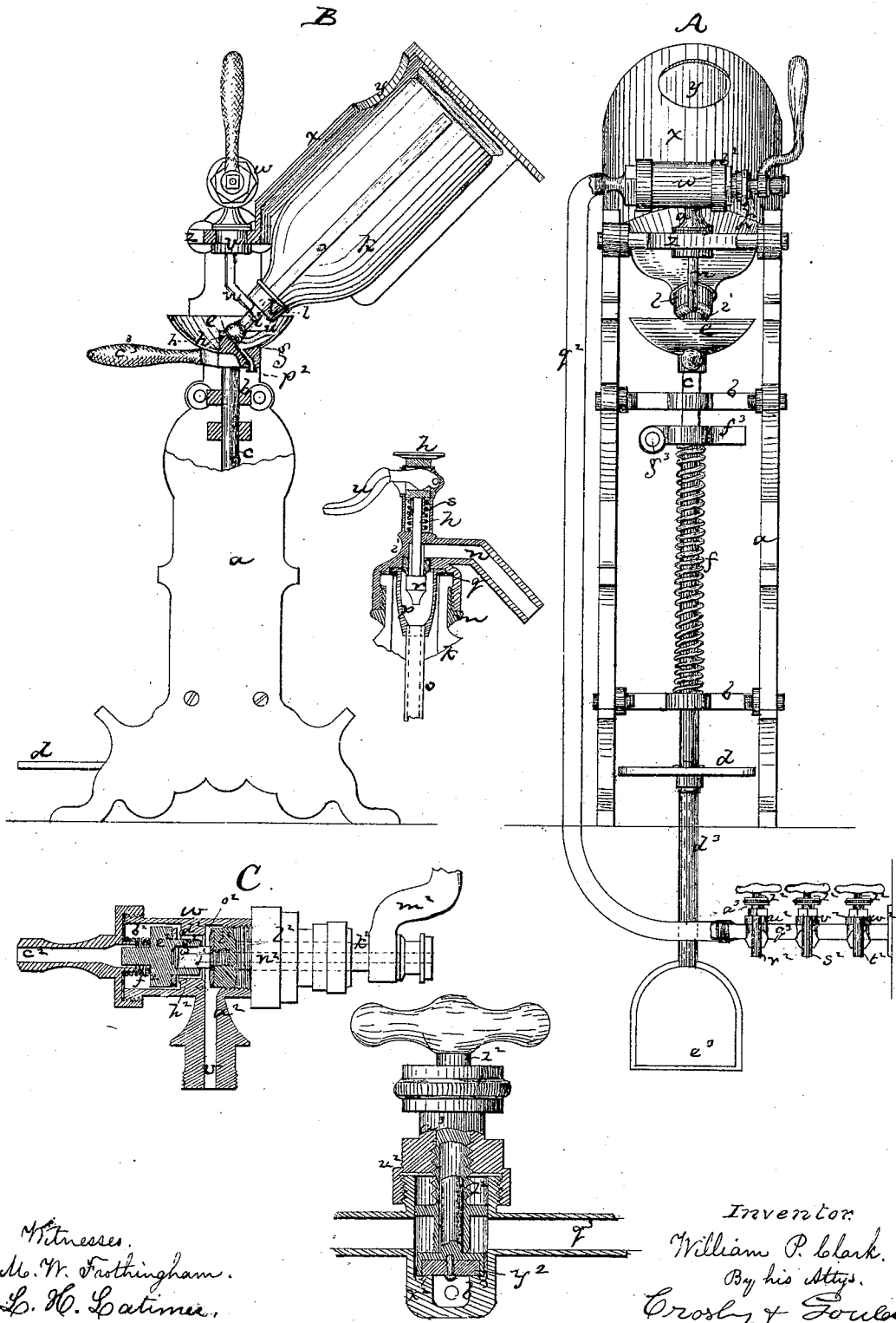


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Improvement in Apparatus for Charging Siphon-Bottles.

No. 129,002.

Patented July 16, 1872.



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## IMPROVEMENT IN APPARATUS FOR CHARGING SIPHON-BOTTLES.

Specification forming part of Letters Patent No. 129,002, dated July 16, 1872.

*To all whom it may concern:*

Be it known that I, WILLIAM P. CLARK, of Medford, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Charging Siphon-Bottles; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In putting up soda-water it is now customary, to some extent, to charge what are known as siphon-bottles, by means of which bottles the aerated liquid may be sold for use in dwelling-houses, as well as dispensed directly from the fountains in places where soda-water beverages are sold. My invention relates to an improvement in charging such siphon-bottles from fountains. A siphon-bottle is made with a screw-threaded metal neck, upon which screws a metal cap, which, in being screwed down against the top of the bottle, is thereby packed. This cap has a central outlet-orifice communicating with a discharge pipe or tube, which extends outlaterally and then downward from the cap-neck, and the orifice is controlled by a valve, which is pressed upward against and under the orifice by a strong spring, the valve being attached to a vertical spindle by downward pressure, upon the top of which the valve is opened to make communication between the valve-opening and the discharge-tube. Encircling the valve is the mouth-piece of a glass tube, extending nearly to the bottom of the interior of the bottle, said mouth-piece having a flange, under which is a rubber washer, which is packed against the under side of the cap by the screw-threaded neck of the bottle. In charging such a bottle it is inverted and the valve opened, and a connection is made of the discharge-tube of the bottle and a cock connected with the fountain, the cock being opened and the impregnated water flowing through the tube and valve up through the glass tube over into the bottle, and as the bottle fills and compresses the air, which has no chance to escape, the pressure of the gas-impregnated liquid and the pressure of the air become equal. The cock is then closed, and in closing opens an air-passage that allows the air to escape, the air being at the top of the inverted bottle and flowing out

freely. The air-passage is then closed and the fountain-passage opened, and the charged water again flows into the bottle, and so on until the bottle is filled. In my invention I support the inverted bottle in the upper part of a stand upon a concave plate between said plate and the outlet-neck of a transfer-cock, the valve-stem of the bottle standing upon the center of the plate in inclined position, and the discharge-tube standing in vertical position, with its end in the outlet of the transfer-cock, and the bottle standing in inclined position, and being, preferably, surrounded or partially surrounded by a metal hood. The bottle is sustained in this position by the stress of a strong spring which presses the concave plate up against the valve-stem tube, and, by such pressure, not only causes the metal top of the bottle to be firmly grasped between the plate and transfer-cock, but also pushes in the valve-stem and opens the valve of the bottle. The plate is on the top of a vertical shaft, which the spring surrounds, and this shaft slides in suitable bearings, and is connected at bottom with a knee-piece or a pedal by downward pressure, upon which the plate is depressed to introduce or remove a bottle, while by release of the pedal, after a bottle has been placed in position to be filled, the stress of the spring forces up the plate and causes the bottle to be grasped and held in position, the bottle being thus normally held in position by the stress of the spring. The body of the transfer-cock stands in horizontal position, and at one end it has a screw-thread, by which connection is made with the pipe from the fountain, and by slightly turning a horizontal valve-spindle of the cock the valve of the cock is so opened as to permit its passage of the soda-water from the fountain through the cock, and out of the cock into and through the glass tube of the bottle and over the tube into the body of the bottle, filling up which, until the pressure of the air arrests further flow, the valve-spindle is turned a little more, by which turning communication with the fountain is cut off, and communication between the bottle and the atmosphere is opened.

The features thus generally explained, and the combination with the apparatus of a peculiar system of valves or cocks, by which,

with the same connections, bottles may be charged from different fountains containing different kinds of aerated water, constitute my invention.

The drawing represents an apparatus embodying the invention.

A shows a front view of the stand, bottle, and transfer-cock. B is a vertical central section of the same. C is a longitudinal section of the transfer-cock.

*a* denotes the stand, having cross-bars *b*, in which moves the vertical shaft *c*, said shaft resting at its front upon an arm projecting from a pedal or knee-piece, *d*, and having at its top the concave plate *e*, the plate being pressed up by the stress of the spring *f*, and being lowered or dropped by the application of the foot to the pedal *d*. In the center of the plate *e* is a socket, *g*, for receiving the valve-stem *h* and the reversed top of the neck *i* of the bottle *k*. The neck *i* extends from the cap *l*, said cap being nut-threaded and screwing upon the metal ring *m* that is fixed around the neck at the top of the bottle. From the cap *l* or its neck extends the discharge-tube *n*, said tube extending horizontally and then inclining downward, and in line with the center of the cap is the glass tube *o*, extending into and nearly to the bottom of the bottle, said tube having a valve-tube, *p*, at its upper end, which valve-tube is packed against the under surface of the cap by a rubber or other packing-ring, *q*, compressed between the cap and flange on the valve-tube and the top of the bottle. Within this valve-tube plays the valve *r*, the seat of which is the under side of the cap, immediately over the top of the valve-tube, the valve controlling communication between the valve-tube and the neck *i* and outlet-tube *n*. The valve is held against its seat by the stress of a spring, *s*, and is pressed down to open the valve-passage by pressure upon the head of the valve-stem *h* or by pressure upon a finger-lever, *u*.

The bottle being empty and ready to be charged, it is inverted, the knee piece *d* or a pedal beneath is pressed down, the stem-cap is held over the center of the recess, and the discharge-tube, held in vertical position, is inserted into the mouth or opening *v* of the transfer-cock *w*, the pedal being then released, and the stress of the spring *f* causing the bottle by its cup to be gripped firmly between the cock *w* and the plate *e*, the inverted bottle standing in the inclined position shown in the drawing, partially surrounded by a metal hood, *x*, to protect the person in case of bursting, the hood having an eye or opening, *y*, through which the charging may be observed, said opening being preferably covered with wire-gauze for protection. The cock *w* stands upon and is confined to a stationary cap-plate, *z*, the outlet-tube *a* passing through the plate. In gripping the bottle-cap, the stress of the spring opens the valve, and communication is thus established between the bottle and the cock *w*, and the end *a* of the cock being con-

nected to the fountain-cock, and the cock *w* being then opened, the charged water will rush through the cock *w*, through the valve-tube *p* by the valve *r*, through and over the glass tube *o* into the body of the bottle until the pressure of the air in the bottle compressed by the charged water equals the pressure of the water, when the water will cease to flow. The air in the bottle is at the top, *i. e.*, at the inverted bottom, in free communication with the open end of the glass tube, and, when the flow of water ceases, the plug or valve of the cock is turned, so as to shut off communication between the fountain and the bottle and open communication between the bottle and the atmosphere so as to let off the compressed air, after which the cock, plug, or valve is again turned to its former position and the charging of the bottle is finished, the cock for this purpose being made as follows: *b*<sup>2</sup> denotes the chamber of the cock. Between the inlet-tube *e*<sup>2</sup> thereof and the outlet-opening *a*<sup>2</sup> is a valve-seat ring or flange, *d*<sup>2</sup>, on the inlet side of which is a valve, *e*<sup>2</sup>, pressed against the ring by a spring, *f*<sup>2</sup>, said valve having a pin, *g*<sup>2</sup>, extending from it, which pin fits the ring, but is made square or otherwise, so that there are free passages *h*<sup>2</sup> at its sides for flow of aerated water into the eduction end of the chamber when the valve is open, and from said chamber out through the outlet-tube into the bottle. In the eduction end of the chamber is another valve, *i*<sup>2</sup>, which fits against the adjacent side of the valve-seat ring and closes the passage through the ring. This valve is on the end of a stem, *k*<sup>2</sup>, that passes through the cap *l*<sup>2</sup> at the end of the cock, and has fastened to its end the handle *m*<sup>2</sup>, and the valve is peripherally screw-threaded, and runs in a nut-thread at the side of the chamber, so that by turning the handle the valve retreats from the valve-seat and opens the passage through the same. The valve has projecting centrally from it a pin, *j*, that extends through the valve-seat into a recess in the pin *g*<sup>2</sup>, and when the valve *i*<sup>2</sup> is against its seat the pin *j* will hold the valve *e*<sup>2</sup> away from its seat at the other side of the ring. Through the stem *k*<sup>2</sup>, its entire length, runs a small central passage, *n*<sup>2</sup>. The valve being closed, and a bottle being coupled to the cock to be charged, the stem *k*<sup>2</sup> is slightly turned, thereby drawing the valve *i*<sup>2</sup> away from the valve-seat. The soda-water then flows from the fountain into the cock by the passage *h*<sup>2</sup>, out through the eduction-orifice *v* and into the bottle. When the flow of water ceases the valve-stem is still further turned, permitting the spring *f*<sup>2</sup> to force the valve *e*<sup>2</sup> up against the valve-seat *d*<sup>2</sup>, thereby cutting off communication with the fountain, and when the valve is thus arrested the valve *i*<sup>2</sup> will leave the end of the recessed pin *g*<sup>2</sup>, establishing a free communication with the eduction end of the valve-chamber and the stem-passage *n*<sup>2</sup>, and the air in the bottle will then be pressed out through the tube-chamber *o*<sup>2</sup> and stem-passage *n*<sup>2</sup>, and after the air is exhausted from the bottle the stem is

turned back until the valve  $l^2$  or pin  $j$  strikes the pin  $g^2$ , and the valve  $e^2$  is pressed from its seat, and the charged water will then again flow into and fill the bottle. The plate  $e$  is made saucer-shaped to catch any drippings, and, by means of an outlet,  $p^2$ , such drippings may be led off into any convenient receptacle, the apparatus being particularly designed for use in the stores of apothecaries, and other similar places where soda-water beverages are dispensed, and it being desirable to make it as cleanly as possible.

With the apparatus I sometimes use a peculiar coupling mechanism, by which different kinds of aerated water may be drawn from different fountains through the same pipe and cock. This mechanism is as follows:  $q^2$  denotes the pipe leading to the bottle-charging cock. Three or any other suitable number of tubes,  $r^2 s^2 t^2$ , lead respectively from, or may be connected with separate fountains, which may be supposed to be charged with the different kinds of aerated water—as common soda-water, Vichy, Kissingen, for instance—each tube leading into the pipe  $q^3$  through a valve-case,  $u^2 v^2 w^2$ , each valve-case having a valve-seat,  $x^2$ , against which a valve,  $y^2$ , is forced by a screw-threaded spindle,  $z^2$ , working in a nut-thread in a neck,  $a^2$ . The pipe  $q^3$  leads into one side of each valve-chamber and out at the other, over or outside of the valve  $y^2$ , and thus when either valve is open the closed position of the other valves does not interfere with the free passage of the liquid through the pipe and through the valve-chambers, over the valves into and through the main pipe to the cock  $w$  and the bottle to be charged. The valve-stem of each valve runs into a tube,  $b^3$ , at the foot of the valve-spindle, and when either spindle is turned back the force of the charged water in the fountain presses open the valve, and the water passes by it into the valve-chamber and through the pipe  $q^3$ , and the several valve-chambers, over the valves through the pipe  $q^2$  into and through the cock to the bottle.

It will be obvious that by this construction the aerated water may be drawn from either

fountain without disturbing, or being disturbed by, the contents of either other fountain.

In using the apparatus the plate  $e$  may be depressed by applying the hand to a projecting arm,  $c^3$ , or the knee to a knee piece,  $d$ , if the apparatus be below the counter, but if above the counter a rod,  $d^3$ , may connect the knee-pedal to a stirrup,  $e^3$ , to be depressed by the foot.

In the mechanism for enabling bottles to be charged with aerated water from different fountains, the pipes  $r^2 s^2 t^2$  leading to the fountains are preferably made with continuations leading to the dispensing apparatus.

To graduate the stress of the spring  $f$ , the rod  $c$  may be provided with a clasp,  $f^3$ , against which the upward stress of the spring is exerted, this clasp being confined to the rod by means of a screw,  $g^3$ , acting upon the split arms of the clasp. By loosing the screw the clasp may be moved up or down on the rod, thereby decreasing or increasing the stress of the spring.

I claim—

1. The transfer-cock constructed and operating as described, and as shown in Figure C—that is, with the valves arranged to open communication between the fountain and the bottle, and to shut off such communication between the bottle and atmosphere—substantially as described.

2. The valve  $w$ , valve-ring  $d^2$ , valve-spindle  $k^3$ , spindle-passage  $n^2$ , all constructed and arranged, substantially as shown and described.

3. The system of fountain-pipes  $r^2 s^2 t^2$  leading into the single pipe  $q^2$ , through the valve-chambers  $u^2 v^2 w^2$ , each chamber having a valve,  $y^2$ , which, when closed, permits free passage through the tube from either of the other valve-chambers, and when opened permits free passage through its valve-seat from the fountain to the pipe.

4. The adjustable clamp  $f^3$  fixed to the rod  $c$ , and regulating the stress of the spring by its position, substantially as described.

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