

(No Model)

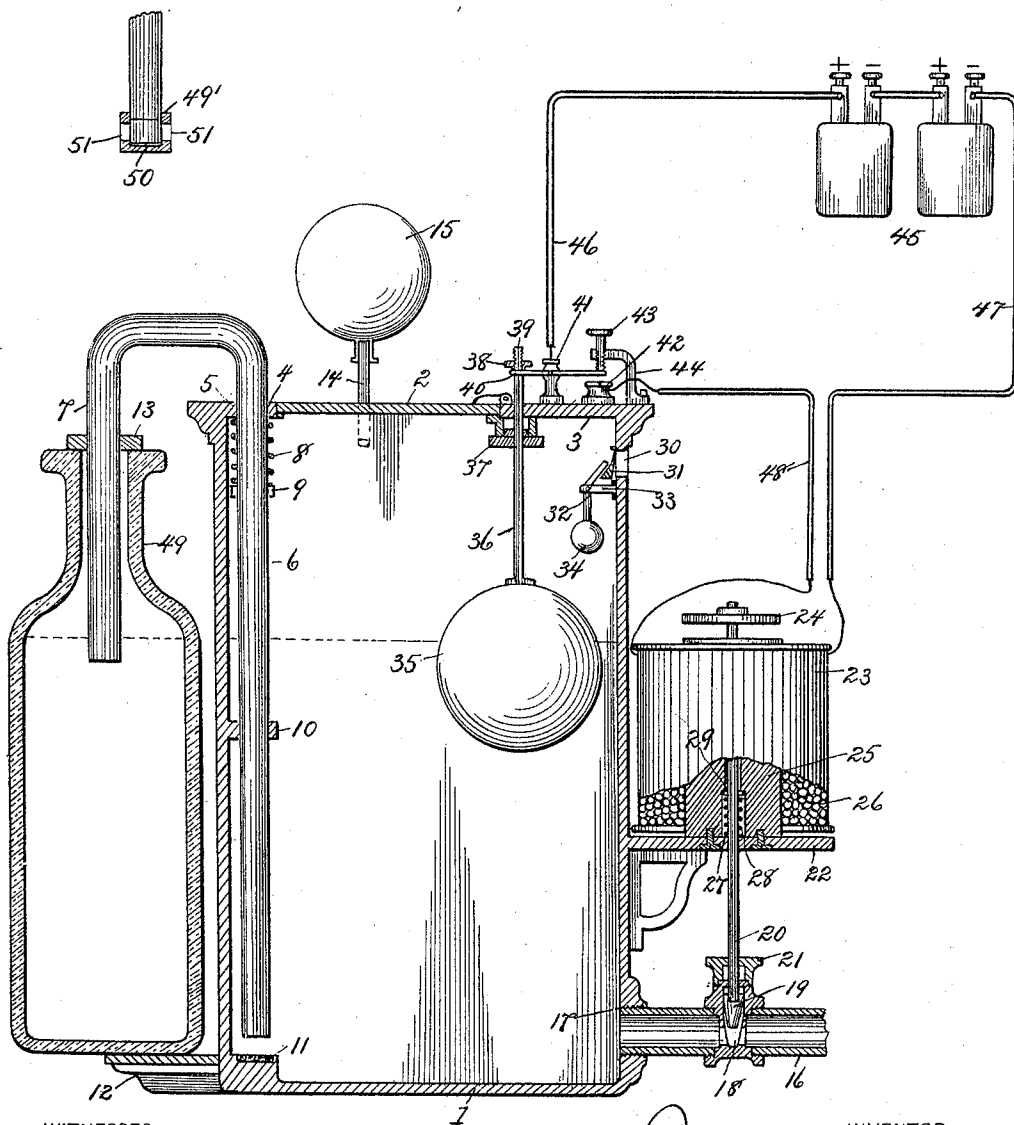
J. H. FAHRNEY.
APPARATUS FOR FILLING BOTTLES.

No. 585,265.

Patented June 29, 1897.

Fig. 2.

Fig. 1.



WITNESSES.

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APPARATUS FOR FILLING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 585,265, dated June 29, 1897.

Application filed October 8, 1895. Serial No. 564,985. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH HARVEY FAHRNEY, a citizen of the United States, residing in the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Filling Bottles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to apparatus for filling bottles.

The primary object of my invention is to provide such bottle-filling apparatus with automatic electrically-controlled mechanism, whereby bottles may be filled to a predetermined height, thus avoiding all waste of the liquid being bottled.

The above-named object and such others as may occur from the ensuing description are accomplished by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of my improved apparatus, partly in vertical section and partly in elevation. Fig. 2 is a detail view of a modification.

The reference-numeral 1 indicates a reservoir of cylindrical or other suitable form, provided with an air-tight cover 2, hinged to a stationary section of cover 3. An opening 4 is formed in the top portion 5 of the reservoir, through which extends the long leg 6 of a siphon, the short leg 7 of which depends from the outside of the reservoir, as shown. Within the reservoir the leg 6 of the siphon is provided with a coil-spring 8, the upper end of which bears against the top 5 of the reservoir, while its lower end bears upon a collar 9, fixed on the siphon-leg 6. The said leg 6 extends downwardly through a keeper 10, projecting from the wall of the reservoir, and is adapted to normally rest upon a yielding seat 11, of rubber, leather, or light material, arranged at the bottom of the reservoir. Projecting laterally from the outer surface of the reservoir is a bracket or shelf 12, adapted to receive the bottle to be filled. The short leg 7 of the siphon is provided with a collar or annular disk 13, against which the neck of the bottle rests while being filled. An inlet-tube 14, connected with an air-bulb 15, extends through the cover 2 a short distance into the reservoir, for a purpose hereinafter

explained. A liquid-supply pipe 16 (connected with any source of supply) connects with an inlet-opening 17, formed near the bottom of the reservoir. This supply-pipe is provided with a conical valve-seat 18, adapted to receive a valve 19, secured to the lower end of a rod 20, extending upwardly through a boxing 21, arranged on the pipe 16, and thence upwardly through an opening in a shelf-bracket 22 and through the core of a magnet 23, arranged upon said shelf. A disk armature 24 is secured upon the upper end of the rod 20. This magnet 23 is of solenoid form, comprising a hollow soft-metal core 25, through which the rod 20 passes, and coils of insulated wire 26. The core 25 is formed at its lower end with a circular recess 27 to accommodate a coil-spring 28, surrounding the rod 20 and resting at one end upon the bracket 22 and at its upper end against an annular shoulder 29 of the core.

The magnet is connected with an electric battery, as will be further described.

At a point near its top the reservoir 1 is provided with an air-inlet 30, covered by a flap-valve 31, controlled by a bell-crank lever 32, fulcrumed upon an arm 33, projecting from the inner wall of the reservoir and provided at its depending end with a float 34.

The numeral 35 indicates a float adapted to rest upon the liquid contained in the reservoir and secured to the lower end of a rod 36, the upper end of which extends through a boxing 37 and the top 3 of the reservoir and is adapted to be adjusted vertically by means of a nut 38, arranged upon the upper threaded end 39 of the rod 36. The rod extends through an opening formed in the end of a lever 40, and the nut 38 bears upon the said lever, as shown. The lever 40 is fulcrumed upon a post 41, and its free end is provided with a platinum point adapted to contact with a platinum point 42 of an electric circuit which will be described. The lever 40 is provided with a set-screw 43, supported upon a bracket 44, secured to the top of the reservoir, for regulating the movement of the lever.

45 indicates an electric battery, the positive pole of which is connected by a wire conductor 46 with the post 41, while the negative pole thereof is connected by a conductor 47, the coils of the magnet 23, and a conductor 48 with the contact-point 42.

The mechanism thus described is adapted to operate as follows: The bottle 49 receives the short leg of the siphon and rests upon the shelf 12, the siphon being adapted to swing upon its long leg 6. The neck of the bottle contacts with the collar 13 on the siphon, thus raising the lower end of the long leg 6 from its seat against the tension of the spring 8 to allow the liquid to enter the siphon. The spring 8 returns the leg 6 to its seat 11 after the removal of a bottle. The bulb 15 and pipe 14 are designed for use when necessary to start the siphon action. It is only necessary to use the bulb when the air entering through the inlet 30 is insufficient. The liquid in the reservoir is maintained at the required height to fill the bottle to a predetermined point and the siphon is regulated by the float 35 and the electrical appliances. When the liquid in the bottle reaches the point desired, the liquid in the reservoir being at the same level, the float 35 rises, thus tilting the lever 40 so that its free end contacts with the point 42, thus closing the electric circuit through the magnet, energizing the latter. The energized core 25 attracts the armature 24, thus depressing the rod 20, closing the valve 19, and stopping the supply of liquid to the reservoir. When the siphon by the filling of another bottle lowers the height of the liquid in the reservoir, the float 35 falls, tilting the lever 40 to its first position, thus breaking the electric circuit and deenergizing the magnet 23. The rod 20 then rises by the force of the spring 28 and the valve 19 is opened to allow the supply of liquid to the reservoir to be continued. Thus it will be seen that a constant regulation of the siphon is effected and that all waste of liquid by overfilling of the bottles is avoided.

The rod 36 is regulated in its vertical adjustment by the nut 38, and the flap-valve 31 admits sufficient air to afford the required pressure upon the liquid to insure the siphon action. If necessary, as above stated, to increase the normal air-pressure, the hand-bulb 15 is utilized.

The float 34 is designed to operate as a safety-valve in case for any reason the valve 19 should fail to operate. In such event the liquid would raise the float 34, thus closing the flap-valve, cutting off the air-supply, and preventing the escape of liquid through the siphon, and at the same time preventing the possibility of an overflow of the liquid through the opening 30 in the reservoir 2.

In Fig. 2 I have illustrated a modified form of seat for the lower end of the long leg 6 of the siphon.

The seat is of tubular form, open at its top 49 to receive the siphon-leg, and has a yielding seat 50, of rubber or like material, as shown. The liquid from the reservoir enters the long leg of the siphon through the opening 51.

It will be understood that a slight departure

from the exact details hereinbefore described may be resorted to without departing from the spirit of my invention.

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

1. In an apparatus for bottling liquids, the combination of a reservoir, a supply-pipe therefor, a valve in said supply-pipe, a valve-rod connected to said valve and extending upwardly, a magnet having a hollow core to receive the valve-rod, an armature on the upper end of said rod and above the magnet, a retracting-spring mounted on the rod and suitably housed within the core of said magnet, a battery, electrical connections from said battery to the magnet, and a float arranged within the reservoir and adapted to close the electric circuit and energize the magnet to shut the valve in the supply-pipe, substantially as described.

2. In a bottling apparatus, the combination of a reservoir and an automatically-closing siphon, a supply-pipe, a valve in said supply-pipe, and electric devices for controlling said valve, a circuit-closer forming a part of said electric devices and comprising a lever 40, a rod 36 extending through the top of the reservoir and connected to one end of said lever, a nut adapted to adjust said rod vertically on said lever and a float on the lower end of said rod, substantially as described.

3. In an apparatus for bottling liquids, the combination of a reservoir and an automatically-closing siphon, a supply-pipe, a valve in said supply-pipe, an electric device for controlling said valve comprising a magnet having a hollow core, a valve-rod secured to the valve and extending upwardly through the core, an armature on the upper end of said rod above the magnet, a retracting-spring housed within the core of the magnet, a battery, electric connections from said battery to the magnet, and a circuit-closer comprising a lever pivotally mounted on the reservoir, a float, a rod carrying said float and extending up through the top of the reservoir and connected to one end of said lever, the other end of said lever being adapted to engage a contact-point to complete the circuit between the battery and the magnet, substantially as described.

4. In a bottling apparatus, the combination of a reservoir, a siphon arranged in one side thereof and adapted to operate automatically, a supply-pipe leading into the reservoir, a valve for said supply-pipe, a magnet, a valve-rod connected with said magnet, a battery, electrical connections from the battery to the magnet and a float arranged within the reservoir and adapted to close the electric circuit and energize the magnet to shut the valve in the supply-pipe, substantially as described.

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Witnesses:

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