

1977
No. 833,988

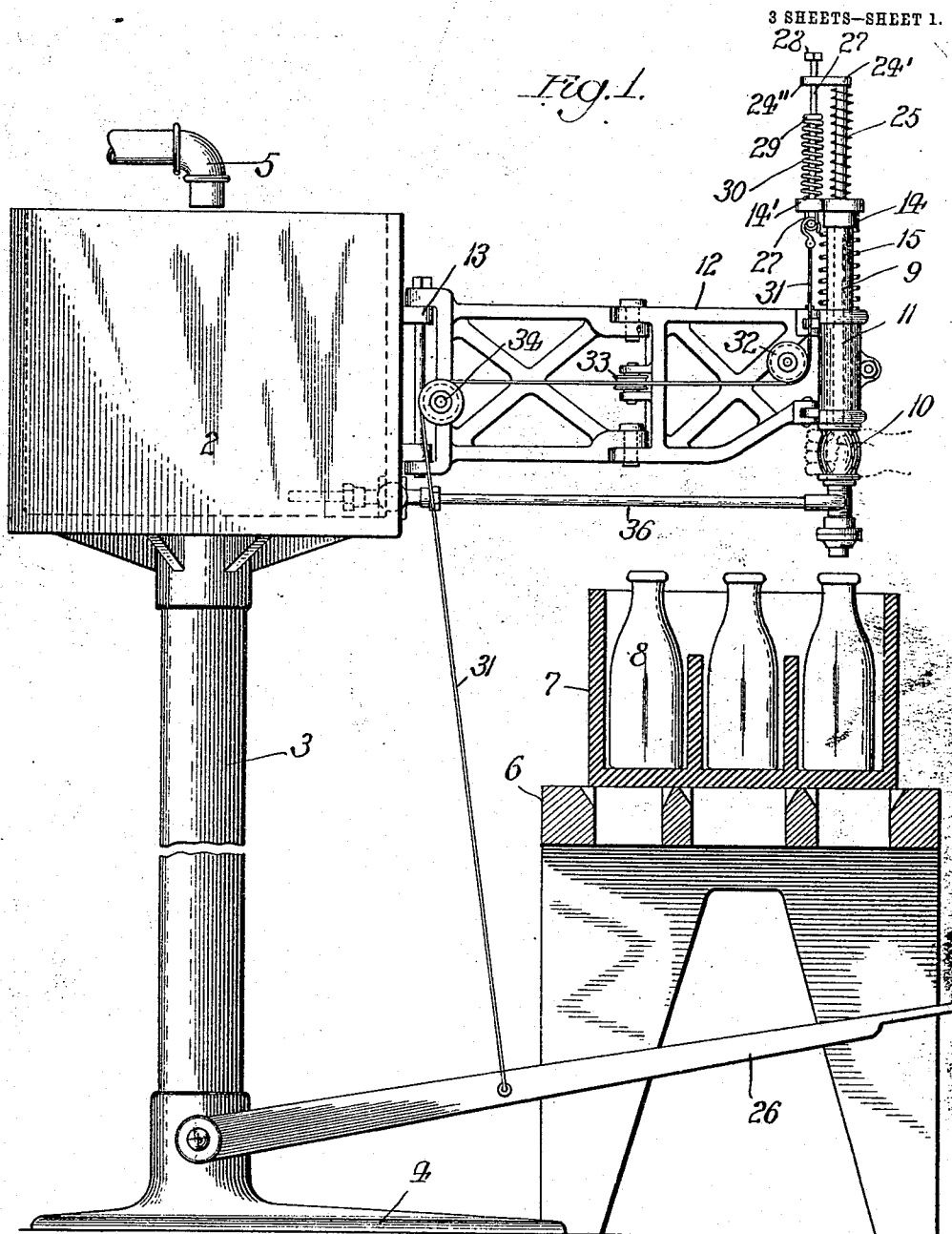
PATENTED OCT. 27, 1906.

T. L. VALERIUS.
BOTTLE FILLER.

APPLICATION FILED AUG. 17, 1903.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Handel G. Baugh.

Lute S. Allen.

Inventor:

Theodore L. Valerius

By.

O. Hawley
Att'y.

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3 SHEETS—SHEET 2.

Fig. 2

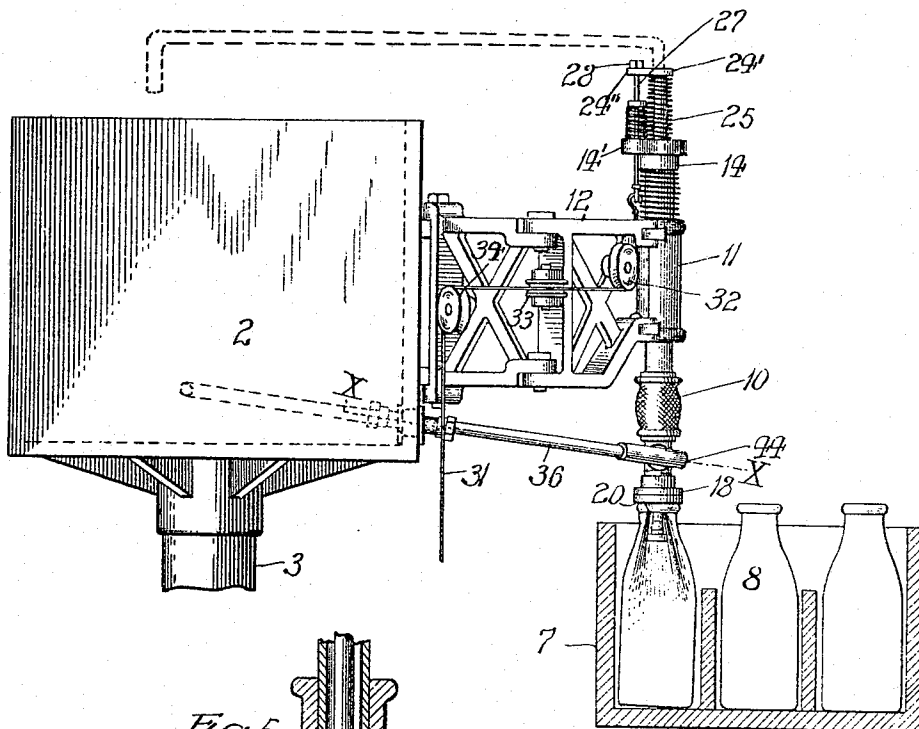


Fig. 5

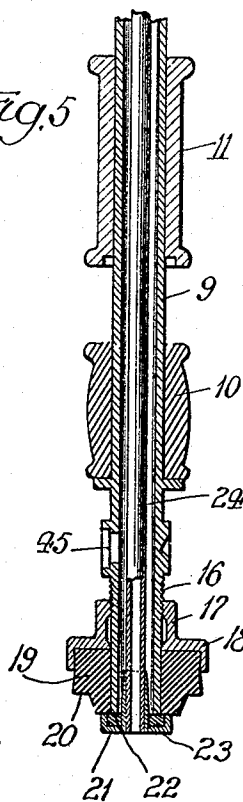


Fig. 6

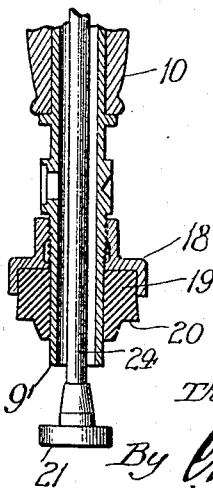


Fig. 7

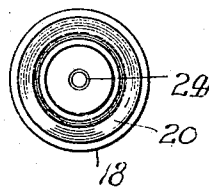
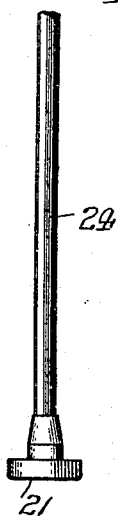


Fig. 8



Witnesses:
Harold L. Barrett
Lester L. Alter

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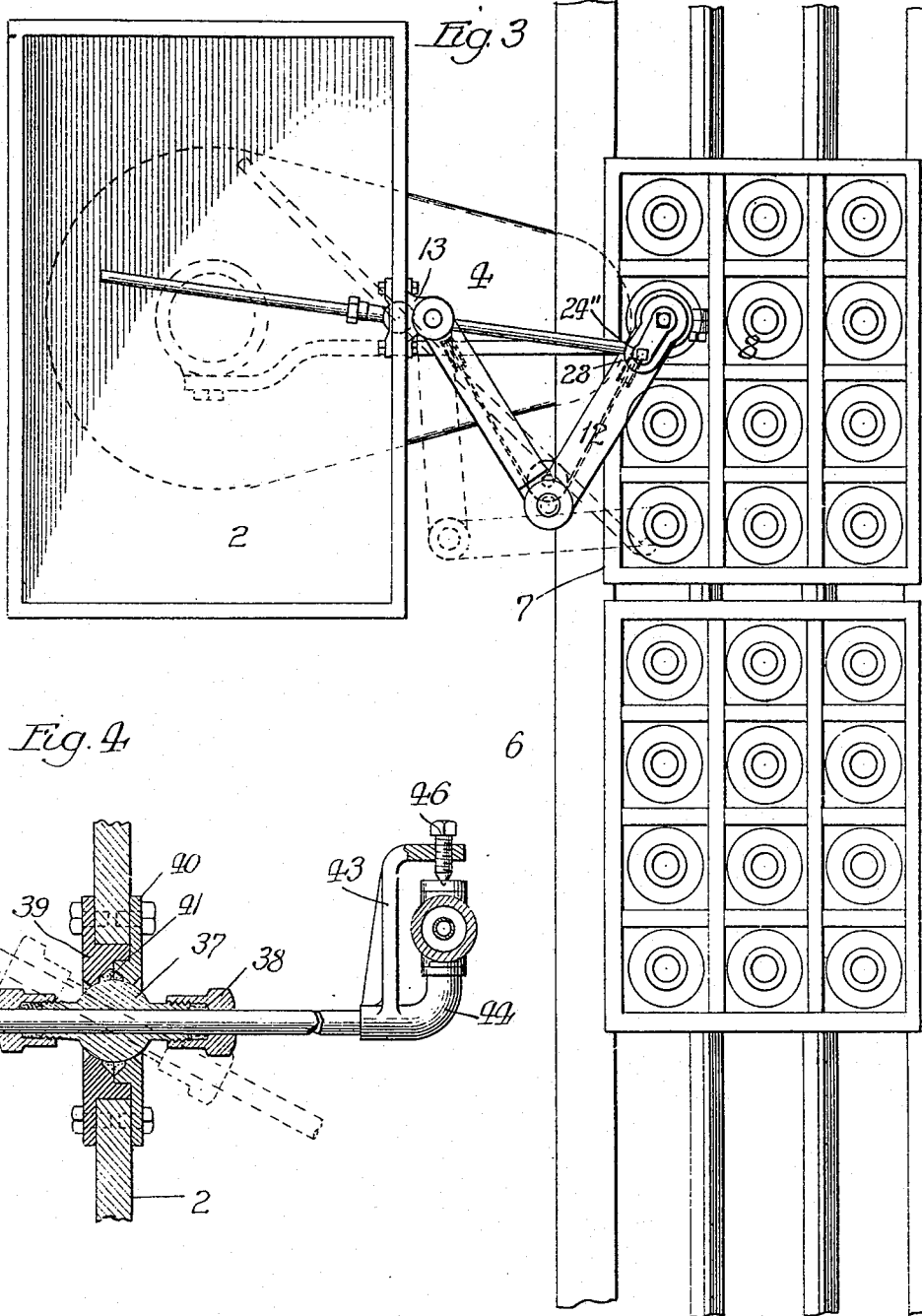
No. 833,988.

PATENTED OCT. 23, 1906.

T. L. VALERIUS.
BOTTLE FILLER.

APPLICATION FILED AUG. 17, 1908.

3 SHEETS—SHEET 3.



Witnesses:
Howard G. Burt
Lute S. Alter

Inventor:
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By *C. Hawley* Atty.

UNITED STATES PATENT OFFICE.

THEODORE L. VALERIUS, OF FORT ATKINSON, WISCONSIN, ASSIGNOR TO
CREAMERY PACKAGE MANUFACTURING COMPANY, OF CHICAGO, ILLI-
NOIS, A CORPORATION OF ILLINOIS.

BOTTLE-FILLER.

No. 833,988.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed August 17, 1903. Serial No. 169,790.

To all whom it may concern:

Be it known that I, THEODORE L. VALE-
RIUS, of Fort Atkinson, in the county of Jef-
ferson and State of Wisconsin, have invented
5 a certain new, useful, and Improved Bottle-
Filler, of which the following is a specifica-
tion.

My invention relates to means for filling
bottles with liquids, and has special reference
10 to a machine for filling milk-bottles and the
like.

The object of my invention is to provide a
bottle-filler adapted for employment with
bottles that have been previously arranged
15 in their crates or cases.

Another object of my invention is to pro-
vide a bottle-filler which will operate rapidly
and by means of which the difficulty present-
ed by the foaming of the liquid may be over-
20 come.

The particular object of my invention is to
provide a machine that is adapted for opera-
tion by hand and which may be built and
sold at a low cost.

25 My invention consists generally in a bottle-
filler comprising a supply-tank, in combina-
tion with a liquid duct or stand-pipe connect-
ed therewith and provided with a bottle-clo-
sure, a vent-tube arranged within said duct
30 or pipe, and an easily-renewable valve pro-
vided on said vent for said duct or stand-pipe;
and, further, my invention consists in a suit-
able tank, in combination with a filler there-
for having a suitable air-vent and a universal-
35 movement connection extending between
said tank and valve and permitting lateral
movement of the valve with relation to the
tank, whereby the filler-valve may be moved
from one bottle to another; and, further, my
40 invention consists in a bottle-filler compris-
ing a supply-tank, in combination with a liq-
uid stand-pipe connected therewith, means
supporting said stand-pipe, wherein said pipe
is vertically and laterally movable, said pipe
45 being provided with a suitable air-vent and a
liquid-valve, whereby a group of bottles may
be successively filled; and, further, my in-
vention consists in various details of con-
struction and in combination of parts, all as
50 hereinafter described, and particularly point-
ed out in the claims.

The invention will be more readily under-
stood by reference to the accompanying

drawings, forming a part of this specification,
and in which—

Figure 1 is a vertical elevation of a bottle-
filling machine embodying my invention. 55
Fig. 2 is a similar elevation illustrating the
filler in operation. Fig. 3 is a plan view of
the machine, the parts being in the position 60
shown in Fig. 2. Fig. 4 is an enlarged sec-
tional detail substantially on the line X X of
Fig. 2. Fig. 5 is an enlarged vertical section
of the valved stand-pipe. Fig. 6 is a similar
view showing the liquid-valve open. Fig. 7 65
is a view of the lower end of the bottle-clo-
sure and valve, and Fig. 8 is a detail eleva-
tion of the vent-pipe and the liquid-valve.

In the drawings, 2 represents the supply
tank or reservoir of my machine. I prefer- 70
ably elevate this upon a standard 3, which
has a broad base-plate 4. Any suitable
means may be used for maintaining a supply
of liquid in the tank 2, the pipe 5 represent- 75
ing such means. In front of the machine I
arrange a bench or support 6 for the bottle
cases or crates, whereon the same slide easily.
These crates contain the bottles 8 to be filled,
and when a crate has been placed before the 80
machine it need not be moved until all the
bottles therein have been filled. For filling
them one after the other I employ a vertically
and laterally movable combined bottle-clo-
sure and filling-valve. This device is conn- 85
ected with the tank 2 and may be moved
from bottle to bottle, as indicated in Figs. 1
and 2 of the drawings. The closure and
filling-valve are attached to the lower end
of the stand-pipe 9. Said stand-pipe is 90
provided with a hand-grip 10 and is slidably
held in the vertical bearing 11, which is
preferably made in two parts, as shown, to
permit the removal of the stand-pipe. Said 95
bearing is placed on the free end of a
jointed arm 12, composed of two rectan-
gular gate-like parts that are hinged to-
gether. The inner end of the arm is secured
to the side of the tank by a hinge 13, and the
stand-pipe is not only supported in the free
end of the arm, but may be moved from place 100
to place above the bench, as required, to fill
the several bottles thereon. The upper end
of the stand-pipe 9 is provided with a collar
14, and between this and the top of the bear-
ing 11 is a lifting-spring 15, which normally 105
holds the stand-pipe in its raised position.

The construction of the stand-pipe and of the filler-valve upon the lower end thereof is well shown in Figs. 5 to 8, and as therein illustrated the lower part of the stand-pipe is provided with a thread 16, that receives the internally-threaded boss 17 of the inverted cup 18. This cup in turn receives the compressible bottle-closure 19, the lower end or bottom of which is reduced to fit within a bottle-neck, leaving a shoulder 20 to bear upon the top of the bottle. The compressible closure surrounds the lower end of the stand-pipe, and said lower end is smooth to permit the vertical adjustment of the closure thereon, as indicated by the different positions of said part in Figs. 5 and 6. The lower end of the stand-pipe is closed by a small valve-disk 21, containing an annular groove 22, in which is a compressible ring 23, that packs against the end 9' of the stand-pipe when the disk is raised. This disk is attached to and supported by the air-vent tube 24, provided within the stand-pipe 9. The vent extends through the disk 21, and through it the air is expelled when a bottle is being filled. The upper end of the vent-tube 24 is also open, and the vent-tube and the valve-disk 21 are supported in the elevated or closed position by a spring 25, arranged about the upper end of the vent-tube between the cap or collar 14 and a collar 24' on the top of the vent-tube. In this manner the lower end of the stand-pipe is normally closed by the valve-disk 21.

It will be noted that the filler-valve on the lower end of the stand-pipe normally stands some distance above the tops of the bottles and to close a bottle must be depressed. For thus depressing the bottle-closure to seat the same in the neck of a bottle and for thereafter depressing or opening the valve 21 at the lower end of the stand-pipe I preferably employ a treadle 26, which is pivoted at the base of the standard or column 3. The collar 14 and the collar 24' are each provided with an arm 14' and 24'', respectively. These arms receive a vertically-slidable rod 27, having a head 28, that is normally above the lug 24''.

29 is a collar placed intermediately on the rod 27 and between which and the lug 14' is a spring 30. The rod passes through the lug 14' and has a loop or eye 27' to receive the end of the cable or cord 31. This cord passes down over a pulley 32 on the jointed arm 12 and then around a pulley 33, arranged substantially at the middle pivot-point of the arm, and thence over the pulley 34, and from thence down to the treadle 26. Preferably the pulleys are so positioned that the tension of the cable or cord 31 tends to buckle the arm, and when the operator removes his hand from the grip 10 and steps upon the treadle 26 the free end of the arm, with the stand-pipe, will be moved inward or

back toward the tank, so that the filled case or crate may be lifted from the bench without endangering the filler mechanism. When the stand-pipe is free, a slight stroke on the treadle will thus effect the retirement of the filler mechanism; but when the stand-pipe is held directly above a bottle to prevent the buckling on the arm the pull of the treadle, operating through the cable, will draw down the rod 27 and therewith the stand-pipe. The spring 30 is stronger than the spring 15, and when placed under tension by the cable 31 thrusts the stand-pipe downward in the bearing 11 to press the closure 19 into and upon the top of a bottle. The bottle serves as a stop for the stand-pipe, and after the closure is seated thereon the further depression of the treadle 26 operates to draw the rod 27 downward against the tension of the spring 30 until the head 28 engages the lug 24'', whereupon the vent-pipe and valve 21 will be lowered. In this manner the opening of the liquid-valve at the lower end of the stand-pipe is delayed until the closure has been tightly seated on the bottle. When the treadle is released, the first result is to free the spring 30 to disengage the rod 27 from the vent-tube and permit the closing of the liquid-valve 25. The next effect is to allow the further and bodily retirement of the spring 30, whereupon the stand-pipe 9 will be elevated by its spring 15, thus lifting the filler-valve and closure out of the bottle.

It will be observed that part of the closure and the disk 21 enter the top of the bottle when the closure is seated thereon. These parts displace liquid that would otherwise occupy the neck of the bottle, and by adjusting the cup 18 this displacement may be increased or diminished, as the operator may desire. The connection between the stand-pipe 9 and the tank 2 is made by means of a telescoping tube or pipe 36. The inner end of this pipe 36 is slidably arranged in the ball-sleeve 37, having packing-boxes 38 on one or both ends. The ball 37 is held in a socket in the front wall of the tank, said socket comprising the plates 39 and 40, formed to fit the ball and making tight joints therewith. A V-groove 41 is provided between the plates 39 and 40, and this is preferably filled with material that is packed upon the ball when the outer plate 40 is put in place. The ball-joint permits the placing of the pipe at any angle, and, as shown in the drawings, said pipe is adapted to slide back and forth through the ball-sleeve 37 in any of its positions or angles. The inner end of the pipe 36 is open within the tank 2. On the outer end of the pipe 36 is a yoke 43, the elbow portion 44 of which is a continuation of the pipe 36 and is seated in the opening 45 in the side of the stand-pipe. The connection is maintained by means of a set-screw 46 in the opposite arm of the yoke pressing against the opposite side of the

stand-pipe. These parts form a horizontal pivot and permit the vertical movement of the stand-pipe without breaking the liquid connection thereto. If desired, the upper end of the vent-tube 24 may have an extension which overhangs the tank 2, as shown by dotted lines in Fig. 2, the purpose thereof being to return to the tank any liquid or foam that may be forced upward through the vent. The stand-pipe, even when depressed, extends above the surface of the liquid in the supply-tank and a stand of liquid is always maintained therein.

It is obvious that the bottles may be elevated to the stand-pipe, either one at a time or collectively, in place of lowering the stand-pipe, as herein shown and described. It is also obvious that two or more stand-pipes may be arranged upon the jointed arm for simultaneous operation. Still other modifications of my invention will readily suggest themselves to one skilled in the art, and I therefore do not confine the invention to the specific constructions herein shown and described.

The operation of my invention is as follows: The tank is first filled with liquid, a portion of which will pass through the pipe 36 and rise in the stand-pipe 9. The machine is then in readiness for use, whereupon one or more bottles are placed upon the bench, the same being preferably left within the crate or case in which they arrive at the machine. The operator then grasps the handle or grip 10 and places the stand-pipe over one of the bottles. He then depresses the treadle, and thereby, through cable 31, forces down the stand-pipe until the bottle-closure 19 is firmly seated in the neck of the bottle. Further movement of the treadle operates to open the liquid-valve at the lower end of the stand-pipe, whereupon the liquid will rapidly flow into the bottle. Meantime the air which is expelled by the entrance of the liquid passes off through the vent-tube. The filling of the bottle is watched by the operator, and when the liquid-level approaches the top of the bottle he releases the treadle 26, whereupon the liquid-valve 21 will be closed and the stand-pipe elevated by the several springs. The stand-pipe is then placed over the next bottle and the operation repeated. The pivotal arrangement of the supporting-arm and of the liquid-pipe 36 permits the operator to reach any bottle in the crate. When all the bottles in the crate have been filled, the crate may be pushed to one side on the bench or lifted therefrom. In the latter case the operator should first strike the treadle to retract or retire the filler before removing the filled crate.

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

1. In a bottle-filler, a reservoir, in combination with a liquid-pipe, having a universal-joint extensible connection with said reservoir, a bottle-closure provided on the free end of said pipe, means for controlling the flow of liquid through said pipe, and means normally elevating and closing said valves, substantially as described.

2. In a bottle-filler, a suitable reservoir, in combination with a jointed arm, a stand-pipe carried by said arm, a filler-valve and bottle-closure provided on said stand-pipe, and a flexible connection between said stand-pipe and reservoir, substantially as described.

3. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, means supporting said stand-pipe for horizontal, lateral movement, with relation to said reservoir, means for moving said stand-pipe vertically, and a suitable liquid connection between said reservoir and stand-pipe, substantially as described.

4. In a bottle-filler, a reservoir, in combination with a liquid stand-pipe, flexibly connected with said reservoir, for lateral movement with relation thereto, a bottle-closure arranged on the lower end of said stand-pipe, means for depressing said stand-pipe, to seat said closure in a bottle, a liquid-valve and means automatically opening said valve after the seating of said closure, substantially as described.

5. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, a support for said stand-pipe wherein said stand-pipe is vertically and laterally movable with respect to said reservoir, a bottle-closure provided on the lower end of said stand-pipe, a liquid-valve also thereon, a vent-pipe and means for successively depressing said bottle-closure and valve, substantially as described.

6. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, a guide wherein said stand-pipe is vertically movable, and a swiveled tube forming a liquid connection between said reservoir and said stand-pipe, substantially as described.

7. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, a swiveled tube forming a liquid connection between said reservoir and stand-pipe, a vertical guide for said stand-pipe, a bottle-closure and a valve provided on the stand-pipe and means for successively seating said closure and opening said valve, substantially as described.

8. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, a swiveled liquid connection between said reservoir and stand-pipe, a bottle-closure on said stand-pipe, a support wherein said stand-pipe is held vertically, and means for successively depressing said stand-pipe and opening said valve, substantially as described.

9. In a bottle-filler, a suitable reservoir, in

- combination with a suitable bottle-support, a stand-pipe held vertically above said support and laterally movable with relation to said reservoir, a flexible liquid connection 5 between the reservoir and stand-pipe, a suitable liquid-valve, an air-vent, a bottle-closure on the lower end of said stand-pipe, and means for seating said bottle-closure upon a bottle and for opening said valve, substantially as described. 10
10. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, a support for said stand-pipe, permitting the movement of the stand-pipe toward and from said reservoir, a bottle-closure and valve for said 15 stand-pipe, means for moving the stand-pipe vertically and opening said valve, a liquid-pipe having a universal-joint connection with said reservoir, and a swiveled connection with said stand-pipe, substantially as described. 20
11. In a bottle-filler, a suitable reservoir, in combination with a jointed arm pivoted thereon, a vertical guide on the free end of 25 said arm, a stand-pipe arranged in said guide, an extensible tube or pipe, forming a liquid connection between said reservoir and said stand-pipe, a bottle-closure and valve, and means upon said arm for depressing said 30 stand-pipe and opening said valve, substantially as described.
12. In a bottle-filler, a suitable reservoir, in combination with a jointed arm suitably pivoted, a stand-pipe carried by said arm, a 35 suitable liquid connection between said reservoir and stand-pipe, a bottle-closure and valve provided on said stand-pipe, springs normally elevating said stand-pipe and closing said valve, an operating-spring interposed 40 between said stand-pipe and valve, and means upon said arm, connected with said operating-spring, as and for the purpose described.
13. In a bottle-filler, a suitable reservoir, 45 in combination with a jointed arm, a stand-pipe and bearing upon said arm wherein said stand-pipe is removably held, a liquid-pipe swiveled to the lower end of said stand-pipe and having a universal coupling upon said 50 reservoir, a bottle-closure and valve upon said stand-pipe, and means upon said arm for actuating said stand-pipe and valve, substantially as described.
14. In a bottle-filler, a suitable reservoir, 55 in combination with a stand-pipe, a support for said stand-pipe, permitting the lateral movement thereof with relation to said reservoir, a suitable valve for said stand-pipe, means for actuating said stand-pipe and 60 valve, a liquid-pipe extending between said reservoir and stand-pipe, and a detachable swivel connection between said pipe and detachable stand-pipe, substantially as described.
15. In a bottle-filler, a suitable reservoir, 65 a sleeve universally jointed therein, a pipe, 36, slidable in said sleeve, a liquid stand-pipe jointed to the free end of said pipe, and means carrying said stand-pipe for operation, substantially as described. 70
16. In a bottle-filler, a suitable reservoir, in combination with a jointed arm pivoted thereon, a stand-pipe arranged in said arm and connected with said reservoir, a bottle-closure and a valve upon said stand-pipe, 75 means upon said arm for actuating said stand-pipe and valve and said means being operable to retract said arm and stand-pipe, substantially as described.
17. In a bottle-filler, a reservoir, in combination with a bottle-closure, a filler-valve 80 connected with said reservoir, a universal-movement support for said closure and valve, a treadle for actuating said closure and valve, when the latter are held against movement in a horizontal plane, and said treadle 85 being operable to retract said closure and valve when loosed, substantially as described.
18. In a bottle-filler, a suitable reservoir, in combination with a stand-pipe, a bottle-closure and a liquid-valve on the lower end of 90 said stand-pipe, an extensible horizontal tube forming a liquid connection between said stand-pipe and reservoir, and an air-vent extending through said valve and stand-pipe, substantially as described. 95
19. In a bottle-filler, a reservoir, in combination with a liquid-pipe, having a universal-joint extensible pipe connection with said reservoir, a compressible bottle-closure, 100 provided on the free end of said pipe, a valve, 21, for controlling the flow of liquid through said pipe, and means normally elevating and closing said valve against said pipe, substantially as described. 105
20. In a bottle-filler, a reservoir, in combination with a stand-pipe, means connecting the lower parts of said reservoir and 110 stand-pipe, a bottle-closure and valve provided on said stand-pipe and a jointed arm supporting said stand-pipe for vertical and lateral movement with relation to said reservoir, substantially as described.
21. In a bottle-filler, a reservoir, a substantially horizontal liquid-tube having a telescopic connection with said reservoir, a 115 swinging arm, a filler-tube, supported by said arm, said filler-tube having an inlet-opening adjacent its lower end, and a yoke having a hollow portion connecting with said inlet-opening, and an opposed member engaging 120 the opposite side of said tube, the inlet portion of said yoke also connecting with said liquid-tube; substantially as described.
22. In a bottle-filler, a reservoir, a liquid-tube having a universal-joint extensible connection with the reservoir, a swinging arm, a 125 filler-tube supported by said arm, said filler-tube having an inlet-opening adjacent its lower end, and a yoke having a hollow por- 130

tion connecting said liquid-tube to said inlet-opening and also having an opposed member engaging the opposite side of said filler-tube; substantially as described.

5 23. A bottle-filler comprising a liquid-reservoir, a swinging arm carried thereby, a vertically-movable filler-valve and bottle-closure carried by said arm, and means for depressing first the bottle-closure and then the
10 filler-valve by a single movement; substantially as described.

24. A bottle-filler comprising a liquid-reservoir a swinging arm carried thereby, a vertically-movable filler-pipe normally supported
15 by a spring resting on said arm, means for depressing the filler-pipe, a second spring stronger than the first spring interposed between the filler-pipe and said depressing means, a bottle-closure carried by the filler-
20 pipe, and suitable connections from the filler-pipe to the reservoir; substantially as described.

25. A bottle-filler comprising a liquid-reservoir, a swinging arm carried thereby, a vertically-movable stand-pipe supported by a
25 spring resting on said arm, said stand-pipe being provided with a perforated lug, a vent-tube within the stand-pipe and carrying a filler-valve upon its lower end, said vent-tube
30 being supported by a spring resting upon the upper end of the stand-pipe and having a perforated lug upon its upper end, a depressing-rod passing through said perforated lugs, and a spring to yieldingly transmit the downward
35 movement of the depressing-rod to the stand-pipe whereby the bottle-closure will be yieldingly seated on a bottle; substantially as described.

26. A bottle-filler comprising a jointed

arm arranged to swing in a horizontal plane 40 but vertically immovable, in combination with a vertical filler-tube mounted for independent vertical movement upon said arm; substantially as described.

27. A bottle-filler comprising a hinged 45 arm arranged to swing in a horizontal plane but vertically immovable, in combination with a spring-supported filler-tube mounted for independent vertical movement upon said arm, and means for depressing said tube; 50 substantially as described.

28. A bottle-filler comprising a reservoir, a hinged arm arranged to swing in a horizontal plane but vertically immovable, in combination with a spring-supported vertical filler- 55 tube mounted for independent vertical movement upon said arm, a bottle-closure upon said tube, and suitable liquid-supply connections from the reservoir to the filler-tube; substantially as described. 60

29. A bottle-filler comprising a reservoir, a hinged arm arranged to swing in a horizontal plane but vertically immovable, in combination with a spring-supported vertical filler- 65 tube mounted for independent vertical movement upon said arm, a bottle-closure upon said tube, and telescopic liquid connections from the reservoir to the filler-tube; substantially as described.

In testimony whereof I have hereunto set 70 my hand, this 11th day of June, A. D. 1903, at Chicago, Cook county, Illinois, in the presence of two witnesses.

THEODORE L. VALERIUS.

Witnesses:

C. G. HAWLEY,
B. K. SEFTON.