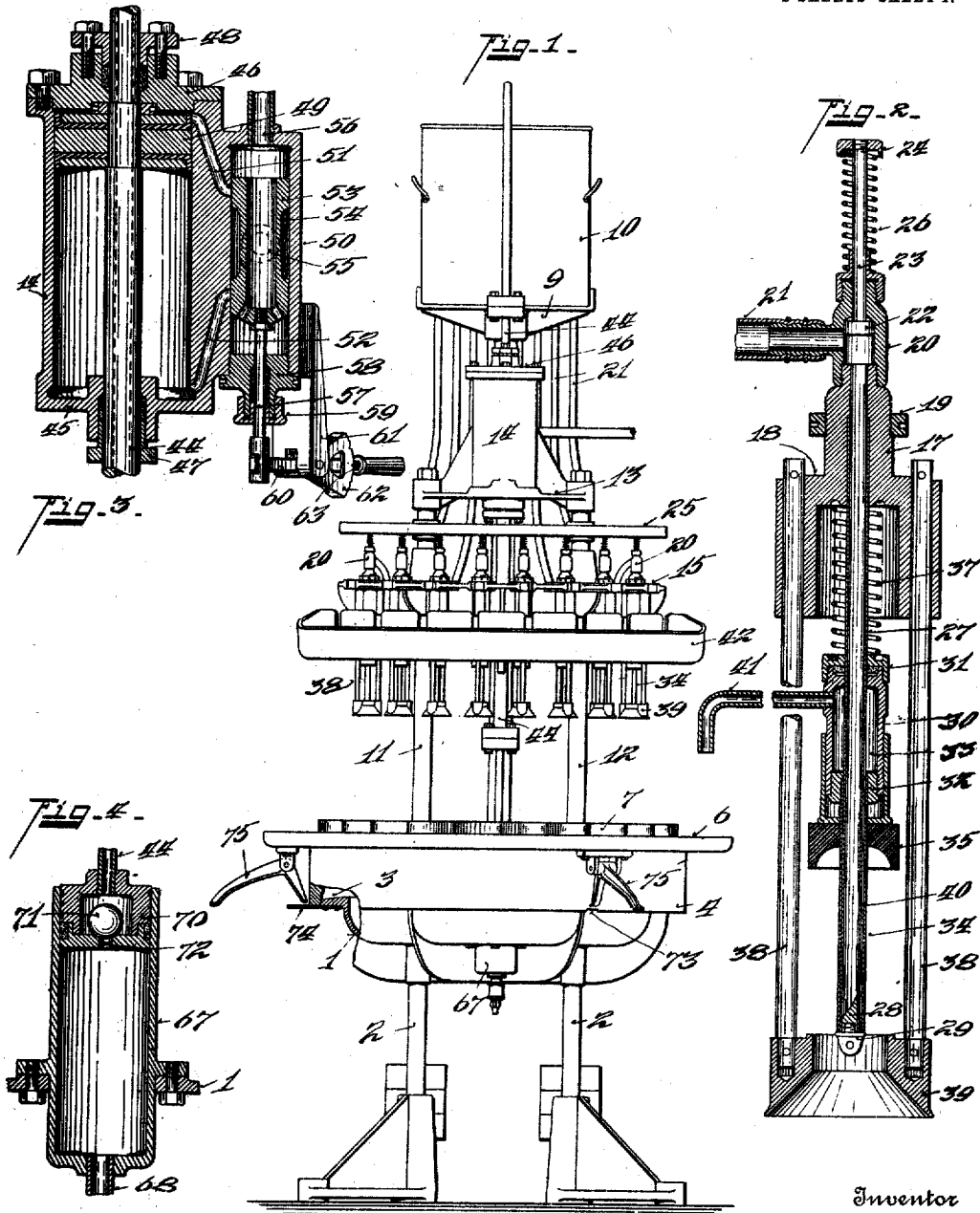


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BOTTLE FILLING APPARATUS.
APPLICATION FILED MAR. 7, 1910.

1,004,623.

Patented Oct. 3, 1911.

2 SHEETS-SHEET 1.



Inventor

Walter L. Bodman

Witnesses

Chas. B. Kaim
[Signature]

By Wood & Wood.

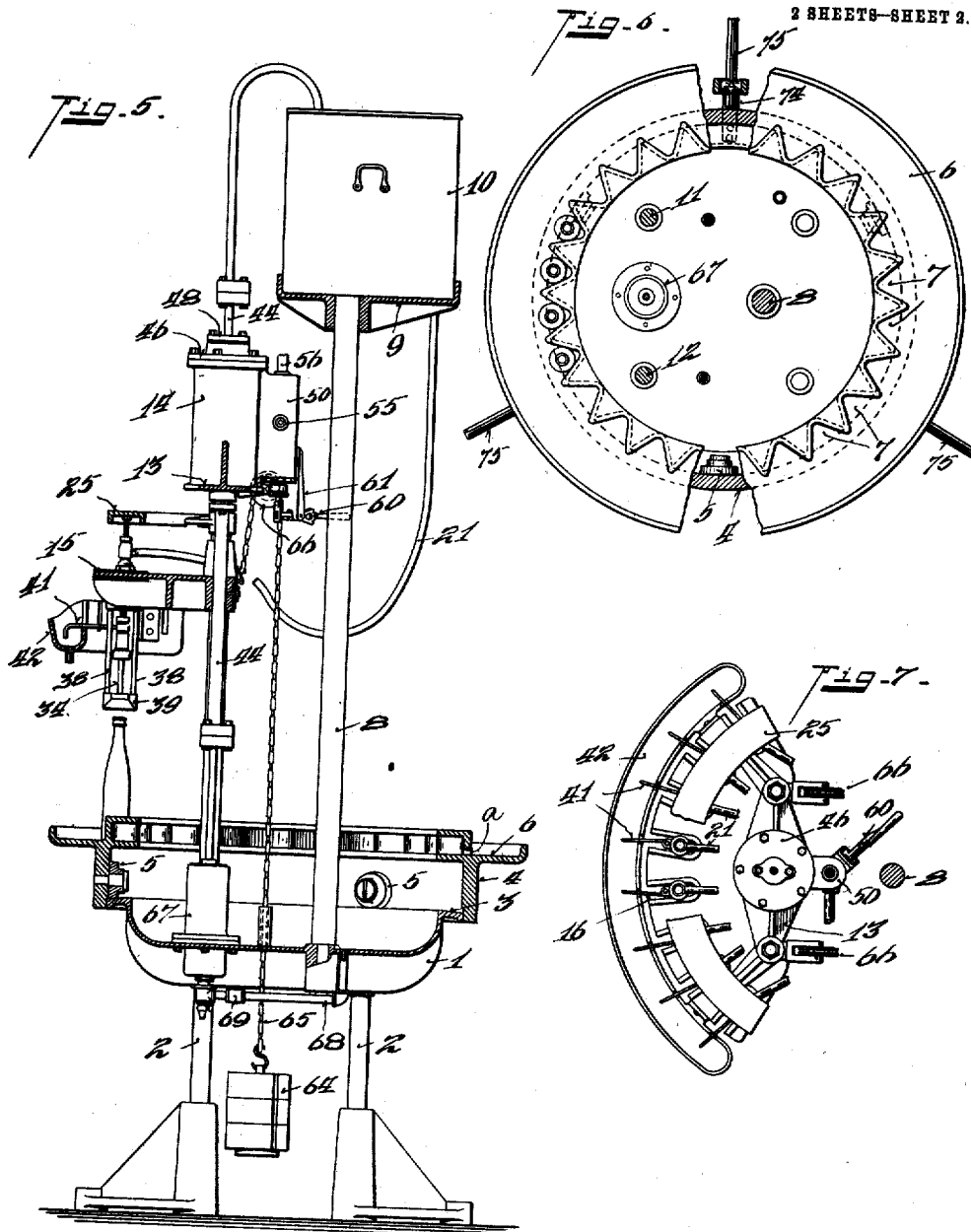
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UNITED STATES PATENT OFFICE. 8

WALTER L. BODMAN, OF COVINGTON, KENTUCKY, ASSIGNOR TO ISAAC RHEINSTROM, OF CINCINNATI, OHIO.

BOTTLE-FILLING APPARATUS.

1,004,623.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed March 7, 1910. Serial No. 547,689

To all whom it may concern:

Be it known that I, WALTER L. BODMAN, a subject of the Kingdom of Great Britain, residing at Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Bottle-Filling Apparatus, of which the following is a specification.

My invention relates to bottle filling machines, primarily of that class in which the filling nozzles are moved to and from the bottle by power means.

One of the objects of my invention is to provide a bottle filling machine, having a series of vertically supported and reciprocated bottle filling nozzles in which the entire series are simultaneously under control, and with power means for reciprocating the same.

Another object of my invention is to provide a bottle filling machine, with a rotatable bottle supporting table for relatively alining a series of bottles with the bottle filling nozzles.

Another object of my invention is to provide a bottle filling machine with an overflow reservoir, with pumping means for reconveying the same to the supply tank upon each reciprocation of the filling nozzles.

The various other features of my invention will be more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a front elevation of my bottle filling machine. Fig. 2 is a central vertical section of one of the bottle filling nozzles, and controlling and supporting means therefor. Fig. 3 is a central vertical section through the elevating fluid chest and fluid control therefor. Fig. 4 is a central vertical section through the overflow pump cylinder and piston. Fig. 5 is a central vertical section through the bottle filling machine. Fig. 6 is a top plan view of the rotatable bottle holding table. Fig. 7 is a top plan view of the bottle nozzle support and piston chest.

1 represents an over-flow reservoir base, supported upon the legs 2, and provided upon its upper edge with a flange projection 3, forming a way and support for the rotatable bottle-holder 4, of circular-form, en-

gaging with the peripheral edge of the flange 3, of the base 1.

5 represents rollers, journaled upon the holder 4, and traveling upon the flange 3.

6 represents a table surface of the holder, with the vertical flange of serial V-shaped form, provided with a series of pockets for receiving the bottle in juxtaposed position, relative to each other, so as to adapt the same to aline with the bottle filling nozzles. The table is drained rearwardly into the reservoir base, and the vertical flange is provided with a series of orifices α , to allow the liquid to flow through the same from the outer portion of the table.

8 represents a vertical rod, secured to the reservoir base 1, provided with a bracket plate 9, upon its upper free end for supporting the supply tank 10.

11, 12, represent vertical guide and supporting rods secured at one end to the base 1, with their opposite ends connected with and supporting a cross-head 13, formed integral with the piston chest 14.

15 represents a nozzle supporting and carrier plate slidably mounted on the rods 11, 12, and of segmental form, extending over only a portion of the bottle holder, preferably, and provided with a series of eight filling nozzles, leaving the remainder circumference of the machine open, for placing a series of bottles in position upon the table and capping a filled series to the convenience of the operator or operators. The carrier plate 15 is preferably provided with the nozzle receiving notches 16, see Fig. 7, through which the nozzles project and within which they can be radially adjusted.

The general form of construction and the actuation of two sets of valves, controlling the liquid discharge, is substantially the same as that described and claimed in a second application filed March 7, 1910, Serial No. 547,689.

17 represents a nozzle supporting sleeve of two different diameters, forming the shoulder 18, adapted to engage against the under face of the carrier plate 15, with the smaller diameter end of the sleeve projecting through the notch 16.

19 represents a nut, screw threaded upon the sleeve, and adapted to engage against

the upper surface of the carrier plate 15, supporting the sleeve therefrom.

20 represents a T-fitting, secured to the sleeve 17, to which is connected a flexible supply tube 21.

22 represents a piston valve, slidable within the bore of the T-fitting, adapted to control the liquid supply at the inlet end of the nozzle.

23 represents a piston valve rod, projected through the T-fitting, and provided with a head plate 24, adapted in upward movement of the nozzle carrier to engage against the bracket 25, fixed to and projecting from the rods 11, 12, and adapted to arrest the upward movement of the valve rod during a continued upward movement of the nozzle to close the inlet end of the nozzle passage.

26 represents a spring for automatically moving said valve to open position upon release of valve rod engagement with the bracket 25.

27 represents a tubing secured within the sleeve 17, its free end forming the nozzle spout, provided with the plug 28, discharge orifice and valve member 29.

30 represents a fitting, slidably mounted on the tube 27, provided at one end with the stuffing-box-cap 31; the opposite end with a thimble 32, and intermediate chamber 33.

34 represents a tube telescopically engaged over the tube 27, secured to the thimble 32, and movable with the fitting 30. The free end of said tube 34 serves as a valve member to control the liquid at the spout end of the nozzle.

35 represents a cap or stopper, preferably made of elastic material, provided with a conical face to receive the mouth of the bottle and engage therewith, arresting a further downward movement of the fitting 30, and its contained parts, upon a continued downward movement of the nozzle, opening the discharge end of the nozzle spout.

37 represents a spring moving the valve tube 34 automatically, to seal the discharge end of the nozzle upon withdrawing the same from the bottle.

38 represents a pair of rods suspended from the sleeve 17, having a guide sleeve 39, secured to their free ends, adapted to telescopically engage over the neck of the bottle upon a downward movement of the nozzles, to align the nozzles with the mouth of the bottles.

40 represents a vent passage formed between the two tubes 27, 34, to provide an escape for the air within the bottles, as they are being filled, and stop the liquid flow when the bottles are filled to a height to seal said passage against the escape of air.

41 represents an overflow pipe connected to the fitting 30, and in communication with the chamber 33, and projected over the trough

42, where the overflow from a series of nozzles is collected and further conveyed.

It is desirable in heavy machines of this class to employ power means for reciprocating the nozzles, and this is accomplished as follows: 14 represents a piston cylinder formed integral or supported upon the cross-head 13. 44 represents a tubular piston rod projected through the heads 45, 46, of the cylinder and stuffing-box-glands 47, 48, respectively, secured to said heads. 49 represents a piston connected to said rod 44, and adapted to reciprocate within the cylinder 14. 50 represents a valve chest, preferably formed integral with the cylinder, and 51, 52, represent passages connecting with valve chest and cylinder ends, see Fig. 3. 53 represents a sleeve slide valve, having a peripheral groove, forming an intermediate chamber 54, adapted to communicate with either one of the passages 51, 52, according to the position of the valve. Said chamber 54 is of elongated form, so as to at all times be open to the fluid pressure inlet port 55. 56 represents an exhaust outlet formed at one end of the valve chest. 57 represents a valve rod secured to one end of the valve, and projected through the valve chest head plate 58, and stuffing-box-cap 59. The free end of said rod is provided with a slot, through which the shifting lever 60 engages, said lever 60 is pivoted to the bracket arm 61, provided with a notched quadrant projection 62, into which notches a spring controlled detent 63, engages to lock the lever into any one of the three positions. By swinging the lever 60, the valve 53 can be shifted to a forward, reverse or neutral position. Thus, when the valve 53 occupies an upward position, the passage 51 will be in communication with the chamber 54, admitting fluid pressure, or the like, against the piston 49, moving the same downward, likewise moving the nozzle carrier plate, connected to the piston rod 44. The fluid upon the opposite side of the piston is exhausted through passage 52, into a chamber formed between the valve end and head-plate 58, through the bore of the valve and exhaust outlet 56. Shifting the valve in the opposite direction, that is, moving the same downward, opening the passage 52 into communication with the chamber 54, thereby exerting a movement of piston, raising the carrier 15 and nozzles. Such movement of the valve opens the passage 51, into communication with the chamber formed between the valve and upper chest end, permitting the fluid to exhaust from the forward end of the cylinder, through passage 51 and through outlet 56. 64 represents a counter-balance weight, suspended from the chain 65. Said chain is carried over the sheave 66, journaled upon the cross-head

and connected with the nozzle carrier 15. As illustrated, two counter-balance weights and connections with carrier are provided for equalization.

5 It is desirable to pump the over-flow liquid from the nozzles connected with the reservoir base 1, into the supply tank, and this, in this instance, is preferably accomplished as follows:—67 represents a pump
10 piston cylinder, secured to the base 1, one end of said cylinder having a pipe connection 68, with the bottom of the base 1, see Fig. 5, and with a check valve 69 connected intermediate thereof. 70 represents a
15 hollow pump piston, connected with the hollow piston rod 44, said piston having a ball valve 71, to seal the port 72, of the piston upon the upward stroke of the piston. Connecting the pump piston with the hollow
20 piston rod of the nozzle reciprocating piston, provides a pumping stroke upon each reciprocation of the nozzles.

The bottle holder 4 is locked against rotation and released, as follows:—The locking
25 means may be provided at several points around the periphery of the holder, of duplicate construction, in which the base edge with a notch 73, one for each of the locking devices, into which a spring 74 is adapted
30 to engage, upon the alinement of a notch therewith in the rotation of the holder. 75 represents a bell crank hand lever pivotally mounted upon the holder, with one arm adapted to engage said spring to disengage
35 the same from its notch engagement of the holder.

Having described my invention, I claim:—

1. A bottle filling machine, having a reservoir base, a reciprocating nozzle carrier 40 supported above said base, a fluid pressure cylinder supported above said carrier, a piston movable therein, a supply tank, a pump cylinder in connection with said reservoir base, piston and pump valve therefor, a
45 hollow piston rod connected with said piston and carrier and in communication with the supply tank, whereby on each reciprocation of the piston rod the overflow liquid within the reservoir base is conveyed to the supply
50 tank.

2. A bottle filling machine having a reservoir base, a reciprocating nozzle carrier, a liquid supply tank, a pump in communication with said reservoir base, and means in
55 connection with said carrier and pump for reciprocating said carrier and actuating said pump to convey overflow liquid from said reservoir base to the supply tank upon each reciprocation of the carrier. 60

3. In a bottle filling machine, a reservoir base having an annular flange on the upper portion thereof, a bottle holder rotatably supported on said base flange, said holder being of trough form, and provided with a
65 series of V-shaped pockets and with a series of orifices to allow the liquid to flow out, and spring controlled locking means for locking said holder to said base.

In testimony whereof, I have hereunto set
70 my hand.

WALTER L. BODMAN.

Witnesses:

OLIVER B. KAISER,
C. B. FOSTER.