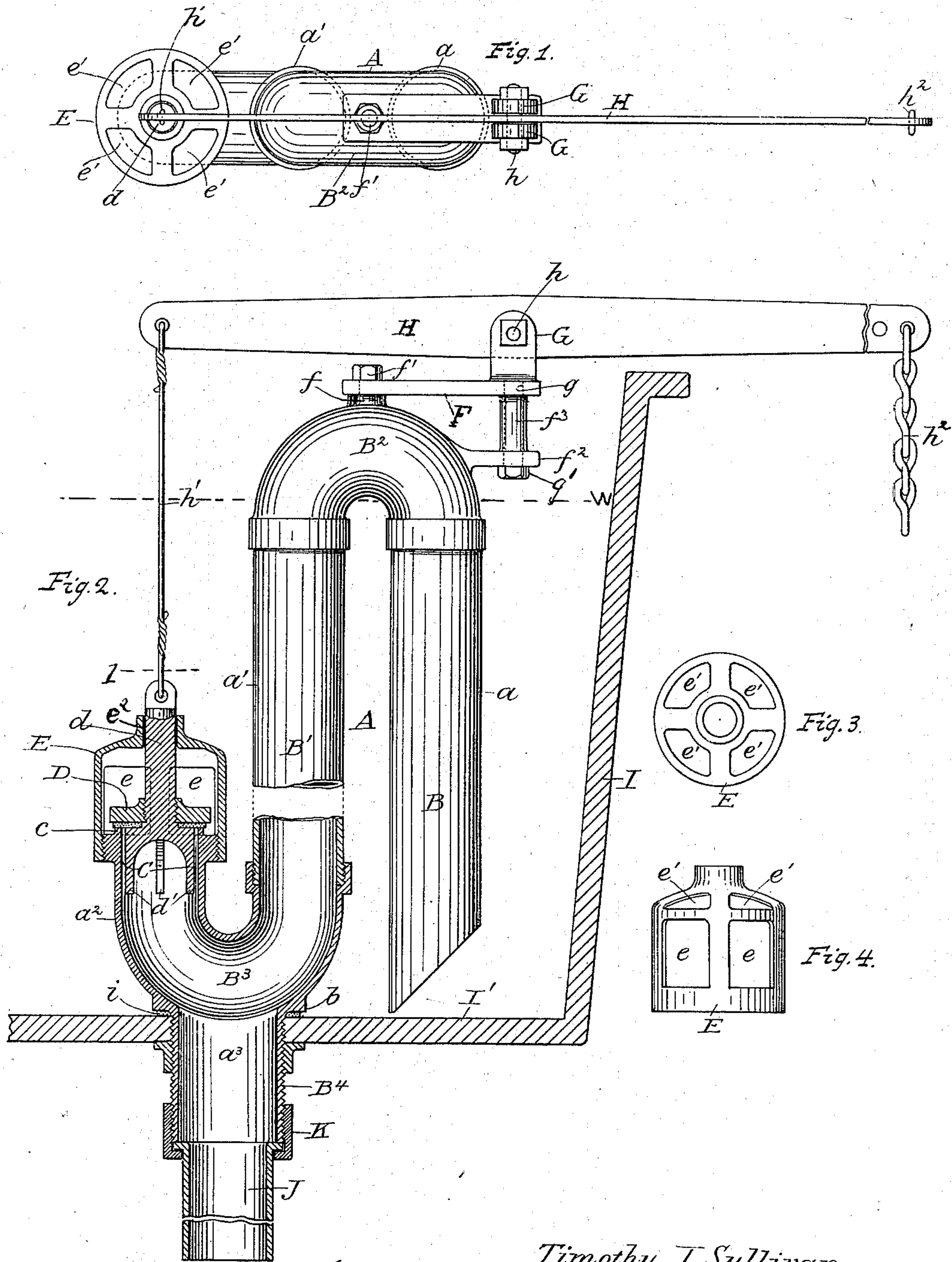


(No Model.)

T. J. SULLIVAN.  
SIPHON FOR TANKS OF WATER CLOSETS.

No. 559,503

Patented May 5, 1896.



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Witnesses.

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# UNITED STATES PATENT OFFICE.

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## SIPHON FOR TANKS OF WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 559,503, dated May 5, 1896.

Application filed July 14, 1894. Serial No. 517,614. (No model.)

*To all whom it may concern:*

Be it known that I, TIMOTHY J. SULLIVAN, a citizen of the United States, and a resident of the city of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Siphons for Tanks of Water-Closets, of which the following is a specification.

My invention relates to siphons for tanks for containing water for flushing water-closet bowls; and it consists in the combination of parts and devices hereinafter particularly described, and specifically set forth in the claim.

The objects of my invention are to provide with a short upturned limb connected with the long limb of the siphon a horizontal valve-seat, reciprocating valve and a valve-cage, whereby the valve will be preserved from shifting out of place on the valve-seat and the water be allowed to have free passage into the lower end of the long limb of the siphon for starting the run of water through the entire length of the same, and also to provide with a guided stem of a vertically-moving valve and the upper end bend of the siphon a means for holding a lever and a connecting-rod between the latter and said valve in place, whereby the said lever may at all times be held in one and the same relation to the said valve. I attain these objects by the means illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a siphon embodying the improvements in this invention. Fig. 2 is an elevation, part in section, of the same. Fig. 3 is a view from above the valve-cage, as at line 1 in Fig. 2; and Fig. 4 is a side elevation of the said valve-cage.

The same letters of reference refer to similar parts throughout the several views.

In the drawings, A represents the siphon, in which  $a$  is the short limb,  $a'$  the long limb, and  $a^2$  is an upturned limb connected with the lower end portion of the long limb  $a'$  and having its chamber communicating with that of said long limb  $a'$  and also with the outlet  $a^3$  of the siphon. Although this siphon may have its limbs  $a$   $a'$   $a^2$  and outlet  $a^3$  integral, yet it may be made sectional, as shown in Fig. 2, and comprised of straight tubes B B',

return-bend B<sup>2</sup>, and return-bend B<sup>3</sup>, having in it the outlet  $a^3$ , which outlet is, through the screw-threaded stem B<sup>4</sup>, extended from the shoulder  $b$ , as shown in Fig. 2. The said tube portions B B' are secured with their respective return-bends B<sup>2</sup> and B<sup>3</sup> by suitable screw-threads, as shown. The upper open end of the upturned limb  $a^2$  is provided with a valve-seat  $c$ , which is annular to the inlet-opening C and horizontal as to its seat-surface.

D is a vertically-moving valve suitably secured to the vertical stem  $d$  and the depending guiding-wings  $d'$   $d''$ , which loosely work within the inlet-opening C.

E is an open-work valve-cage suitably secured to the upper end of the upturned limb  $a^2$  and annular to the said valve D. This valve-cage E is provided with a series of side openings  $e$   $e$  and top openings  $e'$   $e'$ , through which water may freely have passage to the outlet-opening C when the valve D is raised from off the seat  $c$ . A sleeve  $e^2$  is provided central in the upper end of the said valve-cage E, of diameter corresponding with that of the vertical stem  $d$  of said valve, so as to freely work in the same.

F is a lever-supporting bar secured by any suitable means to the upper end of the siphon A. This lever-supporting bar is shown to extend from a boss  $f$ , integral with the wall of the bend B<sup>2</sup>, outwardly to a short distance past the vertical short limb  $a$  and is supported by the said boss and secured thereto by means of the nut-headed screw  $f'$ , and also by means of the laterally-projected lug  $f^2$  and hollow stud  $f^3$  between said lug and the said bar and secured by the stem  $g$ , integral with the ears G, passing through a perforation made in the outer end of said bar F and through the hollow stud  $f^3$  and the lug  $f^2$ , as indicated by dotted lines in Fig. 2, when it is secured by the nut  $g'$ . The ears G receive between them the lever H, which is pivoted by pivot  $h$  with the said ears. One end of said lever H terminates at a point about vertically over the valve D and is connected with the stem  $d$  of said valve by means of any suitable connecting device—as, say, rod  $h'$ —while the opposite end of said lever has connected with it suitable means by which the said end may be pulled down, and which may consist of wire or chain  $h^2$ , as shown.



This siphon is secured in place within the tank I by its screw-threaded stem B<sup>4</sup>, passing through the bottom I' of said tank, with a suitable gasket *i* between said bottom and the shoulder *b*. The flushing-pipe J is secured with said stem B<sup>4</sup> by any suitable means, and preferably by a coupling-collar K, as shown. Water is supplied to this tank from a supply-pipe (not shown) until the water rises to or near to the water-line *w*. When this siphon is to be operated, the inner end of the lever H is raised by the operator pulling down on the rod or chain *h*<sup>2</sup>, when the valve D will be lifted up from the valve-seat *c* and allow the water within the cage E to pass at once into the outlet *a*<sup>3</sup>, and thence into the flushing-pipe J, to be followed by other water passing into the said cage through its openings *e e'*, when the water in the tank will be started to have a flow in direction up through the short limb *a* of the siphon, and thence through the long limb *a'*, and then to the outlet *a*<sup>3</sup> to the flushing-pipe J, when the valve D may be allowed to drop down on its seat and close the inlet-

opening C. The flow of the water through the short and long limbs of the siphon A having been started will be continued until the water in the tank has been lowered to within about one inch, more or less, from the bottom of the tank.

What I claim, and desire to secure by Letters Patent, is—

In a siphon for tanks for flushing water-closet bowls, the combination with the bend B<sup>2</sup> provided with the laterally-projected lug *f*<sup>2</sup>, lever-supporting bar F, secured by one of its ends to the apex of said bend, and having its opposite end supported by said lug, of a lever pivoted with ears connected with said bar and calculated to lift a valve for starting a flow of water from the tank through the said siphon, substantially as and for the purposes set forth.

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Witnesses:

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