(No Model.)

J. TOTHAM.

FLUSHING TANK.

No. 446,903. Patented Feb. 24, 1891.

Fig. 1.

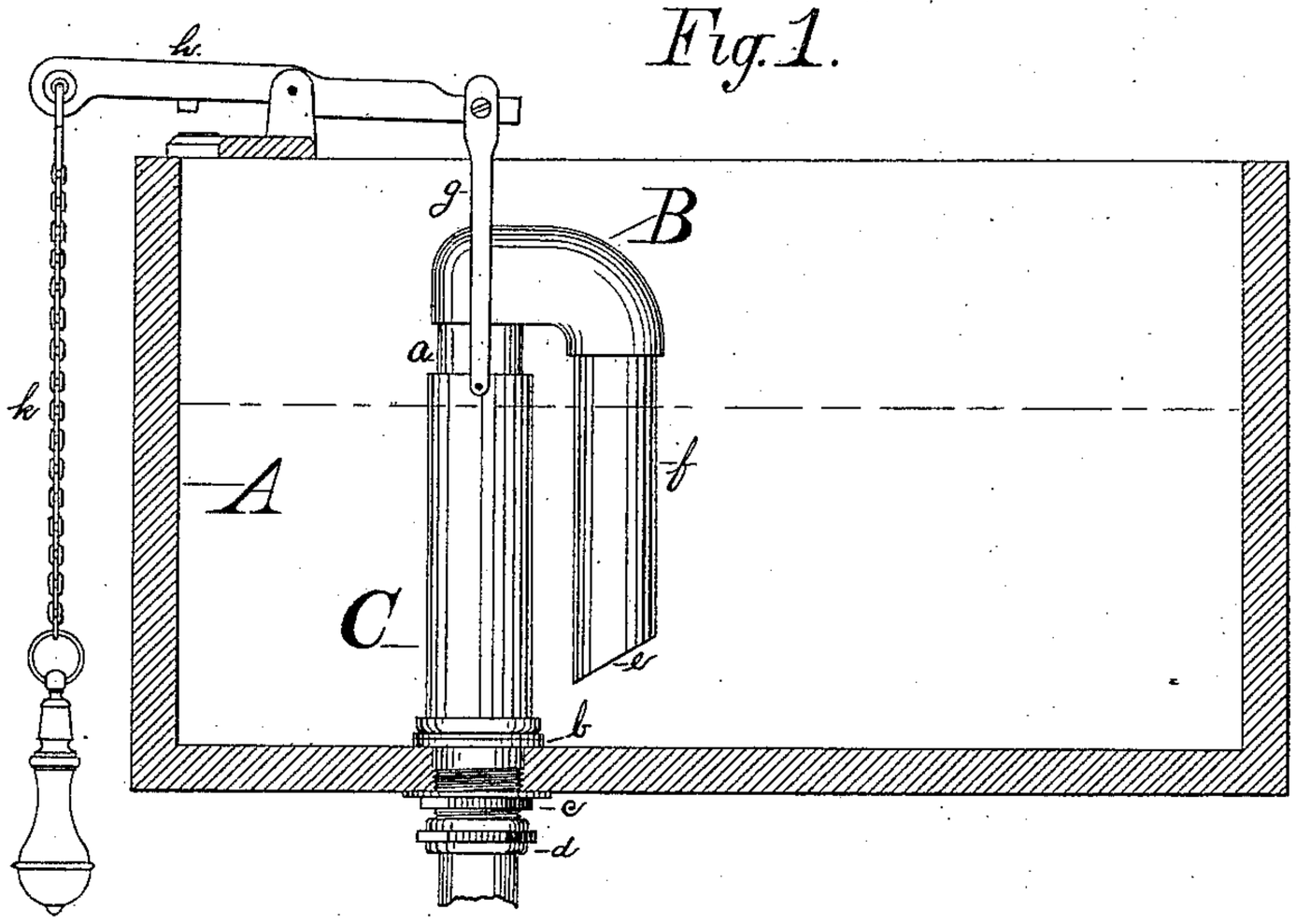


Fig. 2.

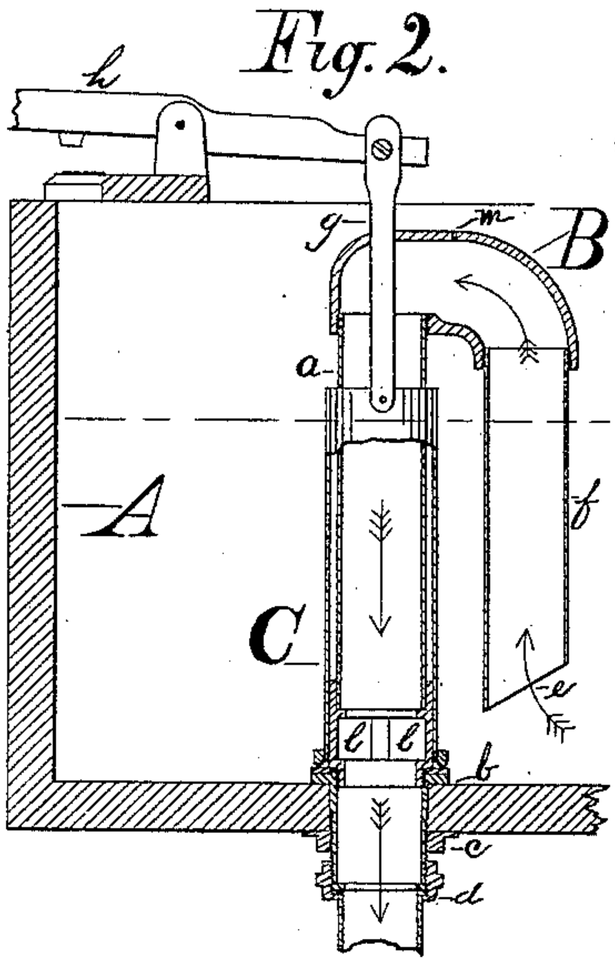
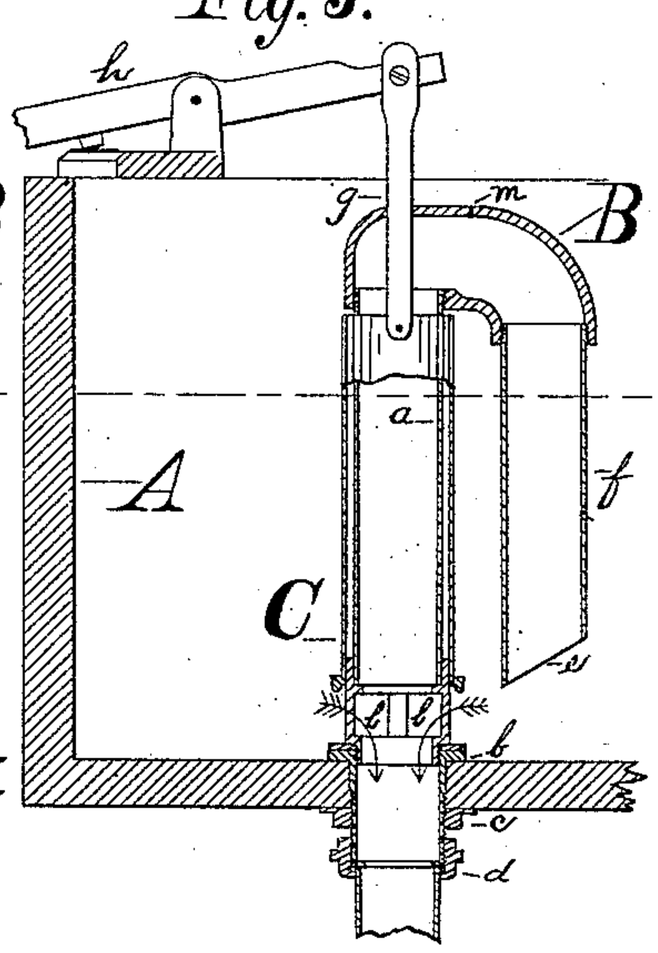


Fig. 3.



Witnesses.—

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UNITED STATES PATENT OFFICE.

JAMES TOTHAM, OF NEW HAVEN, CONNECTICUT.

FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 446,903, dated February 24, 1891.

Application filed September 8, 1890. Serial No. 364,306. (No model.)

To all whom it may concern:

Be it known that I, JAMES TOTHAM, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Flushing-Tanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in flushing-tanks for flushing water-closets and urinals.

Prior to my invention flushing-tanks were made in which the entire siphon was lifted from a valve-seat and a siphonic action thus started. These were open to the objection that, owing to the weight of the siphon, considerable noise was made when it was allowed to fall back to its seat. They were also made with a fixed siphon set in operation by a valve set off from the siphon and connected with the long leg of the same by a pipe, the valve working against the pressure of the water in the tank in opening and with it in closing made them open to the objections that a considerable effort on the part of the person operating them was required to raise the valve from its seat and caused them to make considerable noise when the valve was released and allowed to fall back to its seat.

The objects of my invention are, first, to provide a valve for starting siphonic action which is noiseless in its operation; second, to provide a siphon which will operate without the noise which usually accompanies the breaking of siphonic action by the admission of air into the short leg of the same; third, to provide a valve for starting a siphonic action which is not noticeably affected in opening or closing by the pressure of water in the tank; fourth, to provide a siphon the siphonage of which is effectually broken without the aid of an auxiliary valve or other attachment when the water in the tank reaches the level of the lower end of the short leg of the siphon; and with these several objects in view my invention consists in certain novel features of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in longitudinal section of the flushing-tank and a view in side elevation of the siphon and its valve closed. Fig. 2 is a view in longitudinal section of the tank and siphon, the valve of the latter being in its closed position. Fig. 3 is a similar view showing the valve in its open position.

In the drawings, A represents the tank, which is furnished with any suitable ball-cock and float or other automatic filling device. (Not shown, as such feature forms no part of my invention.)

B represents the siphon, the long leg *a* of which is secured to the bottom of the tank by means of the flange *b* and lock-nut *c*, and is connected with the flush or outlet pipe by the coupling *d*.

e represents the oblique end of the short leg *f* of the siphon. The flange *b* serves as an annular valve-seat for the tubular valve C, which is operated by means of the bail *g*, lever *h*, and chain *k*.

The operation is as follows: The valve C being raised from its seat *b* by means of the bail *g*, lever *h*, and chain *k*, the water passes through the openings *l* in the long leg *a* of the siphon B into the flush-pipe, which starts a siphonic action, which is continued until the water in the tank reaches the level of the highest point of the oblique end *e* of the short leg of the siphon, when air is admitted in a gradually-increasing quantity until the siphonage is effectually broken. The tubular valve C, having no flanges or other projections at or near its seat *b* and moving as it does both in opening and closing at nearly right angles to the water flowing into the openings *l* in the long leg of the siphon, (see arrows in Fig. 3,) is opened without noticeable resistance from the pressure of water in the tank, and for the same reasons when allowed to close does so noiselessly, not being sucked suddenly back to its seat by the outflowing water. The function of the small hole *m* in the return-bend of the siphon is to supply a sufficient amount of air to insure against the noise which would otherwise accompany the large body of air admitted at the lower end of the short leg of the siphon in its passage through the return-bend.

In order to maintain in the tank a sufficient

supply of water to insure a thorough wash or flush to the water-closet and to avoid a gradual escape of water from the tank between the outer circumference of the long leg of the siphon and the inner circumference of the hollow valve, and thus through the valve-openings *l* into the flush-pipe, I carry my hollow valve above the high-water mark in the tank. The same result may be attained by making the hollow valve fit the outer circumference of the long leg of the siphon snugly enough to form a seal against the escape of water between the two, in which arrangement the necessity of carrying the valve above the high-water mark is obviated.

I consider the extension of the hollow valve above the high-water mark preferable, as it admits of a certain amount of play between the valve and the long leg of the siphon, which causes it to operate more easily and avoids the necessity of a nicety of adjustment which would otherwise be necessary.

I claim as my invention the following defined improvements in flushing-tanks, substantially as hereinbefore specified:

1. In a flushing-tank, the combination, with a siphon having apertures in its long leg and provided with an outwardly-projecting flange which serves to support the siphon and as a valve-seat, of a tubular valve which operates to open and close said apertures, substantially as shown.

2. In a flushing-tank, the combination, with a siphon having apertures in its long leg and provided with a valve-seat, of a tubular valve surrounding said long leg and adapted to open and close said apertures, substantially as shown.

3. In a flushing-tank, the combination, with the long leg of a siphon formed in sections, one of which is provided with apertures, of a valve-seat clamped between said sections and serving as a seat for a tubular valve which opens and closes said apertures, substantially as shown.

4. In a flushing-tank, the combination, with the long leg of a siphon having valve-openings near the bottom of the tank, of a tubular valve adapted to open and close said openings, said valve extending above the high-water mark in the tank, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES TOTHAM.

Witnesses:

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