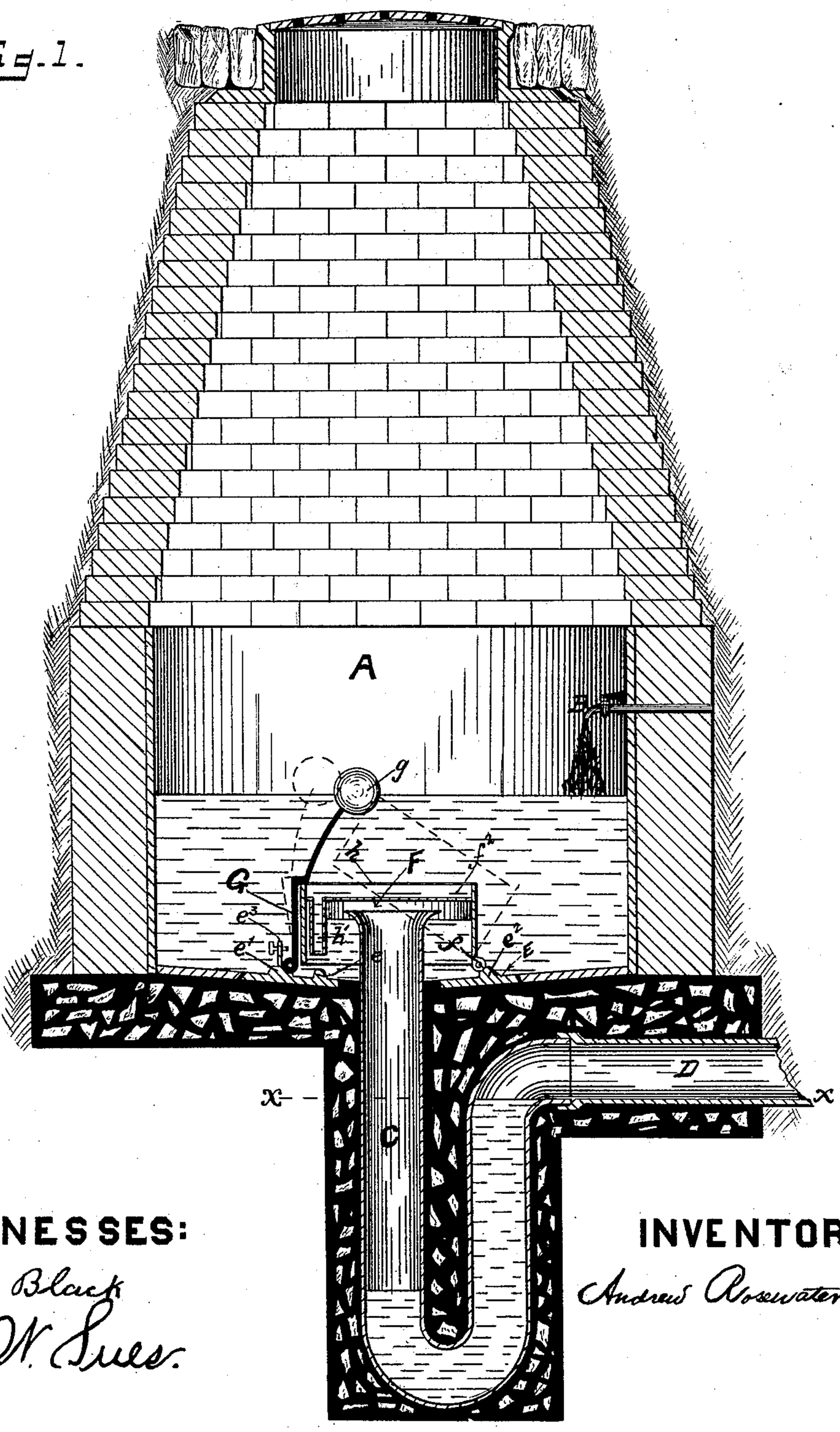
(No Model.) 4 Sheets—Sheet 1.

A. ROSEWATER.

FLUSHING TANK.

No. 428,957. Patented May 27, 1890.

Fig. 1.



WITNESSES:

J. L. Black

G. H. Sues.

INVENTOR.

Andrew Rosewater

(No Model.)

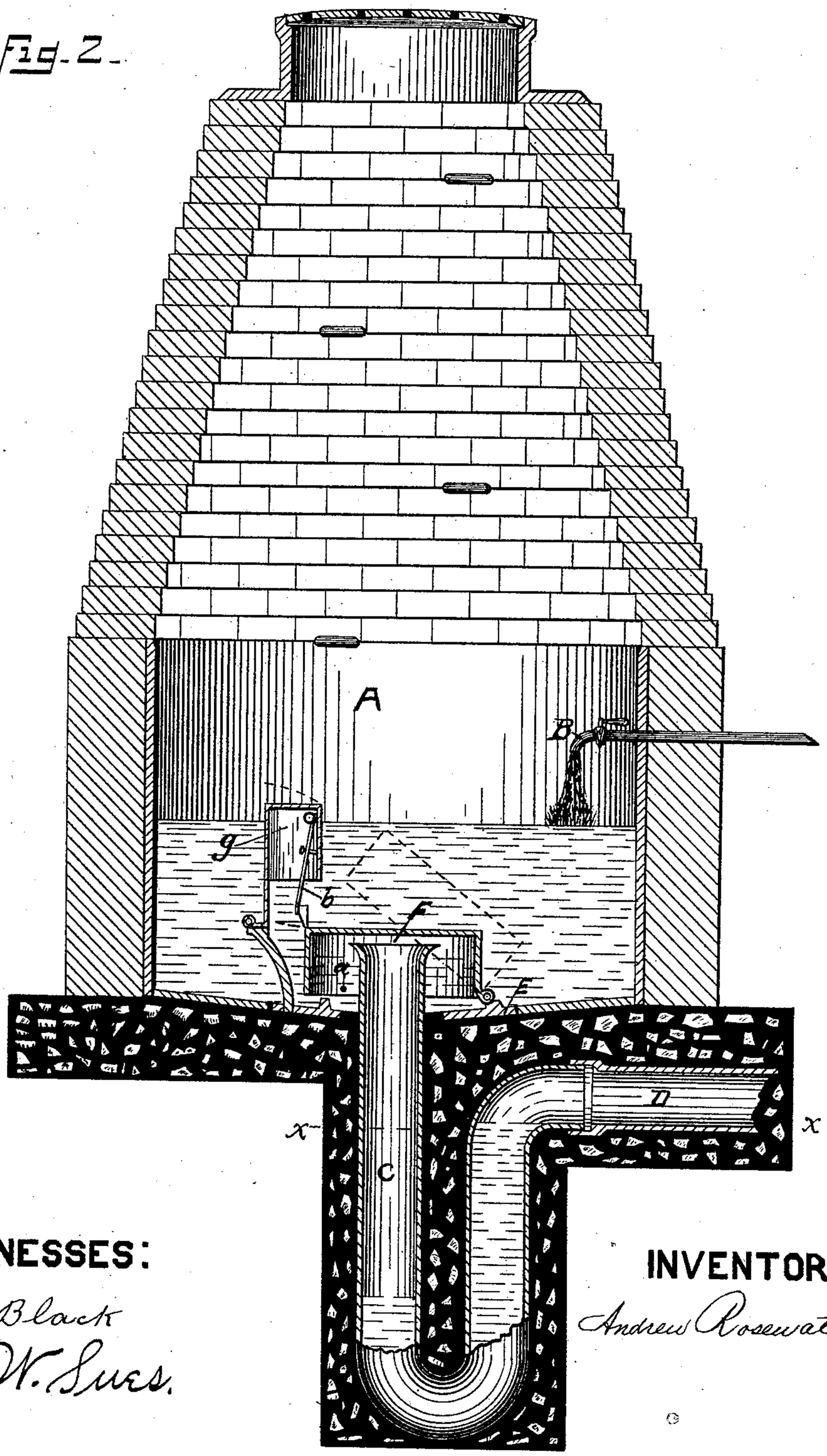
4 Sheets—Sheet 2.

A. ROSEWATER.

FLUSHING TANK.

No. 428,957. Patented May 27, 1890.

Fig. 2.



WITNESSES:

J. L. Black

G. W. Sues.

INVENTOR

Andrew Rosewater

(No Model.)

4 Sheets—Sheet 3.

A. ROSEWATER.

FLUSHING TANK.

No. 428,957. Patented May 27, 1890.

Fig 3

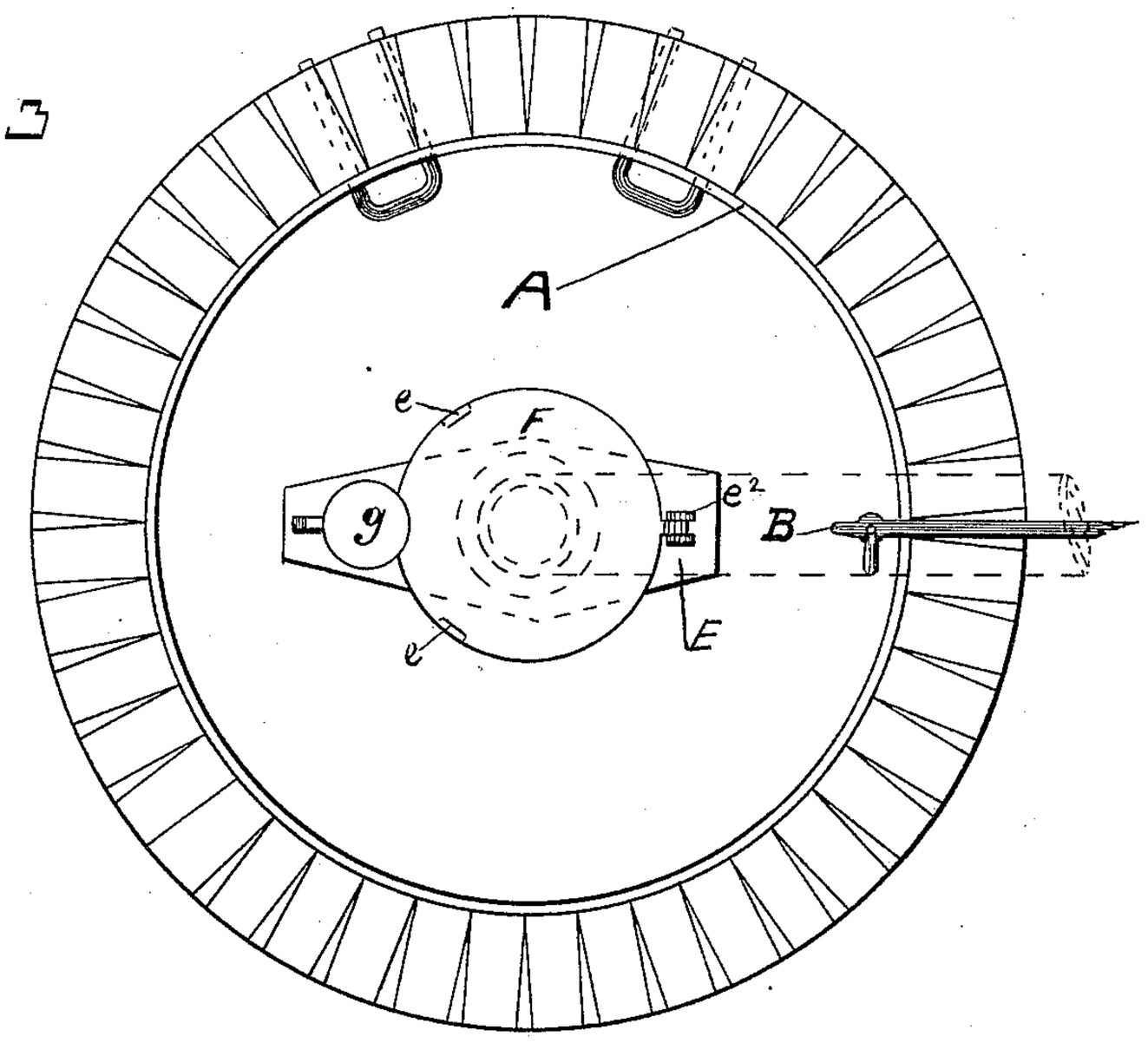
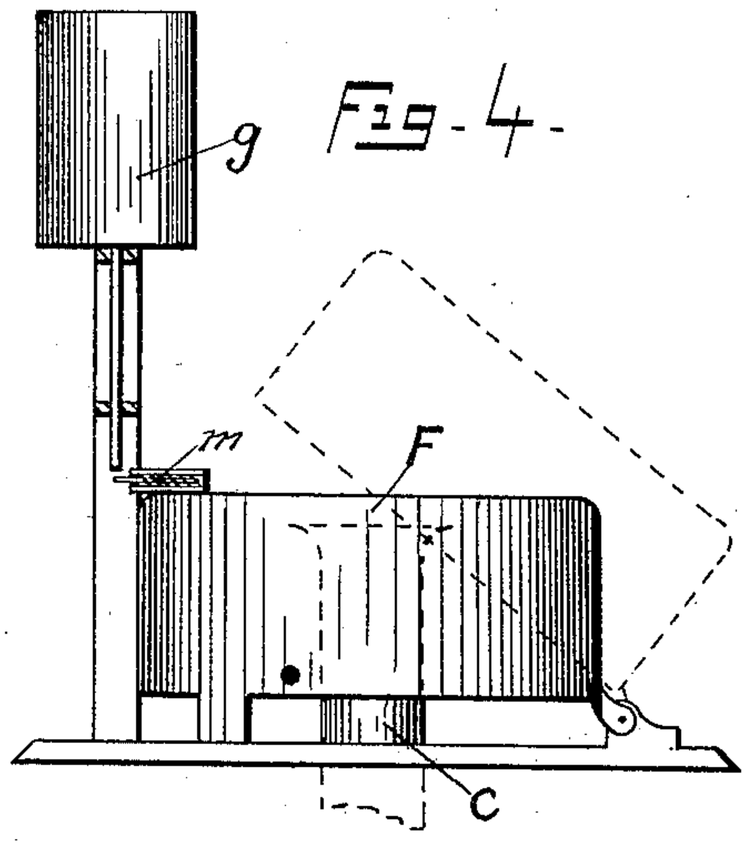


Fig. 4.



WITNESSES:

J. L. Black

G. W. Sues.

INVENTOR

Andrew Rosewater

(No Model.)

4 Sheets—Sheet 4.

A. ROSEWATER.

FLUSHING TANK.

No. 428,957. Patented May 27, 1890.

Fig. 5.

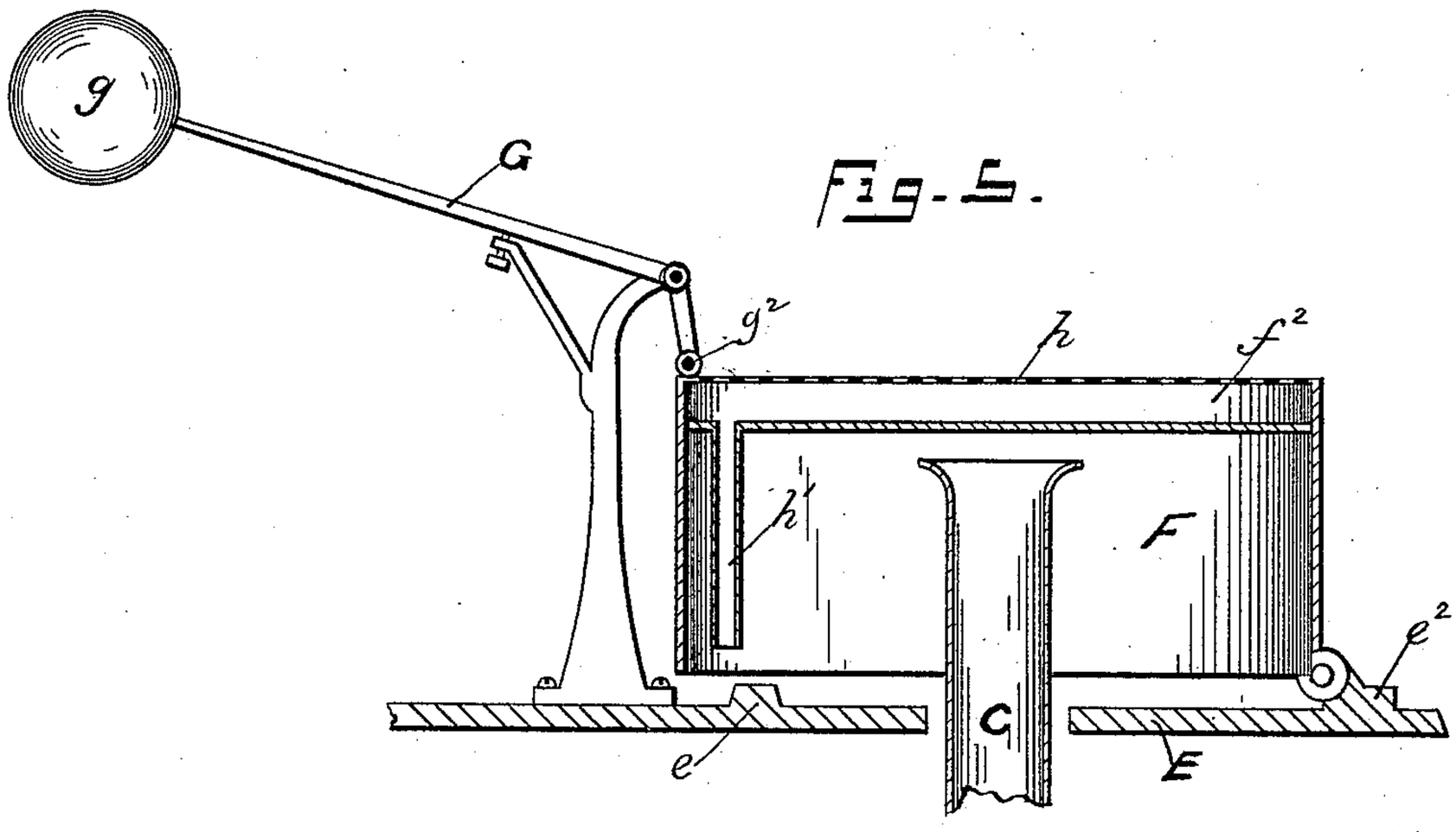
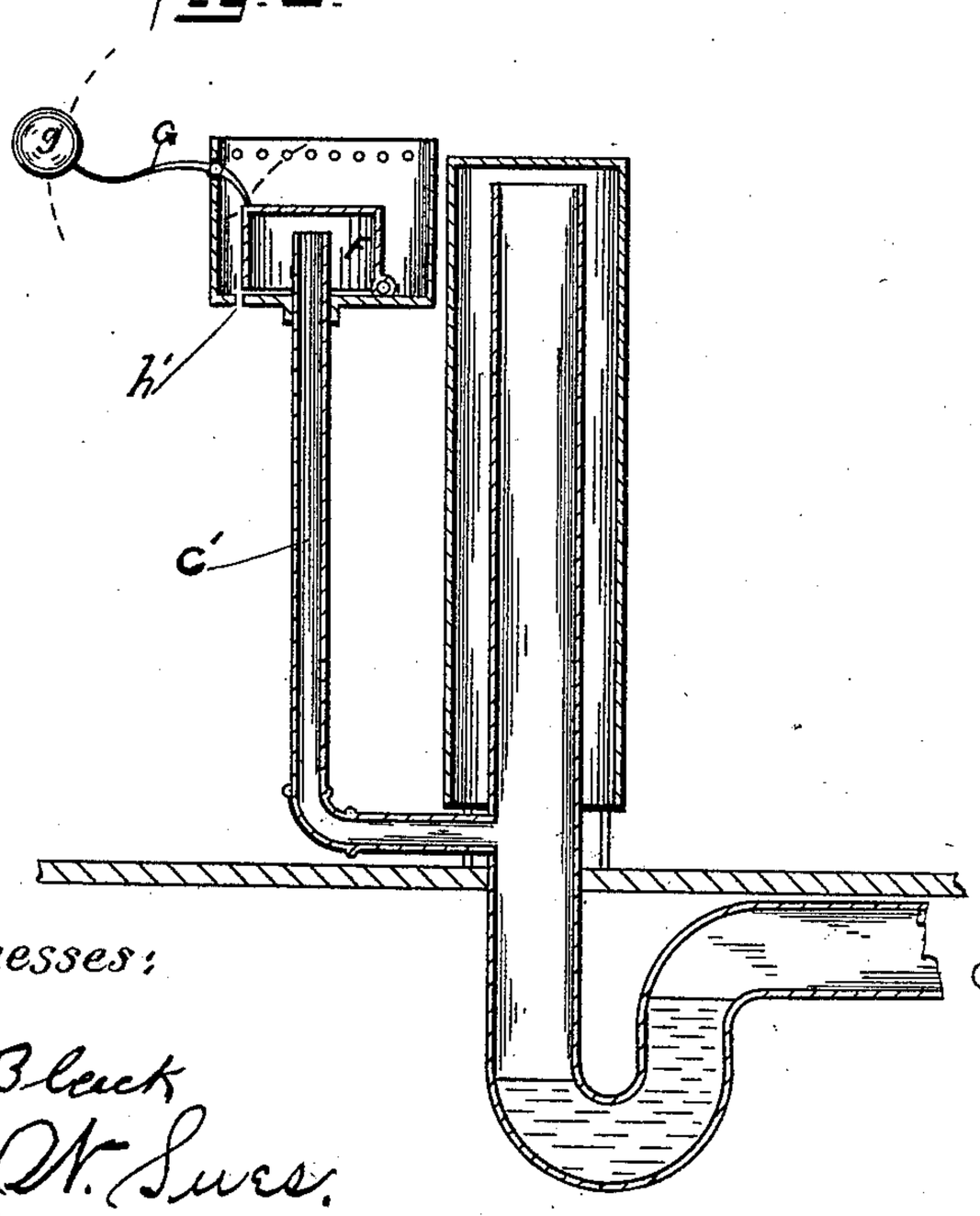


Fig. 6.



Witnesses:

J. L. Bleck

G. H. Sues.

Inventor.

Andrew Rosewater

UNITED STATES PATENT OFFICE.

ANDREW ROSEWATER, OF OMAHA, NEBRASKA.

FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 428,957, dated May 27, 1890.

Application filed October 28, 1889. Serial No. 328,404. (No model.)

To all whom it may concern:

Be it known that I, ANDREW ROSEWATER, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Flushing-Tanks; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to devices for automatically flushing sewers, pipes, conduits, &c.

The object of my invention is to provide an automatic flushing device that will be simple of construction, positive of action, and readily adjustable; and in furtherance of this object my invention consists in the construction, combination, and arrangement of parts, as hereinafter more fully described, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical sectional view of my automatic flushing device as arranged and adapted to work in combination with a flushing-tank. Fig. 2 represents a modification thereof, wherein a pivoted gravity-acting cup is substituted for the actuating-lever shown in Fig. 1. Fig. 3 is a top view on the water-line of Fig. 2. Fig. 4 shows a modification wherein the inverted air-chamber is actuated by means of a weighted float attached to a slide-operating bar and provided with a locking device. Fig. 5 illustrates a modification wherein I substitute a lever of the third class for that shown in Fig. 1, and Fig. 6 shows my device as arranged as an auxiliary tank and operating in connection with an annular siphon.

Similar letters of reference refer to corresponding parts throughout the drawings.

A represents a flushing-tank of the ordinary form of construction, which is provided at a convenient point with a supply-pipe and regulating-cock B, by means of which a constant stream of water is brought within the tank. Leading from the lower part of said tank is a trap or inverted outlet-siphon C, made of iron, clay, or other suitable material, which connects with a sewer or other outlet D at some point below the inner base of the tank. This trap may be of any suitable construction, but must be water and air tight throughout its entire length. The upper end of said trap, which extends the requisite distance from the bottom of the tank, may be straight and of the general uniform diameter of the section, or, what is preferable, be bell-mouthed, as illustrated.

Encircling the upper end of the trap or siphon C, and resting upon the base of the tank, is an elongated anchor-plate E, made of iron or any other suitable material. This plate has an annular opening adapted to encompass the projecting mouth of the siphon, and is provided with two supporting-lugs *e e*, (shown in Figs. 1 and 3,) which are adapted to support the hinged inverted air-compressing chamber F. The anchor-plate is further provided with two pivot-lugs e' e^2 at opposite extremities, to which are pivoted the actuating-float or locking-rod G and the inverted air-compressing chamber F. This chamber is preferably of an annular form, and is provided at a suitable point with a hinge or eye-bearing *f*, adapted to be engaged by the lug e^2, and pivotally connecting said chamber to the anchor-plate.

Upon the upper or deck portion the compressing-chamber is provided with a priming-chamber f^2, as more clearly illustrated in Fig. 6. This priming-chamber is preferably formed by extending the sides of the air-compressing chamber, and is provided at the top with a perforated cover *h*, while a suitable pipe h' leads from said priming-chamber to within a certain distance of the bottom of the main or air compressing chamber, the point of termination being styled the "line of compression."

Pivotally connected to the anchor-plate E, and directly opposite the hinged portion of the compressing-chamber F, is situated the float-actuated locking-lever G. This lever is preferably of brass, and is provided at its lower end with an eye-bearing, adapted to be engaged by the pivot-lug e'. At a distance corresponding to the height of the air-compressing chamber F the lever is provided

with an angular shoulder, which is adapted to work upon the deck portion of said chamber and lock it in an inverted position, as shown in Fig. 1. The rod beyond the shoulder extends at an angle to the lower portion and terminates in a suitable float *g*, by means of which said rod is actuated. This upper portion of the rod is preferably curved, so as to be outside of the upward radial path of the air-compressing chamber F.

Immediately back of the actuating-lever G, and integral with the lug *e'*, is situated an upwardly-extending arm e^3, which is provided with an adjustable set-screw, by means of which the outward movement of the said adjusting-lever is gaged.

Before my device can be operated it is necessary to seal the trap of siphon C, so as to bring the water in both arms flush with the level-line X X. This being accomplished, and the apparatus having being properly adjusted and locked, as shown in Fig. 1, the water is admitted at any desired rate of speed, when the operation of my device will be as follows: As the water fills the bottom of the tank, it rises within the air-compressing chamber F, and as it reaches the lower opening of the downwardly-extending pipe *h'*, determining the line of compression, confines a column of air, which fills the chamber F and extends to the water-level within the trap. This will cause resistance to the rising of water within the compressing-chamber, and as a consequence the confined air in the chamber and siphon will gradually compress, forcing the water within the inner section of the trap downward, and admitting a little more than an equal body of water upward into the compressing-chamber. The height of water surrounding the compressing-chamber and extending above the line of compression will equal the difference between the two columns of water in the two arms of the trap; or, in other words, the water within the open-ended arm of the siphon will be depressed as much below the original line of level as it has risen above the line of compression within the tank, as will be understood by referring to Fig. 1. The priming-chamber f^2, offering no obstruction, is of course filled by the rising water. When the water has risen sufficiently high to reach the float *g* at the upper end of the actuating-lever, it will radially carry it to a position perpendicular to its pivot-point; but before this position is reached the angular portion of the lever, locking upon the compressing-chamber, will have worked free, and the unconfined chamber, forced by the compressed air within, springs open, and as the compressed air makes its escape from the trap and portion of the chamber the space will be filled with an inward rush of water. This will again draw down the compressing-chamber and rapid and complete siphonage of the tank will ensue. The pivoted float-rod, which but for the regulating set-screw c^3 would have gone beyond the perpendicular, now that the water has receded from the float *g*, will fall back to its normal position, and again lock upon the compressing-chamber, as illustrated. In the meanwhile the water within the priming-chamber f^2 will have escaped through the pipe *h'*, and thus afford a temporary open-air communication with the compressing-chamber from above, through which a fresh supply of air will refill the chamber, destroying the siphonage until the water shall again rise to the line of compression, when the operation will be continued, as before.

The operation of my device is of course intermittent, the speed being regulated by means of the inlet-pipe B.

In the modification shown in Fig. 2 I eliminate the upper priming-chamber and provide the air-compressing chamber with a suitable repriming-inlet *a*. This, though effective, is not nearly so reliable as the priming-chamber, and I prefer using the device as described in the preceding figure. In this same modification in place of the actuating-lever I employ a hinged inverted cup, which is provided with an adjustable gravity-catch *b*, by means of which the compressing-chamber is held in a locked position. The cup is sufficiently heavy to overcome the upward pressure of the compression-chamber until the air within the cup itself is compressed sufficiently to overcome its weight, when it is carried readily upward, permitting the escape of the chamber, when the tank is emptied precisely as in the former case.

In the device as illustrated in Fig. 4 I employ a vertically-sliding rod, to which is attached a weight-cup *g*. The operation is as in the previously-described cases, with the exception that the cup works vertically in permitting the escape of the air-compressing chamber, which is locked by means of a spring-catch *m*, as illustrated.

Fig. 5 represents a device wherein I have employed a pivoted lever G, the bent end of which is provided with a friction-roll g^2, adapted to work upon and lock the compression-chamber F until the ball *g* is carried upward by the water, when said chamber is released. Fig. 6 shows this modification, in the form of an auxiliary tank, as applied to an ordinary annular siphon. The auxiliary tank itself serves as a repriming-chamber by means of an annular hole *h'*, the air from the siphon escaping through a connecting-pipe at a point below the shorter or outer arm of the siphon C.

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

1. In a flushing-tank provided with a regulating inlet and exhaust pipe, the following instrumentalities, to wit: a hinged inverted air-compressing chamber, a float-actuated locking-bar adapted to intermittently lock and release said chamber, and means for supplying air to said compressing-chamber, substantially as described.

2. In a flushing-tank provided with a regulating inlet and exhaust pipe, the following instrumentalities, to wit: a hinged inverted air-compressing chamber, a float-actuated locking-bar adapted to intermittently lock and release said inverted chamber, and a repriming-opening within said inverted air-compressing chamber, all arranged and adapted to operate substantially as and for the purpose specified.

3. The combination, with a flushing-tank provided with a supply-pipe and a siphon outlet-pipe, of an anchor-plate surrounding the upper open end of said siphon outlet-pipe, and inverted air-compressing chamber pivotally connected to said anchor-plate and provided upon its deck portion with a repriming-chamber, said repriming-chamber being provided with a pipe leading a suitable distance within said air-compressing chamber, and a float-actuated bar adapted to work upon and intermittently lock and release said inverted chamber, said lever being pivotally connected to the said anchor-plate and adapted to operate substantially as described.

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

ANDREW ROSEWATER.

Witnesses:
J. L. BLACK,
G. W. SUES.