

F. B. THATCHER.
BOTTLE FILLING MACHINE.

APPLICATION FILED DEC. 6, 1902.

3 SHEETS—SHEET 1.

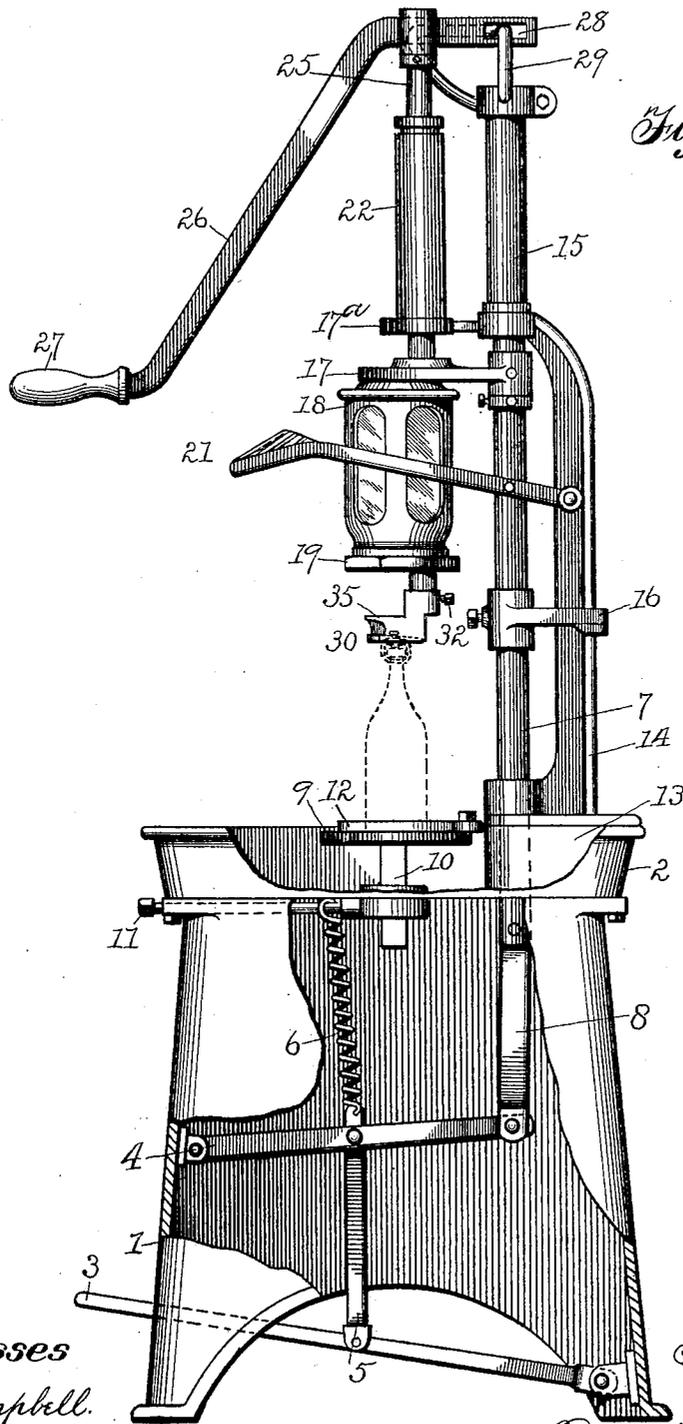


Fig. 1.

Witnesses

F. G. Campbell.

Emma P. Coffin

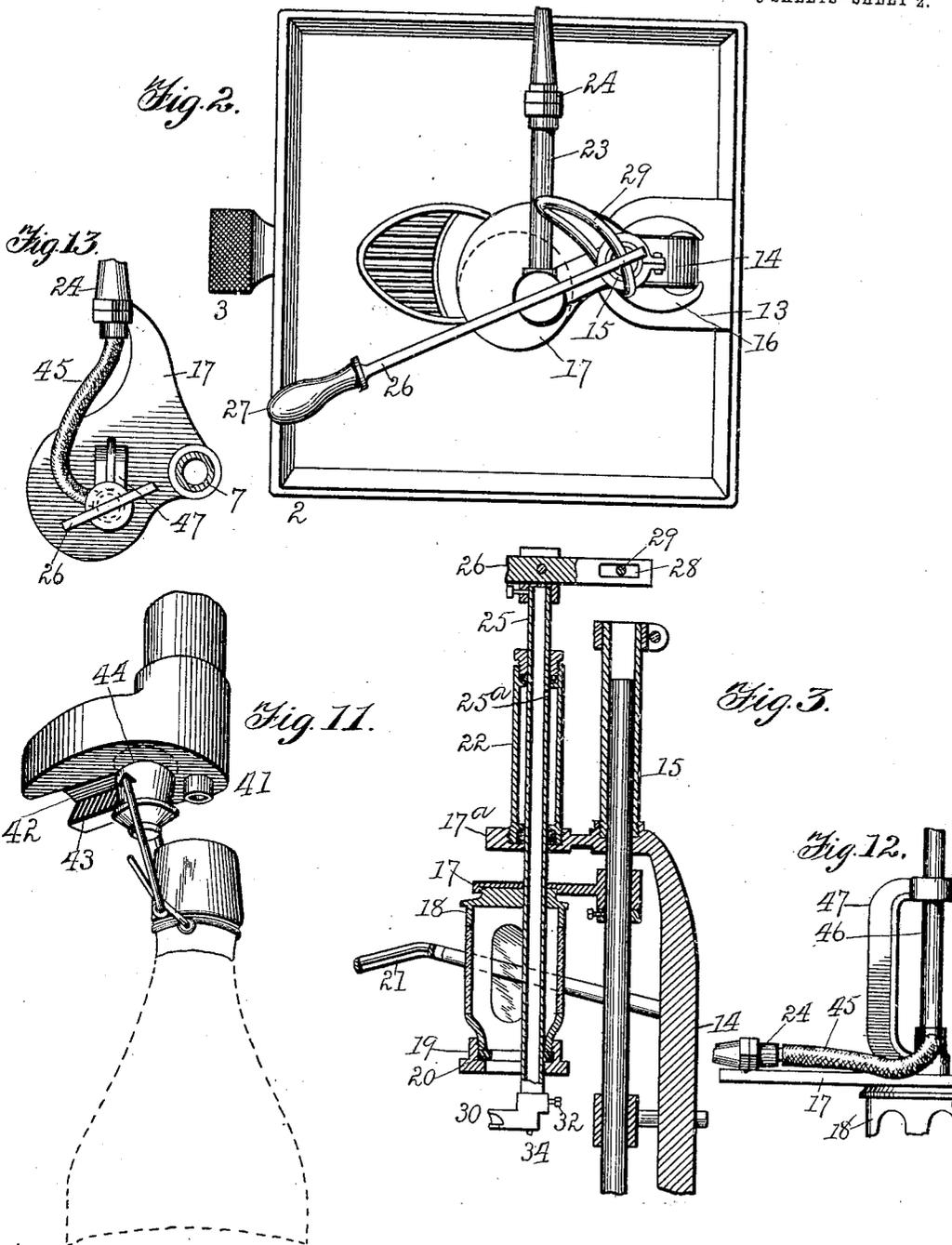
Inventor:

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3 SHEETS—SHEET 2.



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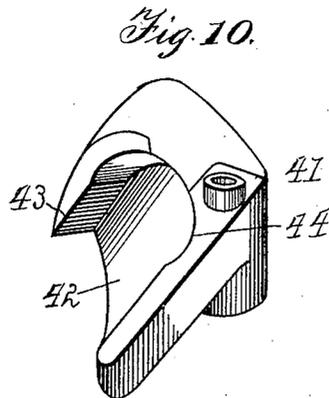
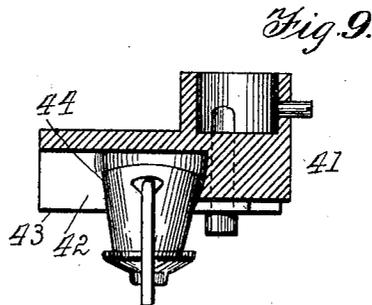
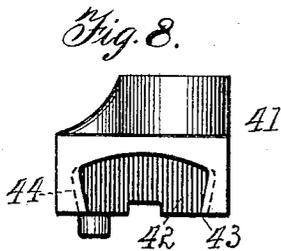
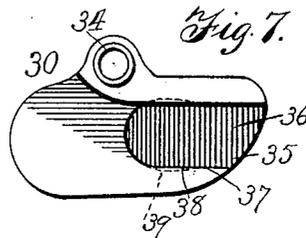
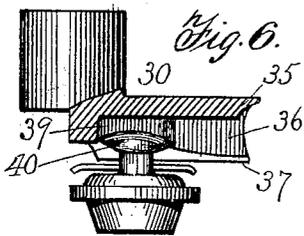
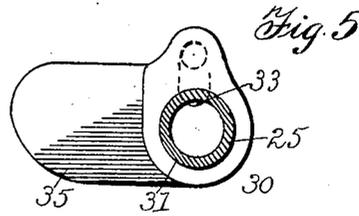
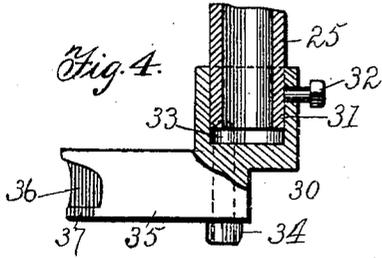
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3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERICK B. THATCHER, OF PROVIDENCE, RHODE ISLAND.

BOTTLE-FILLING MACHINE.

No. 809,407.

Specification of Letters Patent.

Patented Jan. 9, 1906

Application filed December 6, 1902. Serial No. 134,161.

To all whom it may concern:

Be it known that I, FREDERICK B. THATCHER, a citizen of the United States, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

My invention relates to the class of machines employed for filling bottles with a liquid under pressure; and the object of my invention is to provide a machine of this class especially adapted for use in filling bottles provided with what are known as "swing-bail" stoppers; and a further object is to provide means for completely uncovering the mouth of the bottle and for directing the liquid directly into the mouth of the bottle; and a further object is to provide means for securely and tightly replacing the stopple in the mouth of the bottle; and a further object is to provide a machine of this class that shall be extremely durable, simple in construction, and easy of manipulation.

A form of machine in the use of which the above objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of my improved bottling-machine. Fig. 2 is a top or plan view of the same. Fig. 3 is a detail view, in central longitudinal section, through the filling apparatus looking from the side. Fig. 4 is a detail side view, on enlarged scale, partly in section, of the lower end of the filling-tube and stopper-holder. Fig. 5 is a top view of the same. Fig. 6 is a detail side view, partly in section, of the lower end of the stopper-holder on enlarged scale. Fig. 7 is a detail bottom view, on enlarged scale, of the stopper-holder. Fig. 8 is a detail front view, on enlarged scale, of a slightly-modified form of holder. Fig. 9 is a detail view in section through said modified form on enlarged scale. Fig. 10 is a detail perspective view, on enlarged scale, of this latter form of holder. Fig. 11 is a perspective view, on enlarged scale, showing the operation of the holder in grasping and removing a porcelain stopper. Fig. 12 is a view in side elevation of the filling-tube, showing a connection from the syrup-gage directly therewith. Fig. 13 is a top view showing this connection.

In the accompanying drawings the numeral 1 denotes a base or standard on which is supported a pan or table 2. A treadle 3 is pivoted to the inner side of the base and pro-

jects to the front in position accessible to the foot of the user. A lever 4 is also pivoted to the inner side of the base and is connected with the treadle by a rod 5. A spring 6 holds the parts normally at the upper limit of their play. A plunger 7 extends downward through the pan or table 2 and is connected, by means of a rod 8, with the lever 4.

A support 9 is mounted in the bottom of the pan 2 and has a shank 10 extending through the bottom of the pan and held in position, as by means of a set-screw 11, projecting through the base or standard to the front of the machine. A guide 12 is located on the support 9 to determine the proper position of a bottle which is to be filled in the machine.

A boss 13 is located in one side of the pan 2, projecting, preferably, to the upper edge of the pan, and a bracket 14 is secured to this boss and projects upward therefrom. The plunger 7 has a bearing in the upper and lower portions of this bracket, this plunger extending into a tube 15, secured to the upper end of the bracket, the plunger having a free sliding movement in its supports. A guide 16 is secured to the plunger and projects on opposite sides of the bracket and prevents turning movement of the plunger.

A housing-support 17 is secured to the plunger 7, and a housing 18 is secured to this support and projects downward from the under side thereof. This housing is preferably formed of metal and has openings about its periphery, in which glass is inserted, through which the mouth of the bottle located within the housing may be observed. A clamping-nut 19 is secured to the bottom of the housing, and a packing 20 is clamped between the edge of the housing and this clamping-nut. This packing is of yielding form and shaped to fit upon the sloping surface of the neck of the bottle to be filled in the machine. The housing is removably secured to the support 17, preferably as by means of interengaging screw-threaded parts. A guard or shield 21 is pivoted to the bracket 14 and is in engagement with the plunger, so that as the latter is lowered the shield will assume a position in front of the bottle.

A filling-chamber 22 is secured upon a support 17^a, and a tube 23 leads from said filling-chamber to the end 24 of a syrup-gage. The end only of this syrup-gage is shown herein, as the construction and operation of the gage

itself will be readily understood by those skilled in the art. A filling-tube 25 passes through the filling-chamber 22 and through the housing 18. The opening at each end of the filling-chamber and through the housing-support 17 is suitably packed to allow a lengthwise movement of the filling-tube, but prevent the escape of fluid from within the chamber and through the openings in which the tube moves. An opening 25^a is formed in the wall of the filling-tube, this opening being so located that it is within the chamber when the filling-tube is in position to admit fluid to a bottle being filled. An operating-lever 26 is pivoted to the upper end of the filling-tube 25 and projects downward therefrom toward the front of the machine. A handle 27 is secured to this lever as a means of operating it. The lever projects to the opposite side of the filling-tube and has a guide-slot 28 for the reception of a lever-guide 29, that is secured to the upper end of the tube 15.

A stopper-holder 30 is secured, preferably removably, to the lower end of the filling-tube 25. This stopper-holder has a socket 31, in which the lower end of the filling-tube 25 fits, the holder being secured to the tube, as by means of a set-screw 32. A passage 33 leads from the socket 31 downward through the holder to a nipple 34, from which the liquid to be supplied to the bottle flows. This stopper-holder is also provided with a foot 35, in which is formed a recess 36. This recess is open on the front; but the bottom is partially closed by a lip 37, located on each side and leaving an opening 38 in the bottom of the holder. The recess 36 is enlarged at the back, as indicated at 39, and each of the lips 37 is depressed at the back of the recess 36, forming a holding-socket 40, in which the stopper or a projection therefrom is located when the filling-tube 25 is lifted. This enlargement 39, and especially the holding-socket 40, retains a stopper firmly in place and prevents any movement out of the holder.

The holder above described is designed especially for use in connection with a form of stopper which has a headed projection on the upper side, the head passing into the recess 36 and the shank being located between the lips 37 and when the bottle is firmly placed the head or button resting in the socket 40.

In the form of holder shown in Figs. 8, 9, and 10 means are provided for holding a porcelain stopper or one that has a comparatively smooth outer surface—that is, free from projections or the like. In this form of the holder, however, there is provided the same means for securely holding the stopper as in the form above described. The holder 41 is provided with a recess 42, which tapers from the upper side to the lower end, providing a narrow opening 43 at the bottom. The

recess 42 is enlarged at the back portion thereof, providing a stopper-chamber 44. In this form of the device the tapered porcelain stopper is inserted in the recess 42 and located at the back portion thereof in the enlarged stopper-chamber 44. As the filling-tube is raised this stopper sinks into the enlarged stopper-chamber 44 and is securely held therein from any movement toward the front, as in the device above described.

In the operation of the machine the bail of the stopper is first loosened, and, the parts being in the position shown in Fig. 1, the stopper is inserted in the holder and located in the stopper-holding chamber therein and the bottle placed in position on the bottle rest or support. Pressure upon the foot-treadle moves the housing until the packing securely rests upon the sloping shoulder of the bottle, thus locating the mouth of the bottle in the securely-packed chamber. The handle 27 is grasped and lifted upward, sinking the stopper into the stopper-chamber, and the handle is then swung to one side. This carries the stopper entirely away from the mouth of the bottle and locates the nipple 34 directly over the mouth of the bottle. The syrup-gage is then opened, and the liquid flows into the bottle under pressure. When the proper amount of liquid is supplied to the bottle, the syrup-gage is turned off, the handle 27 swung back to position and lowered. Pressure is now retained on the handle, and the pressure on the foot-treadle is released, the housing being carried upward under the force of the spring 6. The eccentric of the stopper is now secured in position, and pressure on the handle is released and the bottle removed, when the operation may be repeated.

In Figs. 12 and 13 there is shown a form of my improvement that is in some forms of the machines the preferred form of the device. In this structure a connection is made directly between the syrup-gage and the filling-tube, a flexible connection 45 being secured to the end 24 of the syrup-gage and also to the filling-tube. In this construction the filling-tube 46 is supported in a bracket 47, secured to the plate 17, to which the housing 18 is secured. The chamber surrounding the filling-tube is dispensed with in this form of construction, and the flexible connection allows the longitudinal movement of the filling-tube, together with the lateral swinging movement thereof. The other forms of the structure are the same as hereinbefore described.

It is obvious that other forms for engaging a stopper may be employed and yet come within the scope of my invention and without the exercise of anything more than mere mechanical skill, and such other forms so long as they embody a housing, and means projecting within the housing for engaging

the stopper to lift it and swing it to one side independent of its attachment to the bottle, will be understood as coming within the scope of the invention.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bottle-filling machine, in combination with a support and a housing, a filling-tube projecting into the housing, a stopper-engaging device borne on the tube and having means to engage and entirely disconnect the stopper from the bottle and lift and carry it in the lateral movement of the stopper-engaging device, and means for imparting independent longitudinal and lateral movement to said device to disconnect and swing the stopper clear of the mouth of the bottle.

2. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a stopper-engaging device located on the tube and having means to engage and entirely disconnect the stopper from the bottle and lift and carry it in the lateral movement of the stopper-engaging device, and means for independently lifting and turning said tube to disconnect and remove the stopper from the bottle.

3. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and located eccentrically therein, a foot secured to the tube and adapted to engage a stopper, and means for entirely and independently lifting and turning said tube to remove the stopper from the mouth of a bottle.

4. In a bottle-filling machine, in combination with a support and a housing therefor, a filling-tube projecting into the housing and located eccentrically therein, a foot secured to the tube and having stopper-engaging means to engage and entirely lift and carry the stopper in the lateral movement of the stopper-engaging device and having a fluid-outlet, and means for lifting and axially turning the tube to remove the stopper and locate the fluid-outlet over the mouth of a bottle.

5. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and having a recess located and arranged to entirely lift and carry a stopper, and means for axially turning the tube to remove the stopper from the mouth of a bottle.

6. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and having a recess located and arranged to entirely lift and carry a stopper, and means for lifting and axially turning the tube to remove the stopper from the mouth of a bottle.

7. In a bottle-filling machine, in combina-

tion with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a foot offset from the tube and containing a recess located and arranged to entirely lift and carry a stopper, and means for lifting and axially turning the tube to remove the stopper from the mouth of a bottle.

8. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a foot offset from the tube and having a recess located and arranged to entirely lift and carry a stopper, and a fluid-outlet, and means for axially turning the tube to remove the stopper and locate the outlet over the mouth of a bottle.

9. In a bottle-filling machine, in combination with a support and a housing, means for reciprocating the housing, a filling-tube extending into the housing, a foot offset from the end of the tube and having a recess located and arranged to entirely lift and carry a stopper, and means for raising and axially turning the tube to remove the stopper from a bottle.

10. In a bottle-filling machine, in combination with a support and a housing, means for reciprocating the housing, a filling-tube, a fluid connection to the filling-tube, a foot offset from the end of the tube and having a recess located and arranged to entirely lift and carry a stopper, and a fluid-outlet, and means for axially turning the tube to remove the stopper and locate the fluid-outlet over the mouth of a bottle.

11. In a bottle-filling machine, in combination with a support and a housing, means for reciprocating the housing, a filling-tube projecting into and located eccentrically to the axis of the housing, a fluid connection with the filling-tube, a foot offset from said tube and having a recess located and arranged to entirely lift and carry a stopper, and a fluid-outlet, and means for axially turning the tube to remove the stopper and locate the fluid-outlet over the mouth of a bottle.

12. In a bottle-filling machine, in combination with a support and a housing, a filling-tube projecting into the housing and having means located and arranged to entirely lift and carry a stopper, and a handle-lever secured to the tube to turn it to remove the stopper from the mouth of a bottle.

13. In a bottle-filling machine, in combination with a support and a housing, a filling-tube projecting into the housing and having means located and arranged to entirely lift and carry a stopper, a handle-lever secured to the tube to turn it, and a guide for said lever.

14. In a bottle-filling machine, in combination with a support and a housing, a filling-chamber located above the housing, a filling-tube extending through said chamber into the housing, a fluid connection to said fluid-

- chamber, means on the end of a tube located and arranged to entirely lift and carry a stopper, and means for axially turning the tube to carry the stopper from the mouth of a bottle. 5
15. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a stopper-holding device having a recess for the entrance of a stopper and an enlarged recess for holding the stopper in the final placing of the bottle before movement of the stopper-holding device to remove the stopper, and means for operating the stopper-engaging device to entirely lift and carry the stopper. 10 15
16. In a bottle-filling machine, in combination with a support and a housing therefor, a filling-tube projecting into the housing, a foot on the end of the tube having a lipped recess extending lengthwise of the foot, and a holding-recess located in the upper surface of the lips for the final placing of a stopper before movement of the foot to remove the stopper. 20 25
17. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a stopper-engaging device having a lipped recess and an enlarged recess at the back portion thereof for the final reception of a stopper before movement of the stopper-engaging device to remove the stopper, and means for operating the stopper-engaging device. 30 35
18. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a foot on the end of a tube having a lipped recess extending lengthwise of the foot and a lateral recess for the final reception of a stopper before movement of the foot to remove the stopper opening out of the lengthwise recess, and means for operating the tube. 40 45
19. In a bottle-filling machine, in combination with a support and a housing therefor, a filling-tube, a foot secured to the end of the tube and having a recess for the reception of a stopper and an enlarged recess at the back portion thereof for finally receiving a stopper before movement of the foot to remove it, and means for operating the tube. 50
20. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, stopper-engaging means located on the tube to entirely lift and carry a stopper, and means for lifting and axially turning said tube. 55 60
21. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and eccentrically located therein, stopper-engaging means on the end of the tube to entirely lift and carry a stopper and means for lifting and axially turning said tube. 65
22. In a bottle-filling machine, in combination, a support, a housing appurtenant to the support, a filling-tube extending into and located eccentrically of the housing, an offset foot from said tube having means for receiving a stopper to entirely lift and carry it, and means for operating the tube. 70 75
23. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and having a recess located and arranged to entirely lift and carry a stopper, and means for axially turning the tube to remove the stopper in a lateral direction from the mouth of a bottle. 80
24. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and having a recess located and arranged to entirely lift and carry a stopper, and means for lifting and axially turning the tube to remove the stopper in a lateral direction from the mouth of a bottle. 85 90
25. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a foot offset from the tube and containing a recess located and arranged to entirely lift and carry a stopper, and means for lifting and axially turning the tube to remove the stopper in a lateral direction from the mouth of a bottle. 95 100
26. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, a foot offset from the tube and having a recess located and arranged to entirely lift and carry a stopper and a fluid-outlet, and means for axially turning the tube to remove the stopper in a lateral direction and locate the outlet over the mouth of the bottle. 105
27. In a bottle-filling machine, in combination with a support and a housing, means for reciprocating the housing, a filling-tube extending into the housing, a foot offset from the end of the tube and having a recess located and arranged to entirely lift and carry a stopper, and means for raising and axially turning the tube to remove the stopper in a lateral direction from the mouth of the bottle. 110 115
28. In a bottle-filling machine, in combination with a support and a housing, means for reciprocating the housing, a filling-tube, a fluid connection to the filling-tube, a foot offset from the end of the tube and having a recess located and arranged to entirely lift and carry a stopper and a fluid-outlet, and means for axially turning the tube to remove the stopper in a lateral direction from and locate the fluid-outlet over the mouth of the bottle. 120 125
29. In a bottle-filling machine, in combination with a support and a housing, means for reciprocating the housing, a filling-tube, a fluid connection to the filling-tube, a foot offset from the end of the tube and having a recess located and arranged to entirely lift and carry a stopper and a fluid-outlet, and means for axially turning the tube to remove the stopper in a lateral direction from and locate the fluid-outlet over the mouth of the bottle. 130

nation with a support and a housing, means for reciprocating the housing, a filling-tube projecting into and located eccentrically to the axis of the housing, a fluid connection with the filling-tube, a foot offset from said tube and having a recess located and arranged to entirely lift and carry a stopper and having a fluid-outlet, and means for axially turning the tube to remove the stopper in a lateral direction from and locate the fluid-outlet over the mouth of the bottle.

30. In a bottle-filling machine, in combination with a support and a housing appurtenant thereto, a filling-tube projecting into the housing, stopper-engaging means located on the tube to entirely lift and carry a stopper, and means for axially turning said tube and lifting it independently of its turning movement.

31. In a bottle-filling machine, in combi-

nation with a support and a housing appurtenant thereto, a filling-tube projecting into the housing and eccentrically located therein, stopper-engaging means on the end of the tube to entirely lift and carry a stopper, and means for axially turning said tube and for lifting it independent of its turning movement.

32. In a bottle-filling machine, in combination, a filling-tube having a foot on the end thereof containing a lipped recess extending lengthwise of the foot and a holding-recess located in the upper surface of the lips for the final reception of a stopper before movement of the foot to remove the stopper.

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Witnesses:

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