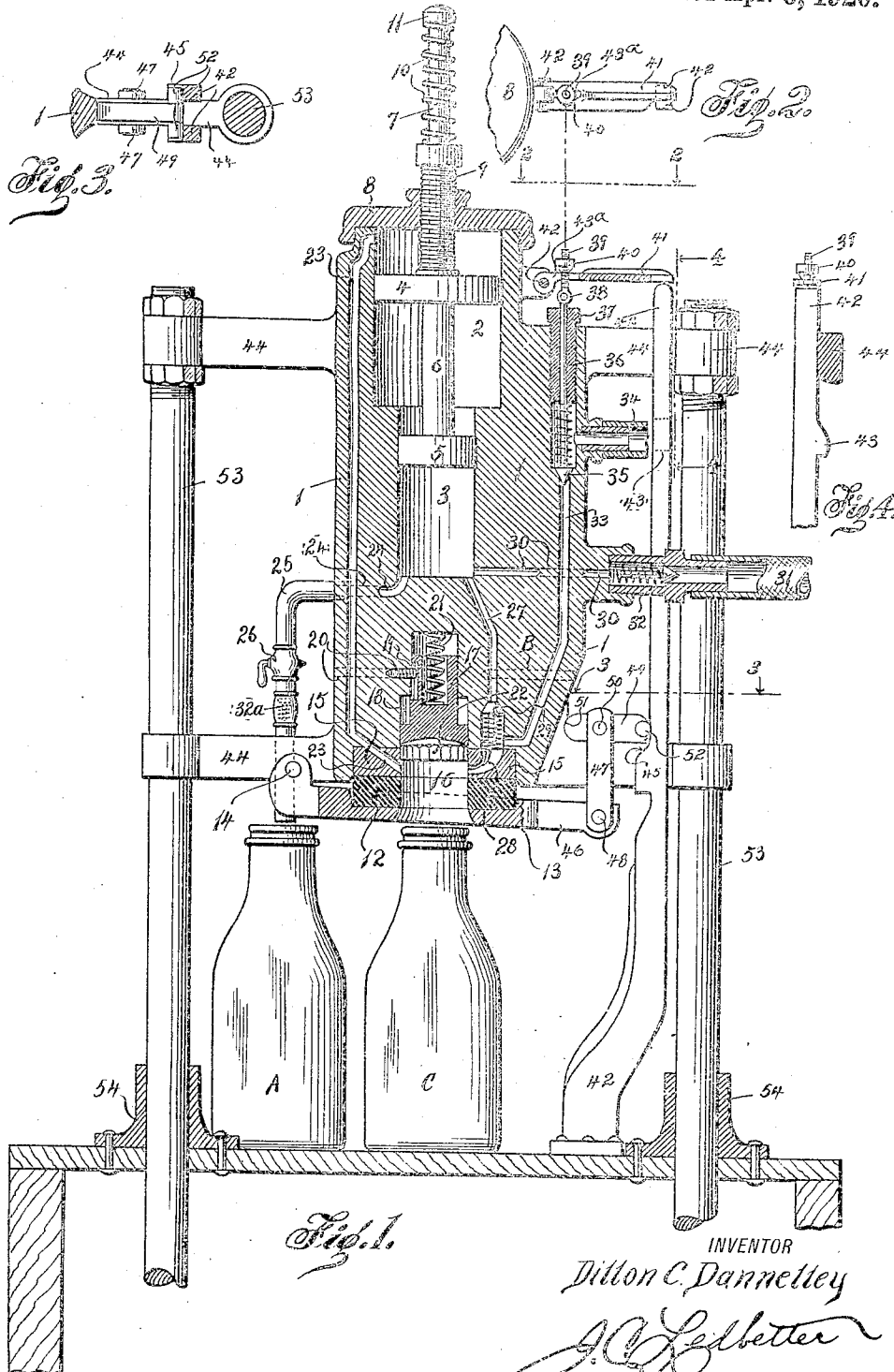


D. C. DANNELLEY,
BOTTLE FILLING DEVICE.
APPLICATION FILED SEPT. 26, 1918.

1,336,071.

Patented Apr. 6, 1920.



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BOTTLE-FILLING DEVICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DILLON C. DANNELEY, a citizen of the United States of America, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Bottle-Filling Devices, of which the following is a specification.

This invention relates to a new and useful form of bottle filling device, and in particular does it relate to a filling machine for charging and filling bottles with carbonated beverages such as soda pops and other drinks.

A purpose of the invention is to provide a machine capable of simultaneously handling two liquids and introducing them into the bottle at the same time under pressure. A still further purpose of the invention is to provide a means of automatic control for regulating and governing the flow of each liquid into the bottle to be charged at the time the machine is brought down upon the bottle and in filling contact therewith.

With the above and other objects in view the invention has relation to a certain combination and arrangement of parts, an example of which is described in the following specification, pointed out in the appended claims, and illustrated in the accompanying drawings; wherein,

Figure 1 illustrates a longitudinal sectional view of the bottle filling device, shown mounted upon operative standards and above bottles to be filled.

Fig. 2 illustrates parts of a certain valve control mechanism in plan view, the view being taken upon the line 2—2 of Fig. 1.

Fig. 3 illustrates a view taken upon the line 3—3 of Fig. 1.

Fig. 4 illustrates a sectional view taken upon the line 4—4 of Fig. 1, illustrating certain valve control mechanisms.

Referring now more in particular to the drawings, wherein the same parts throughout are designated by the same reference characters, the numeral 1 designates an integral metallic casting or head member provided with the various passages and operating parts which comprise the machine constituting this invention. In the upper portion of the device is formed a cylindrical bore chamber 2 which is reduced in size to form a syrup chamber 3. Pistons 4 and 5 are provided in the respective cylinders 2 and 3. Piston rods 6 and 7 are integrally formed one

with the other and carry the pistons 4 and 5 fixed thereupon. For convenience in assembling the rod 7 may be made slightly smaller than the piston rod 6. A cover cap 8 is screw-threaded upon the upper end of the device and adapted to hermetically seal the cylinder. A bushing 9 is screw-threaded into the cover cap 8 and slidably contains the piston rod 7. A compression spring 10 is confined upon the outer end of the piston rod between a head 11 and a head formed on the outer end of the bushing. The piston under the resisting compression of the spring 10 may be moved downwardly in the cylinders until the head 11 contacts the end of the bushing. By screwing the bushing in or out of the cylinder the travel of the pistons therein may be regulated and made to travel substantially the entire length of the cylinder or only part thereof. Within the lower portion of the device is confined a packing gland 12 formed of rubber or any suitable material sufficient to give contractive compressibility capable of obtaining a liquid and air tight hermetically sealed joint about the open neck of the bottle. This gland is partly contained within a hinged cap 13 pivoted at 14 to the casting. Just above the packing gland 12 and carried in contact therewith is another gland or washer 15 of substantially the same size and form as the packing gland 12. This member 15 will not necessarily be formed of a material as yieldable and as flexible as the gland 12, for the reason that it will not be called upon to perform the same function of hermetically sealing the bottle as the originally named gland 12. Within this member 15 are formed certain passages for conveying air and liquids as hereinafter explained. The two members 12 and 15 are annularly formed and provided with a centrally cylindrical opening 16 of a size substantially the same as the outer diameter of the neck of the bottle to be filled. A crowning plunger 17 is carried within a cylindrical chamber 18 formed in the casting above the packing glands. This plunger is provided with a slot 19 formed normal to the axis of the plunger 17. A screw 20 is screw-threaded into the device and registers within the slot 19 thus confining the plunger to its chamber. The plunger is hollow-bored and fitted with a compression spring 21 confined within the plunger and against the upper head of the cylinder and adapted to keep the

plunger in a normally downwardly limited position. This crowning plunger 17 is provided for the purpose of pressing the cover cap or crown of the bottle upon the neck thereof sealing same after said bottle has been filled. One form of crown or bottle cover 22 is shown in position and ready to be driven home by the plunger and action of the device as later described.

10 A duct or passage 23 extending the length of the casting communicates the upper cylinder with the opening 16 formed in the member 15. This duct or passage, as later described, will carry a certain air pressure to be drawn from the bottle. Another duct or passage 24 is formed in the casting and opens into the lower portion of the cylinder 3. A tube or pipe 25 connects with the passage 24 and is provided with a cut off valve 26. This tube is downwardly directed and adapted to open in the position illustrated just above the bottle placed thereunder. Another passage 27 connects with the cylinder 3 and extends downwardly where it registers with a passage 28 formed in the member 15. This syrup outlet passage 27 is enlarged at the lower extremity thereof and provided with a valve 29 adapted to govern the flow of the liquid through said passage. A syrup intake passage or duct 30 connects with the cylinder 3 and communicates with a tube 31 which is provided with a valve 32. This last named duct, as will later be seen, is provided to lead into the filling device a regulated quantity of syrup beverage to be introduced into the bottle. A passage or duct 33 connects with the chamber containing valve 29 thereby communicating with the passage 28 and extends upwardly and has connection with a filling tube 34.

40 A regulating valve 35, provided with an extended valve stem 36, is contained in the passage 33 for the purpose of regulating the flow of liquid therethrough. A valve spring confined on the stem keeps the valve in a normally seated position. The valve 35—36 is slidably confined within a bushing 37 screw-threaded into the casting. The upper portion of the valve stem 36 is provided with an eye 38 and pivotally connects with a screw-threaded stem 39 which carries a nut provided with a rounded or oval head 40. A valve actuating lever 41 is pivotally carried upon the casting at 42 and adapted to remain in a normally horizontal position. A slot 43^a is provided within the lever or through the trigger member 41 for the purpose of containing the upper portion of the valve stem. As later shown the trigger or lever 41 will exercise a regulating control over the valve 35.

60 A trigger comprising a long stem or rod 42 is mounted upon the table support which carries the machine. This trigger member 65 is vertically arranged and has its upper ex-

tremity lying directly beneath and in line with the outer end of the trigger 41. A short distance from the upper end of the trigger is provided a wedge shaped deflector step 43. This member 43 is formed on the trigger rod just beneath one arm 44 of a set of four integrally formed on the device for the purpose of mounting it in operative relation, as later described. Farther down on the rod is located another inclined or wedge shaped surface 45.

An arm 46 is integrally formed upon the cap 13. A pair of links 47 pivotally connect with the member 13—46, as indicated by the numeral 48. The links lie one upon each side of a member 44 and pivotally connect with a lifting arm 49 through a pin 50. This arm rests upon the upper surface of the arm 44. One extremity lies within an arcuate cavity 51 formed in the casting, while the outer extremity is provided with a pair of pins 52, one upon each side of the member 49. The pins 52 lie in contact with the vertical face of the trigger member and just above the inclined-plane 45. The trigger member is slotted or split at this point where it passes upon each side of the member 44.

The four arms 44 are confined and fixed upon two vertical actuating rods 53, such that the device will be carried up and down during the vertical reciprocation of said rods. These rods upon which the machine is mounted are slidably confined within bearings 54 securely fixed to the table or platform which mounts the device.

The complete assembly of all parts necessary to place this machine in operation would disclose a foot or hand lever operating means shown below the table or platform and having connection with the lower extremities of the rods 53. These latter parts are broken away and not shown since any form of foot pedal or operating means sufficient to subject the rods to an intermittent vertical reciprocation at times desired by the operator, may be used in connection with this machine.

The drawing illustrated herein may be taken to be a rear view of the device, which would place the operator in front of the machine in a position convenient to the bottles. In such a case the bearings 54 and rods 53 and all control devices in connection herewith would be partly in the rear of the machine with all the principal working parts located slightly forward and away from the reciprocating rods and bearings.

In the operation of this device and the charging and the filling of bottles therefrom, two bottles will be placed in position as illustrated, one directly beneath the opening 16 and the packing glands, and the other arranged to the side thereof and directly under the open end of the pipe 25. The ma-

chine is supported above the table with just enough room to permit the bottles to be placed thereunder and readily removed.

In the upwardly limited position of the machine the water valve 35 is normally seated thus withholding the pressure of the flow of carbonated water under pressure from the tube 34 which connects with the supply located any convenient distance from the machine. When the machine is thrust downward by the usual form of foot power the packing gland 12 passes down around the bottle neck, and as the machine comes down the lifting arm 49 with its parts 52 will ride along the cam 45 of the trigger thereby lifting upwardly the cap 13 which contractibly compresses the packing gland around the bottle neck thereby sealing same against liquid or air leakage. At the same time the trigger 41 is lifted which unseats the valve 35, thus permitting the flow of carbonated water under pressure through the duct 33 down into the passage 28 which leads the water directly into the bottle. The water passing into the bottle forces the air therefrom upwardly through the duct 23 into the chamber 2 above the piston 4 thus forcing the piston to descend. It will here be understood that the chamber 3 under the piston 5 contains the necessary syrup, flavorings or juices for the composition of the soda pop in the bottle at the time of filling. The pistons 4 and 5 work jointly one with the other and as the air pressure from the bottle forces the pistons downwardly the syrup in the chamber 3 will be forced through the duct 27, by the valve 29 and into the bottle along with the water, the two liquids thoroughly co-mingling and mixing under the energetic action of the carbonated water under the usual carbonic gas pressure. At this stage of the operation the valve 26 will be closed to prevent the syrup passing out in that direction. When the bottle has been filled the foot pedal, or any form of operating mechanism used, will again be brought into play by the operator and the machine further shoved down on the bottle. This will cause the crown or cover cap 22 to be brought in contact with the bottle neck, and under the pressure of the plunger 17 backed up by the stiff compression spring 21, the crown 22 will be rammed upon the bottle sealing same under pressure. Simultaneously with this described operation the machine on its further downwardly displaced motion will cause the arm 44 to come in contact with the inclined plane 43 thereby causing the trigger rod 42 to be flexed or bent outwardly at its top end. This action causes the upper end to be forced from beneath the trigger 41 and permits said trigger to return to its downwardly limited position under the action of the valve 35—36 and its spring.

This closes off the water supply and permits the bottle to be crowned without undue wastage thereof. The machine will then be released which will permit it to rise to the position illustrated. The bottle will then be drawn from the device filled and sealed.

This machine provides means for simultaneously passing the syrup and the carbonated water into the same bottle. It also provides means for passing the syrup into one bottle at the same time the water is being passed into another bottle. In this latter mode of operation a bottle A is set in a filling position beneath the pipe 25, and the valve 26 open. A screw B is screw-threaded into the casting with its head passing through the passage 27, thus plugging up and closing same. In this way the syrup confined in the chamber 3 will be forced out through the pipe 25 and into the bottle A, while the water from the tube 34 will be permitted to flow into the bottle. In this way the bottle C will be replaced in each operation by the bottle A, since the bottle will have the necessary quantity of syrup already introduced therinto and will be placed under the machine merely for receiving its charge of carbonic gas and water. The machine is capable of being used in either manner as illustrated and described. When the machine travels upwardly to its natural inoperative position, as illustrated, the parts all assume a normal position which permits the packing gland 12 to be relieved from its compression thus loosening its hold upon the bottle neck. As the machine travels upwardly the valve 32 will be drawn open by the suction of the piston 5 which permits another charge of syrup to be passed into the chamber 3 through the duct 30, and at this stage of operation a valve 32^a, included in the pipe 25, will close thereby holding the syrup in the chamber 3 until it is discharged therefrom through one of its selected passages, either into the bottle A or C according to the method of operation employed.

The invention is presented to include all such changes and modifications in design or form as may come within the scope of the following claims:

Claims.

1. A bottle filling device comprising; a head member provided with a cylindrical bore for receiving gas compression, and another bore provided therein for holding syrup, means for supplying syrup to the syrup holding bore, a piston mounted in each bore, a piston rod carried common to each piston to simultaneously operate the pistons, a packing gland carried by the head member and provided with an opening for receiving the open end of a bottle to be filled, said head member provided with a passage through which water is transmitted to the

bottle held in the packing gland, means to supply a second bottle with syrup from the syrup holding bore simultaneously with the transmission of water to the first named bottle, and a passage provided in the head member to transmit gas or air compression from the bottle being filled with water to the cylindrical bore whereby both pistons are set in motion to effect a filling operation.

2. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore, and a syrup bore provided therein, a piston slidably confined within the cylindrical bore, a piston slidably confined within the syrup bore, a piston rod carrying both the pistons, a packing gland with an opening for receiving a bottle, a syrup passage connecting the syrup bore with the bottle, and an air passage connecting the bottle with the cylinder bore.

3. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore, and a syrup bore, a piston inserted in each bore, means for passing syrup into the syrup bore, a packing gland carried by the head member, a syrup passage connecting with the syrup bore, an air passage connecting with the cylindrical bore, and means for receiving a bottle into the head member so that the syrup passage and the air passage connect with the bottle.

4. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore and with a syrup bore, a piston in each bore, a syrup intake passage to supply the syrup bore, a packing gland with a bottle receiving opening, a syrup outlet passage connecting with the syrup bore to pass syrup to a bottle to be filled, an air passage leading from the bottle to be filled to the cylindrical bore, and means for displacing the bottle filling device downwardly upon a bottle to be filled.

5. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore and a syrup chamber, a piston, a packing gland with an opening to receive a bottle, a syrup outlet passage to convey syrup from the syrup chamber to the bottle, a water passage to convey water into the bottle, an air passage to convey air from the bottle to the cylindrical bore, and mechanism to close the packing gland opening tightly around the bottle.

6. A bottle filling device, comprising in combination; a head member having a cylindrical bore and a syrup chamber, a piston in the cylindrical bore, supply means for the syrup chamber, means for receiving a bottle

to be filled within the head member, means for pushing a cover cap onto the bottle to seal it, a syrup passage connecting with the syrup chamber and the bottle, a water passage for conveying water to the bottle, and an air passage for conveying the air from the bottle to the cylindrical bore.

7. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore and a syrup chamber, a piston in the cylindrical bore, a packing gland with an opening to receive a bottle to be filled, an air passage for conveying the air from the bottle to the cylindrical bore to move the piston, a syrup intake passage to supply the syrup chamber, a syrup passage connecting with the syrup chamber and the bottle, a water inlet to the bottle, means for opening the water inlet, and means for tightening the packing gland around the bottle, and means for forcing the syrup into the bottle.

8. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore and a syrup chamber, a piston in the bore, a piston in the syrup chamber, a packing gland carried by the head member and provided with an opening to receive a bottle to be filled, a water passage to the bottle, a syrup passage from the syrup chamber to the bottle, an air passage from the bottle to the cylindrical bore for conveying the air from the bottle to move the piston, a valve in the water passage, a means for displacing the bottling machine downwardly, means for opening the valve in the water passage, and means for ramming a cover cap on the bottle.

9. A bottle filling device, comprising in combination; a head member provided with a cylindrical bore and a syrup chamber, a bottle receiving means to hold a bottle to be filled with water, a syrup passage from the syrup chamber to the bottle receiving means, a second syrup passage connecting with the syrup chamber and adapted to pass syrup to a bottle, a valve included in the second named syrup passage, a means for closing the first named syrup passage, a water passage to the bottle to be filled with water, means for automatically opening the water passage, an air passage connecting the bottle with the cylindrical bore, and means for ramming a cover cap onto the bottle to be filled with water.

In testimony whereof I hereunto affix my signature.

DILLON C. DANIELLEY.