are indicated with the threaded shanks 75 and the tapered ends 76. The shanks 75 are in threaded engagement with the walls of the cylinders 70 and extend through the chambers 73. A vent or discharge opening 78 is provided in the wall of each cylinder 70, and the tapered ends 76 of the shanks 75 of the needle valves 74 extend through the openings 78. A pair of operating levers are each indicated in its entirety by the numeral 83. Each lever 83 is indicated having the short arm 84 and the long arm 85. Each short arm 84 is pivotally connected to one of the journal lugs 49 by means of a pivot pin 86 extending through said lugs 49 and through an elongated opening 87 in the arm 84. An elongated opening 88 is formed in each of the levers 83. A valve rod 90 extends through each of the openings 88 and into each of the hoods 35. The upper end of each rod 90 is pivoted to its operating lever 83 by means of the pivot pin 91. At the lower end of each valve rod 90 is shown the valve 92 with the beveled wall 93. From each valve 92 extends the sleeve

95, the lower end of which latter is in threaded engagement with its valve 92.

A helical spring 99 encircles each of the valve rods 90, and has its ends bearing against its valve 92 and the head 38 of its hood 35.

A thimble shaped piston 100 with the head 101 is provided for each of the cylinders 70.

A plug 102 for each cylinder 70 is indicated with the threaded shank 103 which is in threaded engagement with a threaded opening in the head 101. A bifurcated journal lug 104 extends from each shank 103, and a disc 105 extends from each plug 102. A washer 106 encircles each plug 102 between the head 101 and the disc 105. Each washer 106 has imbedded therein the circular spring 107, to prevent the washers becoming distorted.

A link 108 in each of the pistons 100 has its ends pivoted to the long arm 85 of its adjacent lever 83 and to the accompanying bifurcated lug 104.

From the upper portion of each of the hoods 35 extends a bifurcated journal lug 112, and in each of the lugs 112 is pivoted a supplemental operating lever having the long arm 113 and the short arm 114. Each of the short arms 114 is adapted to bear up against its accompanying pivot pin 91.

To operate the multiple dispensing and measuring device, the inlet nozzle 23 is connected to a source of supply of a fluid to be dispensed, and the second inlet nozzle 29 is connected to a source of supply of a second fluid to be dispensed and mixed with the other or first fluid. For the purpose of exemplification the first fluid may be coffee and the second fluid may be milk.

The operator adjusts both the needle valves 74 to a predetermined position to locate the tapered ends 76 in proper position in the vent openings 78, to control the effective area of each of said vent openings 78.

The operator next swings down the operating bar 56 of the handle 53 in the direction of the arrow A, Fig. 4 and thereby the operating lugs 60 bear up against the pins 62. By this means the operating plate 63 is raised and thereby both the operating levers 83 rise. The stop lug 61 prevents the operating handle 53 being swung too great an extent, by being adapted to contact with the connecting portion 50. When the operating levers 83 rise the valves 92 are raised from their valve seats 32, and both the thimble shaped pistons 100 are also simultaneously raised. By this means the fluids that enter both the valve chambers 20 and 21, flow therefrom through the openings 33 into the mixing chamber 67. The mixed fluids escape from the chamber 67 through the discharge nozzle 66. It will be noted that the operator releases the bar 56 when the lug 61 contacts against the connecting portion 50 when the operator releases the operating bar 56, the tension of the springs 99 will seat the valves 92 independently of each other on their valve seats 32 and the flow of the fluids is gradually cut off. During the descent of the valves 92, the pistons 100 also descend. During the descent of the pistons 100 the air in each, between the washers 106 and the partitions 71 is compressed and escapes through the vent opening 72 and enters the chamber 73. The air escapes from the chambers 73 through the vent openings 78. The discharge of the compressed air through the openings is controlled by the position of the tapered ends 76 in the openings 78. The annular opening between the wall of the opening 78 and the tapered end 76 is varied by locating the needle valve 74 in different positions. By adjusting the needle valves 74 in different positions the downward strokes of the valves 92 are retarded and the speed of travel of the down stroke of each of the valves 92 differs or is the same. Thereby the interval of time for each of the fluids flowing through the device may differ or be the same. By this means the ratio of the fluids in the mixture discharged from the discharge nozzle is easily controlled. For example the amount of milk dispensed for a certain quantity of coffee is easily controlled by means of the needle valves 74.

In case a large amount of either fluid is to be dispensed the operator swings down the arm 113 of either supplemental operating lever, and maintains it in its lowered position until the required amount of fluid flows through either one of the valve chambers 20 or 21 and is discharged from the nozzle 66.

Various modifications may be made in the invention and the present exemplification is to be taken as illustrative and not limitative thereof.

Having described my invention, I claim:

1. In a device of the character described the combination of a pair of valve chambers for fluids, an inlet nozzle for each valve chamber, a valve seat and an outlet opening for each valve chamber, a valve in each valve chamber coacting with its valve seat, a mixing chamber below said valve chambers in connection with said outlet openings, means to simultaneously raise said valves from their seats, means to independently lower each of said valves to its seat, a controlling cylinder coacting with each of said valve chambers and valves, a partition having an opening in each controlling cylinder, a piston adapted to reciprocate in each cylinder, connections between each piston and one of said valves, a chamber at the lower end of each of said controlling cylinders below its partition, a vent opening in each cylinder leading from the latter chambers and an adjustable needle valve extending through each of the latter chambers with its tapered end extending through the vent opening thereof, the pistons in said controlling cylinders when descending compressing the air below the partitions thereof, said air flowing into the chambers below said partitions and escaping from the latter through the openings for the tapered ends of said needle valves.

2. In a device of the character described the combination of a pair of valve chambers, an inlet nozzle for each valve chamber, a valve seat and an outlet opening for each valve chamber, a hood for each valve chamber, a valve in each valve chamber coacting with its valve seat, a valve rod extending from each valve through an opening in its hood, a spring encircling each valve rod, bearing between its valve and the top wall of its hood, a pin extending through the upper end of each valve rod, a journal lug extending from the upper end of each hood, an operating lever pivoted to each of said journal lugs adapted to bear against one of said pins to raise said valves, a mixing chamber at the lower faces of said valve chambers, and a discharge nozzle for said chamber.

3. In a device of the character described the combination of a pair of valve chambers, an inlet nozzle for each valve chamber, a cylindrical hood fastened to the upper face of each valve chamber, a connecting portion having guide openings connecting the hoods, a valve seat with an outlet opening at the lower end of each valve chamber, a mixing chamber at the lower ends of the

valve chambers, connecting with said outlet openings, a discharge nozzle for said mixing chamber, a valve in each valve chamber coacting with its valve seat, a valve rod extending from each valve and passing through an opening in its hood, a spring encircling each valve rod bearing between its valve and the top wall of its hood, a controlling cylinder adjacent to each valve chamber, a piston in each cylinder, a partition having a vent opening in each cylinder below its piston, a chamber below each partition, an operating plate having a pair of openings positioned upon said hoods, said valve rods extending through the openings of said operating plate, journal lugs extending from the upper portion of each hood, an operating lever over each hood with one arm of each in pivotal connection with the journal lug of its hood, each valve rod pivotally connected to its adjacent operating lever, a link with one end pivoted to the other arm of each operating lever, the other end of each link pivoted to one of said pistons, journal lugs extending from said hoods, an operating handle pivoted to the latter journal lugs, an operating lug extending from said operating handle, pins extending through the guide openings in the connecting portion of said hoods, said pins adapted to be raised by the operating lug of said handle and means to control the discharge of the air from the chamber below each partition of said cylinders.

4. In a device of the character described, the combination of a pair of valve chambers, an inlet nozzle for each chamber, a valve seat and an outlet opening for each valve chamber, a valve in each valve chamber coacting with its valve seat, means to raise said valves from their seats, means to independently lower the valves to their seats, a controlling cylinder coacting with each of said valve chambers and valves, a vent opening for each controlling cylinder, a piston adapted to reciprocate in each cylinder, a washer in each cylinder connected to the piston thereof, a spring in each washer to maintain it from distortion, connecting means between each piston and one of the valves of said valve chambers, the said pistons when descending compressing air, and adjustable means to control the escape of said compressed air.

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