

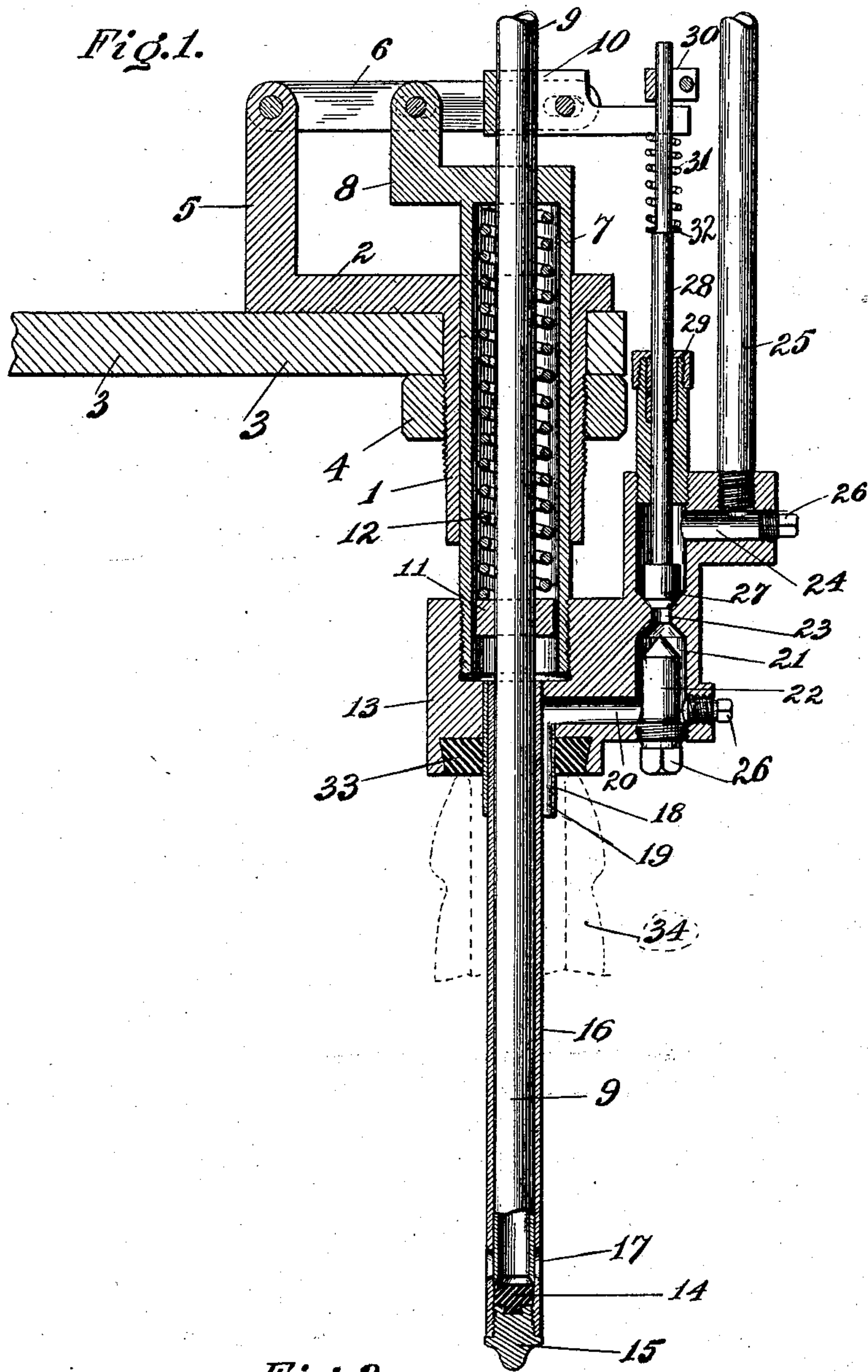
No. 747,729.

PATENTED DEC. 22, 1903.

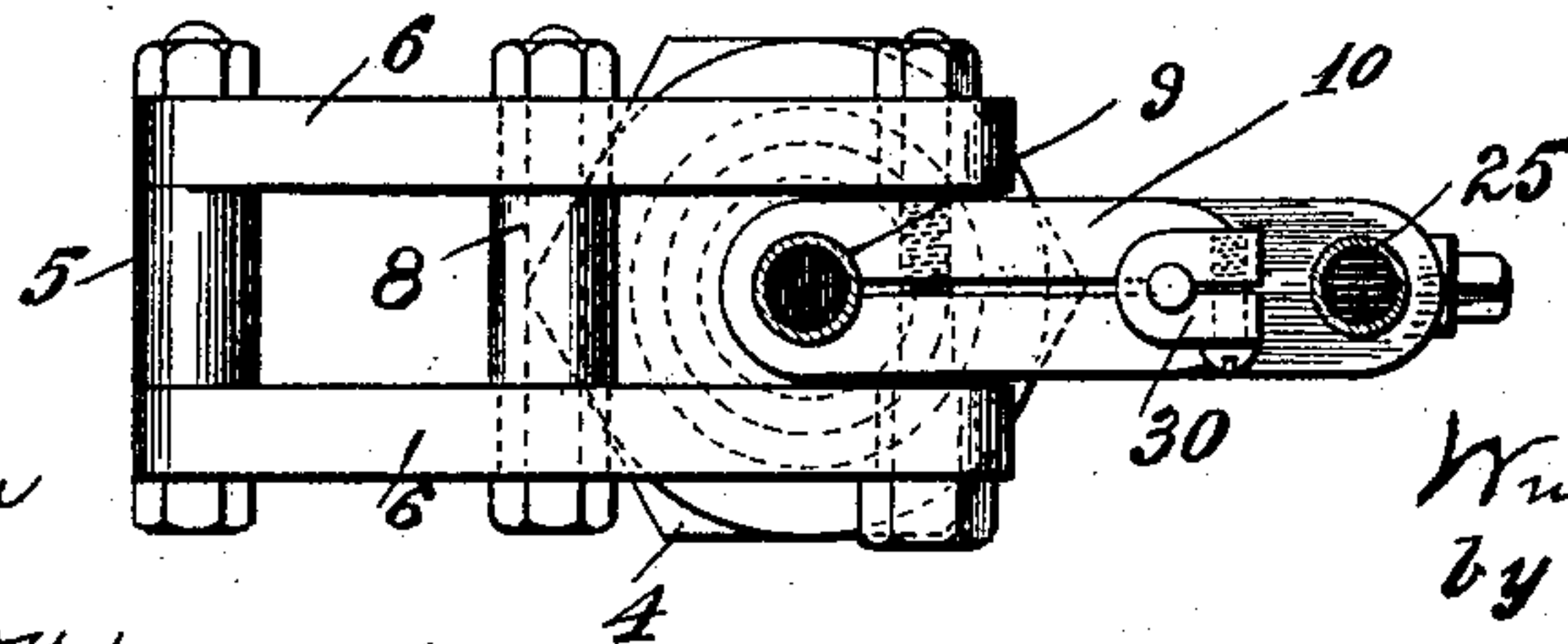
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AUTOMATIC FILLING MACHINE.

APPLICATION FILED SEPT. 8, 1902.

NO MODEL.



*Fig. 2*



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## UNITED STATES PATENT OFFICE.

WILLIAM KOEDDING, OF ST. LOUIS, MISSOURI.

## AUTOMATIC FILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 747,729, dated December 22, 1903.

Application filed September 8, 1902. Serial No. 122,477. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM KOEDDING, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Automatic Filling-Machine, of which the following is a specification.

My invention relates to machines for filling bottles and other receptacles with liquid, and has for its principal objects to produce a filling-machine which will operate automatically when the bottle is pressed against it in proper position to be filled, to equalize the pressure in the bottle with the pressure in the supply-pipe before the supply-pipe is opened to permit the liquid to flow into the bottle, to provide for automatically stopping the flow of the liquid when the bottle is filled, and to prevent any stale liquid getting into the bottle.

My invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a vertical central section of my machine. Fig. 2 is a plan view thereof.

The main support for my machine consists of a hollow cylindrical thimble or guide 1, which has a flange 2 on its upper end and projects downwardly through a hole in the table or other suitable support 3, to which it is firmly clamped by means of a nut 4, working on a thread on the exterior of said thimble. Extending upwardly from the flange 2 is an upright or supporting arm 5, which constitutes a fulcrum for a lever 6. Working in the vertical thimble is a hollow cylindrical slide 7, whose upper end is closed and provided with an arm 8. This arm extends laterally and upwardly and is pivotally connected with the lever 6 at a point about midway between the fulcrum or seat of the lever and the prolonged axis of the slide. Extending longitudinally through the slide is the liquid-supply pipe 9. This supply-pipe 9 is provided with a collar 10, which is adjustably clamped thereto a suitable distance above the end of the slide. This collar is pivotally connected with the lever 6 by a pin or other suitable means. The pipe 9 is provided with a second collar 11, arranged to move up and

down inside of the slide 7. This last-mentioned collar 11 forms the lower abutment for a helical spring 12, whose upper end bears against the end portion of the slide 7, surrounding the inlet-pipe.

The lower end of the slide 7 is screw-threaded to fit into a body-piece 13, which is hollowed out and threaded to receive it. The inlet-pipe 9 extends downwardly a suitable distance beyond this body-piece, and the inner edge of its lower end is beveled off to cooperate with an adjustable seat 14 provided therefor. This seat consists of a soft-rubber plug secured in a cap-piece or closure 15, which is threaded to engage a thread provided therefor on the end of a tube 16, which is fixed to the body-piece 13 and forms a casing or guide for the supply-pipe 9. This last-mentioned tube 16 has one or more perforations or ports 17 near its lower end in position to be traversed or covered and uncovered by the lower end of the supply-pipe 9. Surrounding the upper end of the tube 16, where the tube enters the body-piece, is a cylindrical sleeve 18, which is provided with one or more slots or passage-ways 19. These slots or passage-ways 19 extend upwardly from a point below the body-piece to a passage-way 20, arranged horizontally therein and obviously may be formed in the body-piece itself and the sleeve 18 thereby dispensed with. This passage-way 20 communicates with a chamber 21, which is provided with a float 22, adapted to close the port 23 at the top of its chamber. From the port 23 at the upper end of the chamber 31 a passage-way 24 extends to a suitable point for connection to the air-pipe 25. The several passage-ways are preferably drilled in the body-piece 13, and the ends of the drill-holes are closed by threaded plugs 26. The port 23 is controlled by a valve 27, arranged inside of the passage-way 24 and consisting of a plug whose lower edge is beveled to conform to the beveled edge of port 23. Said valve 27 is provided with a rod or stem 28, which extends vertically beyond the turn of the passage-way 24 and a stuffing-box 29, provided therefor. This valve-rod 23 extends upwardly through an opening provided therefor in the lever 6 or through an opening in the collar 10, clamped to the inlet-pipe, and is equipped with a collar or clamping-ring



30, adjustably mounted thereon above said lever 6 or the collar 10, and is equipped with a spring 31, abutting upwardly against the same and downwardly against a shoulder 32, provided therefor on the valve-rod 28.

The under side of the body-piece 13 is provided with a soft-rubber washer or ring 33, which surrounds the tube 16 and the sleeve 18 thereon.

10 The operation of my machine is as follows: The supply-pipe 9 is connected with the lower portion of the tank of beer or other liquid to be bottled, and the air-pipe 25 is connected to the upper portion of said beer-tank. The  
15 bottle 34 to be filled is then placed around the tube 16 with its lip against the soft-rubber ring 33. In the normal position of the parts the supply-pipe 9 is closed at its end by means of the soft-rubber plug 14, and the  
20 air-pipe is closed by the valve 27. The bottle is forced upwardly against the soft-rubber ring, thereby sealing the bottle from the atmosphere and at the same time forcing the body-piece 13 and all the parts connected  
25 thereto upwardly. The upward movement of the body 13 thus effected is transmitted to the slide 7 and through it to the lever 6, and the movement of the lever carries with it the supply-pipe 9 and the valve-rod 28 and the  
30 valve 27. The lifting of the valve 27 from its seat opens the air-pipe, so as to establish free communication between the upper end of the bottle and the upper end of the beer-tank through passage-ways 19 and 20 and  
35 the air-pipe. In this manner the pressure inside of the bottle is equalized with the pressure on the beer in the tank, and consequently when the filling-pipe is open the beer is free to flow by means of gravity without  
40 foaming or other disadvantages. The opening of the filling-pipe results from the differential movement of this pipe with reference to its incasing-tube, and consequently such opening requires an appreciable time, whereas  
45 the air-valve is lifted directly from its seat. The proper timing of these movements is regulated by shifting the adjustable soft-rubber seat 14 by which the end of the filling-pipe is closed, the adjustable collar 30 on the  
50 stem of the air-valve, or the relative positions of the connections to the lever 6 of the filling-pipe and the stem of the air-valve. When the beer has filled the bottle, it enters the passage-way 20 and through it the float-chamber 21 and lifts the float against its seat,  
55 thereby closing the port 23 and air-pipe 25 and cutting off the flow of beer.

When the bottle is removed, the spring automatically returns the parts to their normal positions. In the returning movement the filling-pipe is closed before the air-valve is seated. Consequently the beer in the passage-ways of the body piece is forced out and the liability of becoming stale and getting  
65 into another bottle is thus prevented.

Obviously the construction hereinbefore described admits of considerable modifica-

tion without departing from my invention, and I do not wish to be restricted to such construction. So, too, my machine may be  
70 used for filling other receptacles besides bottles and with other liquids besides beer.

What I claim is—

1. A filling-machine comprising a lever, a filling-pipe and a slide both connected thereto  
75 but at different distances from the fulcrum so as to have a differential movement, and a piece mounted to move with the slide and adapted to coöperate with the end portion of the filling-pipe to open and close said pipe. 80

2. A filling-machine comprising a lever, a filling-pipe connected thereto to be raised and lowered thereby, a slide connected to said lever closer to the fulcrum thereof than  
85 said filling-pipe, to be raised and lowered thereby, and a piece mounted to move with the slide and adapted to coöperate with the end portion of the filling-pipe to open and close the same.

3. A filling-machine comprising a lever, a filling-pipe and a slide both connected thereto  
90 but at different distances from the fulcrum so as to have a differential movement, and a tube mounted to move with the slide and having a plug at its end adapted to seal the  
95 end of the filling-pipe and having openings near its end in position to be traversed by the end of said pipe.

4. A filling-machine comprising a lever, a filling-pipe connected thereto, a slide con-  
100 nected to said lever closer to the fulcrum thereof than said filling-tube, a piece mounted to move with the slide and adapted to coöperate with the end portion of the filling-pipe to open and close the same, and means  
105 for restoring the parts to their normal position.

5. A filling-machine comprising a lever, a filling-pipe connected thereto, a slide con-  
110 nected to said lever closer to the fulcrum thereof than said filling-pipe, a piece mounted to move with the slide and adapted to coöperate in opening and closing said pipe, and a helical spring surrounding said pipe and  
115 abutting at its upper end against a shoulder on said slide and abutting at its lower end against a collar on the filling-tube.

6. A filling-machine consisting of a hollow cylindrical thimble arranged to be mounted  
120 on a suitable support, a lever mounted horizontally upon an upright arm of said thimble, a hollow cylindrical slide pivotally connected to said lever, a body-piece to which the lower end of said slide is fastened, a fill-  
125 ing-pipe extending endwise through said slide and body-piece, said pipe being connected to said lever farther from its fulcrum than the connection of the slide and said pipe having a collar thereon inside of said slide, a heli-  
130 cal spring bearing against said collar and the upper end of said slide, a tube suspended from said body-piece and incasing the filling-pipe, the lower end of said tube having a plug arranged to close said pipe and having



openings in position to be traversed by the end of said pipe, and said body-piece having a washer on its under side surrounding said pipe and adapted to seal the mouth of a bottle pushed against it.

7. A filling-machine comprising a body-piece, a filling-pipe extending therethrough, a washer in the under side of said body-piece surrounding said filling-pipe and adapted to seal the mouth of a bottle pressed against it, said body-piece also having a passage-way extending therethrough with an enlarged chamber in said passage-way, a valve for positively controlling said passage-way, a float-valve in said chamber adapted to close said passage-way, and means whereby the movement of the body-piece effects the operation of said first-mentioned valve and also the opening and closing of the filling-tube.

8. A filling-machine comprising a body-piece having a valve-seat suspended therefrom and a slide extending above said body-piece and working in a suitable guide, a filling-pipe extending downwardly through said body-piece and having its end portion arranged to cooperate with said valve-seat to open and close said pipe, a washer in the under side of said body-piece surrounding said pipe and adapted to seal the mouth of a bottle pressed against said washer, and said body-piece having a passage-way extending through the same and through said washer,

a valve for controlling said passage-way, and means connected to said slide whereby the movement of said body-piece effects the opening and closing of the filling-pipe and of the passage-way simultaneously.

9. A filling-machine comprising a body-piece having a valve-seat suspended therefrom and a slide extending above said body-piece and working in a suitable guide, a filling-pipe extending downwardly from said body-piece and having its end portion arranged to cooperate with said valve to open and close said pipe, a washer on the under side of said body-piece surrounding said pipe and adapted to seal the mouth of a bottle pressed against said washer and said body-piece having a passage-way extending through it and through said washer, a valve for controlling said passage-way, and a lever to which the slide, the filling-pipe and the stem of said valve are all connected, the connection of the slide to said lever being closer to the fulcrum thereof than the connection of the filling-pipe thereto, whereby the movement of the body-piece causes a simultaneous opening and closing of the filling-pipe and passage-way.

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Witnesses:

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