

C. L. WILKINS & A. F. BLESCH.
SIPHON FOR WATER CLOSET TANKS.

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A detailed technical cross-section drawing of a mechanical assembly, possibly a door or shutter mechanism. The main body is a large rectangular frame labeled 'a'. Inside, there's a vertical sliding component labeled 'b' which has several internal parts labeled 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n', 'o', 'p', 'q', 'r', 's', 't', 'u', 'v', 'w', 'x', 'y', 'z'. A horizontal rod or lever is shown at the top right, connected to a chain mechanism labeled '08'. Various other labels like '01', '02', '03', '04', '05', '06', '07', '09', '10', '11', '12', '13', '14', '15', '16', '17', '18', '19', '20', '21', '22', '23', '24', '25', '26', '27', '28', '29', '30', '31', '32', '33', '34', '35', '36', '37', '38', '39', '40', '41', '42', '43', '44', '45', '46', '47', '48', '49', '50', '51', '52', '53', '54', '55', '56', '57', '58', '59', '60', '61', '62', '63', '64', '65', '66', '67', '68', '69', '70', '71', '72', '73', '74', '75', '76', '77', '78', '79', '80', '81', '82', '83', '84', '85', '86', '87', '88', '89', '90', '91', '92', '93', '94', '95', '96', '97', '98', '99' are scattered throughout, indicating specific parts or points of interest. The bottom part shows a base or support structure with labels 'n', 'n¹', 'n²', 'n³', 'n⁴', 'n⁵', 'n⁶', 'n⁷', 'n⁸', 'n⁹', 'n¹⁰', 'n¹¹', 'n¹²', 'n¹³', 'n¹⁴', 'n¹⁵', 'n¹⁶', 'n¹⁷', 'n¹⁸', 'n¹⁹', 'n²⁰', 'n²¹', 'n²²', 'n²³', 'n²⁴', 'n²⁵', 'n²⁶', 'n²⁷', 'n²⁸', 'n²⁹', 'n³⁰', 'n³¹', 'n³²', 'n³³', 'n³⁴', 'n³⁵', 'n³⁶', 'n³⁷', 'n³⁸', 'n³⁹', 'n⁴⁰', 'n⁴¹', 'n⁴²', 'n⁴³', 'n⁴⁴', 'n⁴⁵', 'n⁴⁶', 'n⁴⁷', 'n⁴⁸', 'n⁴⁹', 'n⁵⁰', 'n⁵¹', 'n⁵²', 'n⁵³', 'n⁵⁴', 'n⁵⁵', 'n⁵⁶', 'n⁵⁷', 'n⁵⁸', 'n⁵⁹', 'n⁶⁰', 'n⁶¹', 'n⁶²', 'n⁶³', 'n⁶⁴', 'n⁶⁵', 'n⁶⁶', 'n⁶⁷', 'n⁶⁸', 'n⁶⁹', 'n⁷⁰', 'n⁷¹', 'n⁷²', 'n⁷³', 'n⁷⁴', 'n⁷⁵', 'n⁷⁶', 'n⁷⁷', 'n⁷⁸', 'n⁷⁹', 'n⁸⁰', 'n⁸¹', 'n⁸²', 'n⁸³', 'n⁸⁴', 'n⁸⁵', 'n⁸⁶', 'n⁸⁷', 'n⁸⁸', 'n⁸⁹', 'n⁹⁰', 'n⁹¹', 'n⁹²', 'n⁹³', 'n⁹⁴', 'n⁹⁵', 'n⁹⁶', 'n⁹⁷', 'n⁹⁸', 'n⁹⁹'.

Fig. 1. A perspective view of a curved, ribbed structure, possibly a part of a machine or a biological specimen, labeled with 'i' and 'd'.

E. E. Bragg.
H. B. Bradshaw

Inventors:
Charles L. Wilkins
August F. Blesch.
By their Attorneys
Staley and Shepherd

UNITED STATES PATENT OFFICE.

CHARLES L. WILKINS AND AUGUST F. BLESCH, OF COLUMBUS, OHIO.

SIPHON FOR WATER-CLOSET TANKS.

SPECIFICATION forming part of Letters Patent No. 484,834, dated October 25, 1892.

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To all whom it may concern:

Be it known that we, CHARLES L. WILKINS and AUGUST F. BLESCH, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Siphons for Water-Closet Tanks, of which the following is a specification.

Our invention relates to the improvement of siphons for water-closet tanks of that class wherein a tank or reservoir is located above the water-closet and forms a receptacle for the water to be used in flushing the closet.

The objects of our invention are to provide a superior form of siphon of this class, of such construction as to render the manufacture of the same simple and comparatively inexpensive, to provide a stationary siphon cylinder or tube of such construction as to admit of its operation in a simple and effective manner, and to construct and arrange the operating parts thereof in a durable and substantial manner, and to provide in connection therewith an improved inlet-opening valve. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a closet-tank and our improved siphon therein. Fig. 2 is a plan view of the same with the top of the siphon-case removed. Fig. 3 is a view in perspective of one of the parts or sections of which our improved siphon-tube is formed. Fig. 4 is a similar view of the remaining section or part thereof, and Fig. 5 is a sectional view of our improved valve.

Similar letters refer to similar parts throughout the several views.

a represents the tank or reservoir, which may be of any of the well-known forms and has leading thereto at the desired point a supply-pipe *a'*.

b represents our improved siphon-case, which is preferably tubular or cylindrical in form, but which may be provided with square or angular sides, if desired. This siphon-case is formed, as shown, of two approximately half-cylindrical sections *c d*, each of said sections being preferably produced of any class of thin sheet metal bent to the desired form.

A portion of the metallic strip or plate from

which is produced the section *c* is bent, as shown in Fig. 3, to form a half-cylindrical body *c'*, the remaining portion *f* thereof being then bent across the open side of said body and secured by soldering or otherwise to an inwardly-projecting edge lip *e* of the half-cylinder portion. This portion *f*, which serves, as hereinafter described, as an approximately-central partition for the siphon-tube, is of a slightly-less height than the portion *c'*. The inturned edge lip *e* of the portion *c'* extends throughout the length of the latter. The metallic strip which is bent to form the half-cylindrical portion *d* is somewhat shorter than the portion *c* and has each of its long edges bent inward throughout its length to form inturned lips *i*. The portion *c* is provided near its lower end and on its curved side with an inlet-opening *k*, from which projects outwardly a flaring flange *k'*, which forms, as hereinafter described, a valve-seat.

Our improved siphon-case is constructed by uniting, as shown in Figs. 1 and 2 of the drawings, the two sections *c* and *d*, the rounded edges formed by the inturned lips *i* and *e* and by the bend of the portion *f* across the open side of the portion *c* being soldered or similarly secured together. When the two sections are thus joined, it will be observed that the portion *f* will serve as a partition, which separates the case formed into two chambers, (indicated at *l* and *m*,) which, owing to the height of the partition-plate, communicate at their upper end portion. The two-compartment siphon-cylinder thus formed is secured vertically upon a suitable base-plate *n*, which rests upon the floor of the tank *a* and which has formed centrally therewith a tubular downwardly-extending neck *n'*, which passes through a correspondingly-shaped opening in the tank-floor and is secured thereto by a lock-nut *g*. The hollow of the neck *n'* extends through the plate *n* and communicates, as shown, with the compartment *m* of the siphon-case. The upper end of the case is closed by a top plate *s*, to which are soldered the case-sections, as shown.

Fulcrumed to a projecting lug *o* on the side of the siphon-case above the opening *k* is the vertex of a bell-crank lever *o'*, the longer arm of which extends downward and terminates in a bifurcated end portion *o''* in front of the

valve-seat k' . The ends of the fork-arms produced by the bifurcated end portion o^3 of the lever-arm are pierced to form journal-bearings for the projecting ends of a transverse pin or spindle p , upon which is mounted between said fork-arms a hollow rubber ball-valve p' , the latter being formed, as shown in Fig. 5 of the drawings, at each of two opposite points with an inwardly and outwardly projecting boss, as indicated at p^2 , said bosses serving to form extended bearings for the pin p . The convex surface of this ball-valve p' normally bears within the flaring mouth of the opening k , as shown in the drawings.

The outwardly-extended arm o^3 of the bell-crank lever o' is jointly connected with an upwardly-extending rod or link o^4 , which connects with the inner portion of a normally-horizontal bar o^5 , the outer end of which is fulcrumed to a lug o^6 , projecting from the top of the tank a , and which is provided with an outward extension from its fulcrum-point, as shown at o^7 , to which is attached a suitable chain or cord o^8 . The inner end of the bar o^5 is suitably weighted, as shown at q .

The operation of our device is as follows: The tank is supplied with water through the supply-pipe a' or usual ball-cock, and the water is allowed to flow therein until it reaches the upper portion of the tank or until its level is slightly below the upper end of the partition f . The opening i^4 , which is formed beneath the section d by the difference in length of the two case-sections, admits water within the chamber l , where it is normally on a level with the water in the tank. Pulling downward on the chain o^8 will result in the elevation of the inner weighted end of the arm q' and through the connection thereof with the rod o^4 in the elevation of the upper arm of the bell-crank and a resulting outward movement of the lower end of the lever and the ball-valve p' . This outward movement of the lower end of the lever will result in unclosing the valve-seat k' and allow a volume of water to pass therethrough into the compartment m and thence out through the pipe or tubular neck n' into a suitable flush-pipe connected therewith. The chain r being released, it will be seen that the weighted bar o^5 will drop to its normal position and cause the valve p' to be again forced into its seat k' to close the opening k . The volume of water admitted and passing outwardly through the pipe n' will result in the production of a vacuum in the chamber m and the upper portion of the chamber l and in the consequent suction of the water through the opening i^4 within the chamber l into the chamber m and out through the flushing-pipe. This flow of water from the tank through the case-opening i^4 , thence through the chambers l and m , will be continued until the level of the water is below the upper part of the opening i^4 , when the air thus admitted to the siphon-case will break the vacuum therein and the incoming water from the supply-pipe

may again be allowed to accumulate in the tank and chamber l .

It will be observed that the spindle which supports the ball-valve being journaled, as described, to the bell-crank o' , said ball-valve will be free to rotate in its bearings and that in case the rounded surface of the ball should fail to enter the valve-seat centrally at the movement of the bell-crank the contact of the ball with the mouth edge of the seat will result in said ball rolling into its place in said seat. It will also be observed that the character of the ball-valve herein shown and described is such as to produce a water and air tight closure of the opening k and that the suction produced by the passage of the water through the siphon will result in said ball being drawn inward firmly against its seat.

From the herein-described manner of forming our improved siphon-case it will be seen that its production will be accomplished in a simple and effective manner and that a reliable operative siphon may thus be constructed in a neat and simple form and at a comparatively-low cost of manufacture.

We are aware that siphons of this class have been formed heretofore wherein the case is provided with a central partition and that the outflow of the water therefrom has been produced by the creation of the vacuum; but our invention differs from these in the manner and means of operation and in the construction of the siphon and valve.

It is obvious that the shape or position of the siphon-case herein shown and described may be subject to changes without departing from the principle of our invention.

Our improved siphon-case may be formed by employing a tubular body of any shape in cross-section, and the partition-plate may be formed separately and inserted therein, if desired. It will also be seen that the case and partition may be produced by uniting the flat sides of two hollow bodies, thus resulting in a partition of double thickness.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A siphon for water-closets, consisting of two sections the edges of which are permanently secured together to form a hollow case, one of said sections being longer than the other and provided with an inlet-opening, the upper ends of said sections being even and provided with a cover rigidly secured thereto, a partition extending from the lower end of the longest section nearly to the cover, and a valve for closing the inlet-opening, substantially as set forth.

2. A siphon for water-closets, consisting of two sections the longest edges of which are flanged inwardly and secured together to form a substantially-cylindrical case, one of said sections being longer than the other one and provided with an inlet-opening, the upper ends of said sections being even and provided with a cover rigidly secured thereto, a parti-

tion extending from the bottom of the longer section nearly to the cover, and a valve for closing the inlet-opening, substantially as set forth.

- 5 3. A siphon for water-closets, consisting of two sections of unequal length, the edges of which sections are flanged inwardly, and one of said flanges is wider than the others and has its edge secured to the flange upon the
10 opposite side of the same section, the extended portion of said wide flange being of less length at its upper end than the section of which it forms a part and the flanges of the shorter

section being secured to the flanges of the longer section from the top downward, an inlet-opening in the side of the longer section, 15 a cover for the two sections, rigidly secured thereto, a base for the longer section, and a valve for the inlet-opening, substantially as set forth.

CHARLES L. WILKINS.
AUGUST F. BLESCH.

In presence of—

C. C. SHEPHERD,
JOSEPH H. DYER.