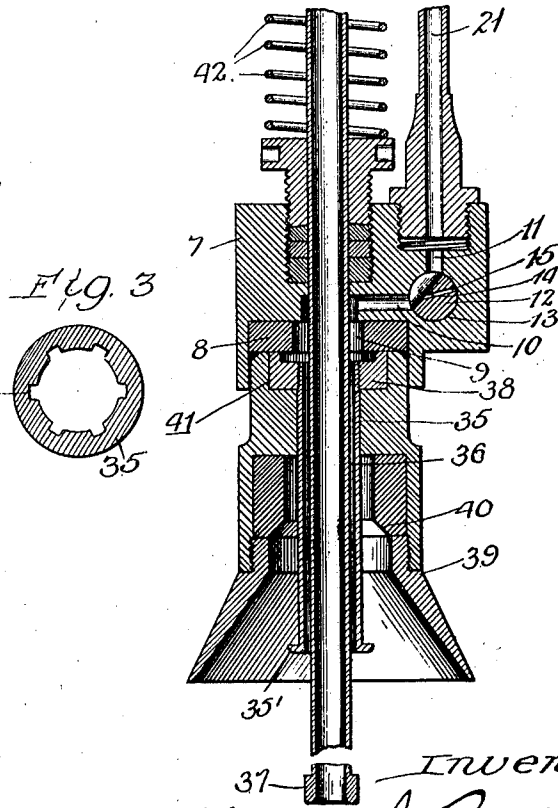
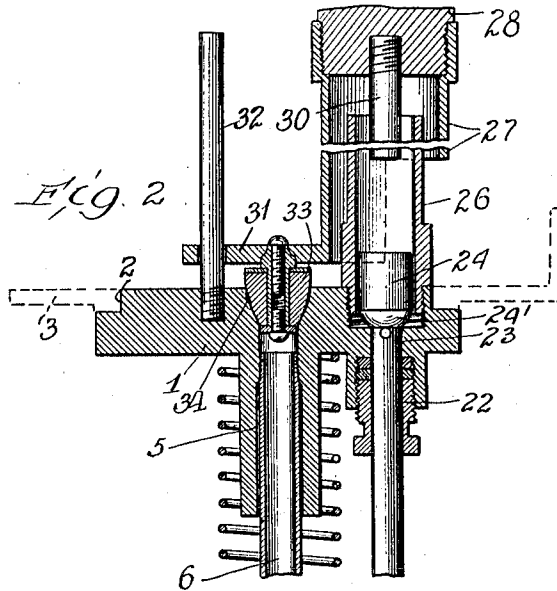
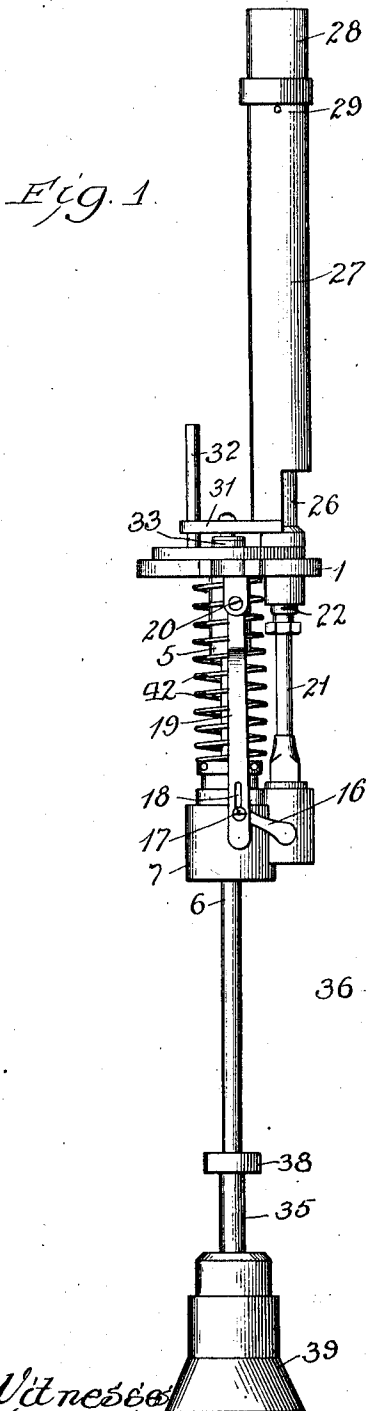


C. L. BASTIAN.
FILLING MACHINE.
APPLICATION FILED JAN. 11, 1907.

956,876.

Patented May 3, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

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FILLING-MACHINE.

956,876.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed January 11, 1907. Serial No. 351,761.

To all whom it may concern:

Be it known that I, CHARLES L. BASTIAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Filling-Machines, of which the following is a specification.

This invention relates more particularly to that class of filling machines which are employed for filling bottles with beer or other carbonated liquids and it comprises certain improvements in this art, which, for convenience, I have shown embodied in a valve mechanism of the general construction disclosed in my companion application filed of even date herewith, although it will be readily understood by those familiar with the art, that the invention can be embodied with equally satisfactory results in other filling machines and valve mechanisms.

In bottling beer heretofore, according to the old methods and with the old bottling machines, more or less foam has generally been produced in the bottle and while this is objectionable it nevertheless has prevented the bottle from being entirely filled with beer so that a space has been left in the bottle wherein the gas may expand during the pasteurizing process. If the bottle is completely filled with beer there will be great danger of the bottle bursting or having its stopper blown off during the pasteurizing process. With certain improved methods and machines, foaming as an incident to bottling beer has been greatly reduced and with certain methods and machines entirely eliminated in a practical sense. Therefore it becomes necessary to regulate and control the quantity of beer in the bottle and thereby provide a sufficient space for the expansion of the gas during the pasteurizing process.

The object of this invention is to provide means of simple construction and adapted to be applied easily to bottling machines for regulating and controlling the quantity of beer or other carbonated liquid which enters the bottle.

In the accompanying drawings: Figure 1 shows a filling machine embodying the invention. Fig. 2 is an enlarged central sectional view. Fig. 3 is a transverse sectional view of the sleeve.

Referring to the drawings 1 designates the body of the filling valve which may be fastened in an opening 2 in the bottom of

the liquid tank 3 in any suitable manner. The body has a central bore 5 into which the filling tube 6 is screwed or otherwise secured. The head 7 is slidably arranged on the filling tube and has a seat 8 in its lower face. An enlarged bore 9 is provided in this seat and in a part of the head and it communicates by lateral passage 10 with an upright passage 11 in the head. A check valve is located at the juncture of this passage and it comprises a plug 12 which is seated in a bore 13 in the head and is provided with a large port 14 and a contracted port 15, these ports being adapted to connect the passages 10 and 11 at different times for the purposes fully pointed out in my companion application aforesaid.

The lever arm 16 is fastened at one end to one end of the plug 12 and this arm carries a pin 17 at its upper end which is arranged to travel in a slot 18 at the lower end of a link 19 which is pivotally connected at its upper end 20 to the body. An air tube 21 is screwed into the head 7 and projects upward through a stuffing box 22 and an opening 23 in the body 1 and carries on its upper end a head 24 and a rubber gasket 24'. The air tube is provided with one or more lateral ports 25 which are closed when the machine is at rest and are opened when the bottle is in filling position and the air tube is raised as herein described. The upper end of the air tube is located within a tube 26 which is arranged within the tank and secured by the body 1 over the head 24 and the upper end of the air tube. A sleeve 27 is arranged to slide freely on the tube 26 and it is provided with a weighted head 28 and one or more lateral ports 29 beneath the head. A rod or stem 30 is fastened to the head 28 and projects downward in the tube 26 to be engaged by the head 24 of the air tube as will be described hereafter. The sleeve 27 has a lateral projection or foot 31 which is guided on a post 32 fixed in the body 1 and carries the liquid valve 33 to and from its seat 34 in the body at the upper end of the bore 5. No claim is made in this application for the invention previously described for, as heretofore stated, that forms the subject matter of my companion application and is simply used here to illustrate one type of filling machine valve mechanism with which my invention can be employed. A sleeve 35 provided interiorly with

grooves 36 is held in place on the filling tube 6 by a collar 37 at the lower end of said tube. This sleeve carries a removable collar 38 at its upper end which engages the seat 8. A guide bell 39 is slidably arranged on the sleeve 35 and is held in place thereon by a peripheral flange 35' at the lower end of said sleeve. This guide bell is provided with a rubber seat 40 for the mouth of the bottle and it has a recess 41 in its upper end to receive the collar 38.

A spring 42 incloses the filling tube and operates between the body 1 and the head 7 and presses said head away from the body to seat the gasket against the body thereby to close the air tube. This gasket 24' and the lateral openings 25 in the air tube constitute with the adjacent portion of the body 1 an air valve whereby communication is established between the interior of the tank and the bottle.

In practice the air valve is held normally closed by the spring 42, the large port 14 of the check valve is normally open and the liquid valve 33 is also normally closed, being held in its seat by gravity. A bottle is moved up against the guide-bell and on the filling tube. The mouth of the bottle engages the seat 40 and pushes the bell upward first against the collar 38 and then against the seat 8 in head 7, the filling tube 6 and the sleeve 35 meanwhile entering the bottle. On the continued upward movement of the bottle the head is carried upward on the filling tube against the pressure of spring 42 and the air tube, moving with the head, opens the air valve 24'. At this time communication between the passages 10 and 11 is through the large port 14 of the check valve so that the pressure in the bottle may be equalized with the pressure in the tank before the liquid valve is opened. The air or gas connection is established through the ports 25, tube 21, passage 11, port 14, passage 10, bore 9, and grooves 36. On the continued upward movement of the bottle and head 7, the head 24 on the upper end of the air tube engages and pushes upward the rod or stem 30 thereby lifting the sleeve 27 and unseating the liquid valve 33. The position of the check valve and its lever arm does not change relatively to the head 7 while the head is being raised to open the air valve and until the pressure in the bottle has been equalized with the pressure in the tank, for during this initial movement of the head the pin 17 travels in the slot 18 to the upper end of said slot. On the continued upward movement of the head to open the liquid valve, as just described, the pin 17 having reached the limit of its movement in the slot is held, and as the head moves upward the lever arm 16 is swung to turn the plug and carry the large port 14 out of register with the passages 10 and 11 and bring the

contracted port 15 into register with said passages, whereby the outflow of air or gas from the bottle, due to the inflowing liquid, is retarded by reason of the contracted port 15 to prevent the liquid from foaming in the bottle.

The sleeve 35 regulates and controls the quantity of liquid in the bottle because the liquid will stop flowing into the bottle when the level of the liquid in the bottle reaches and submerges the lower end of the sleeve and thereby prevents the escape of air or gas from the bottle through the grooves 36. By changing the length of the sleeve 35 provision can be readily made for filling the bottle to any height desired. Thus a space, which constitutes an expansion chamber of pre-determined area can be left uniformly in all bottles filled on machines similarly equipped and thereby the liability of the bottle bursting or having its stopper blown off during the pasteurizing process is entirely avoided. The size of this expansion chamber will depend upon the size of the bottle and the amount of gas in the bottle but it can be easily regulated by changing the length of the sleeve as heretofore indicated.

After the bottle is filled it is removed from the filling tube, the guide-bell and sleeve following the bottle to the end of the tube by gravity and the head 7 being returned to its normal position by the spring 42 thereby closing the air valve 24' and bringing the large port 14 into register with passages 10 and 11. The liquid valve closes by gravity.

What I claim and desire to secure by Letters Patent is:

1. In a filling machine, the combination of a filling tube, a sleeve loosely mounted on said tube and movable thereon with the bottle while the bottle is being adjusted in filling position prior to the admission of the liquid thereto, said sleeve being adapted to extend into the bottle to provide a passage independent from the fluid passage to permit the escape of air or gas from the bottle while being filled, and a guide-bell for the bottle carried by and movable on the sleeve and with the sleeve on the filling tube.

2. In a filling machine, the combination of a filling tube, a head on the tube, a sleeve loosely mounted on said tube and movable thereon with the bottle between the lower end of the tube and the head while the bottle is being adjusted in filling position, said tube opening into the bottle at a point remote from the end of said sleeve and said sleeve being adapted to extend into the bottle and permit the escape of air or gas therefrom while being filled, and a guide-bell for the bottle carried by and movable on and with the sleeve.

3. In a filling machine, the combination

of a filling tube, a sleeve loosely mounted on said tube and movable thereon with the bottle while the bottle is being adjusted in filling position, said sleeve being adapted to extend into the bottle and permit the escape of air or gas therefrom while being filled, a collar on the upper end of the sleeve, a peripheral flange at the lower end of the sleeve, and a guide-bell for the bottle movable on the sleeve between said collar and flange and movable with the sleeve on the filling tube.

4. In a filling machine, the combination of a filling tube, a head on said tube, a collar at the lower end of the tube, a sleeve loosely mounted on the tube and movable thereon between the head and said collar while the bottle is being adjusted in filling position, said sleeve being adapted to extend into the bottle and permit the escape of air or gas therefrom while being filled, a collar on the upper end of said sleeve, a peripheral

flange at the lower end of said sleeve, and a guide-bell movable on and with the sleeve and relatively thereto between said collar and flange.

5. In a filling machine, the combination of a liquid tank, a filling tube, a liquid valve, a head on said tube, an air connection between the tank and said head, a sleeve loosely mounted on the tube and movable thereon while the bottle is being adjusted in filling position and having an air passage therethrough to connect with the air connection in the head, said sleeve being adapted to extend into the bottle and permit the escape of air or gas therefrom while being filled, and a guide-bell on the sleeve and movable therewith and relatively thereto.

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Witnesses:

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