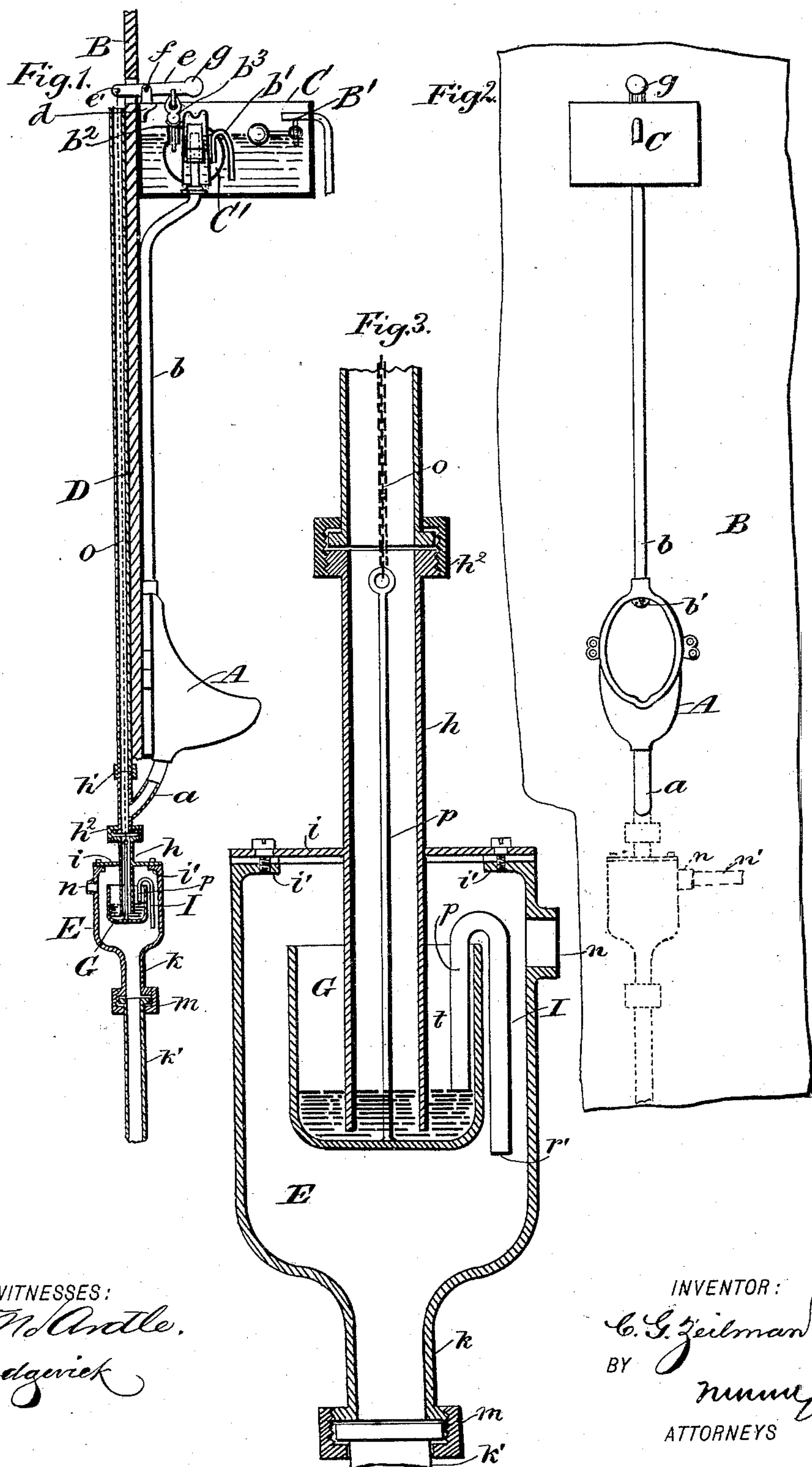


(No Model.)

C. G. ZEILMAN.
URINAL.

No. 473,806.

Patented Apr. 26, 1892.



WITNESSES:

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CHARLES G. ZEILMAN, OF ALBANY, NEW YORK.

URINAL.

SPECIFICATION forming part of Letters Patent No. 473,806, dated April 26, 1892.

Application filed May 5, 1891. Serial No. 391,628. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. ZEILMAN, of Albany, in the county of Albany and State of New York, have invented a new and useful
5 Improvement in Urinals, of which the following is a full, clear, and exact description.

The objects of this invention are primarily to provide a simple practical device of the character indicated that will effect a prompt
10 and automatic flushing of the receiving-bowl of urinals by reason of the gravity of the urine or a portion of the urine deposited therein; and, secondarily, afford a positive seal at all times against the escape of sewer-gas.

15 To these ends my invention consists in the construction and combination of parts as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification,
20 in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly in section, of a urinal and a flushing-tank above it. Fig. 2 is a front elevation of the bowl and
25 water-flushing tank of a urinal with the improvement shown in dotted lines as concealed behind a wall whereon the exposed parts are supported, and Fig. 3 is an enlarged sectional elevation of the essential features of the in-
30 vention detached from other parts, connections with the flushing-tank above and soil-pipe below being shown broken away.

The receiving-bowl A is of any approved form, and is provided with a discharging
35 branch pipe *a* that extends downwardly and rearwardly through the vertical wall B, whereon the bowl A is affixed. At a proper elevation the flushing-tank C is secured upon the wall B, so that a flush-pipe *b* will extend there-
40 from downwardly and be adapted to introduce a wash of water from the tank into the bowl at *b'*, or any other preferred point. The usual water-float and valve attachment B' controlled thereby are provided to regulate
45 the automatic introduction of water into the tank C from a supply-pipe.

While other means for the periodic supply of flush-water to the device that is the sub-
50 ject of the present invention may be utilized, I prefer to employ, conjunctively, the flush-
ing-cistern patented to me January 6, 1891,

No. 444,310, which device is adapted to discharge water through the flush-pipe *b* when a certain level is attained by the water in the tank C, and arrest such a discharge when the
55 water is lowered a predetermined degree, this action being effected mainly by the use of a spherical float C' that normally floats on the water, moving with it as it rises in the tank, thereby extending the upper end of the flush-
60 pipe that is telescoped on its upper portion. When the float reaches a maximum limit of elevation, it is arrested by impinging on a fixed collar on the pipe *b*, and water still entering the tank charges a siphon *b'*, which
65 has one leg in the spherical float C' and the other extended below in the tank C, near its bottom. On the side of the float C', near its top and adjacent to the vertical wall B, an air-escape pipe *b²* is upwardly projected to a
70 point above the maximum elevation of water in the tank C, having a valve-seat on its upper end, said pipe being adapted to relieve the spherical float C' of contained air. The air-dis-
75 charge pipe *b²* is sealed by a ball-valve *b³*, that is pendent from a horizontal lever *e*, having its fulcrum *f* on a bracket *d*, affixed to the wall B at a proper point to permit a vibration of the
80 lever, which latter has a weight *g* on the end that is above the float C', so as to normally seat the valve *b³* on the air-tube *b²* and seal it, preventing the escape of air from said float. While the float C' is full of air and sealed the
85 siphon *b'* will remain inoperative; but should the valve *b³* be raised after the siphon is covered with water by reason of the maximum elevation of water in the tank C, there will be
90 an influx of water as the air escapes, so that the float is soon filled with water and its weight with that of engaging parts will depress it until it rests upon the extension of the flush-pipe *b*, previously mentioned, thus moving the loose portion of this pipe down so
95 as to permit water from the tank C to be discharged from the lower end of the flush-pipe. The flushing action will continue until the tank C is partly emptied, when the siphon *b'*,
100 that has been charged with water, will begin to empty water from the spherical float C', said action continuing until the same level of water is attained within the float as compared to that in the tank, which has been depressed

to the lowest limit, a refilling of the tank by the float and valve B', again elevating the spherical float C' and carrying the extension of the flush-pipe *b* up with it as before mentioned.

A guide-tube D is attached to the rear of the partition or wall B, so as to vertically extend from a point below the bowl A to or near the tank C, the end *e'* of the lever *e* projecting above the upper end of the tube in alignment with it. Upon the lower terminal of the guide-tube D a short extension or pipe *h* is removably secured by a socket *h'*, or similar means, which pipe is divided at *h²*, where a union connection is introduced. On the side of the detachable pipe *h*, above the union *h²*, the branch-pipe *a* is secured to discharge liquid from the bowl A, and at a proper distance below the union named a radial flange *i* is projected from said pipe, which forms a cover for an overflow-chamber E, that is of proper dimensions for its service, and is sufficiently contracted at its lower end to afford an integral neck-pipe *k*, which is joined at its lower terminal to a waste-pipe *k'*, (shown broken,) but when entire is prolonged to tap a sewer or soil pipe leading to the same, the connection between these pipes being effected preferably by a union *m*. The cover-plate *i* is removably attached to an inwardly-extending flange *i'* formed on the upper edge of the chamber E, and below the cover an outlet *n*, is produced in the side of the chamber to which is attached a gas-escape pipe *n'*, (shown by dotted lines in Fig. 2,) said pipe having an attachment to a sewer or soil pipe. (Not shown.)

Within the chamber E a sealing-cup G is concentrically suspended by a chain *o*, that is attached at its lower end to the upper end of a hanger-rod *p*, the latter named having its lower end affixed to the bottom of the sealing-cup centrally, the upper end of the chain or similar flexible connection *o* being secured to the end *e'* of the lever *e*. The length of the connection between the cup G and lever *e* is so proportioned that the cup will hang below and near to the lower end of the extension-pipe *h* when the valve *b³* is closed, said chain *o* and the hanger-rod *p* entering the pipe named and passing upwardly through the guide-tube D, which thus incases these parts loosely.

Upon the side of the cup G a small bent tube I is secured, the shorter leg P of which is inserted within the cup and the longer leg *r'* downwardly extended a sufficient distance exterior of the sealing-cup, thus affording a siphon which will automatically decant a portion of the contents of the sealing-cup and discharge the liquid into the chamber E.

It is essential for the proper operation of the device that the inner tube-leg *p* should be so proportioned in length as to allow a sufficient space to intervene between its terminal and the lower end of the pipe *h* to insure a

water seal for the end of the latter-named pipe when the parts are arranged for service.

In use, the parts of the device being assembled as represented in Figs. 1 and 3 and the tank C charged to a proper depth with water from a suitable source by means of the ordinary float and valve B', already mentioned, the introduction of a certain amount of water from the tank C is first effected to seal the end of the pipe *h* and reach the siphon-tube I, as follows: It will be evident that an introduction of urine into the bowl A will increase the bulk and weight of liquid in the sealing-cup G, so as to depress it and vibrate the lever *e*, opening the valve *b³* and allowing the escape of air from the spherical float C' and its consequent filling with water from the tank through the siphon *b'*, which will depress the end of the flush-pipe *b* and cause a copious flushing action in the bowl A and other parts below it, the surplus water that flows from the sealing-cup over its edge serving to charge the siphon-tube I, so as to render it effective. At this stage of the operation the water in the cup G has been purified by the flushing with the pure water from above, the cup remaining full until by the automatic action of the siphon I a portion of its liquid contents is removed and the level of the contained water reduced thereby, which will lighten the cup so as to allow the weight *g* to again preponderate and close the valve *b³*, there being a sufficient amount of water remaining in the cup G to seal the siphon and prevent the escape of sewer-gas through the same into the apartment where the urinal is placed. The level of water in the tank C, which was lowered by the discharge in the manner stated, will be automatically replenished by means of the float and valve B', before mentioned, which may be of any preferred form capable for the service mentioned.

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

1. In an automatic flushing device for urinals, the combination, with the discharge-pipe of the urinal and the operating-lever of the flushing device, of a sealing-cup suspended from said operating-lever, said sealing-cup being adapted to fall by gravity from the initial increment of urine, and thereby operate the flushing device, substantially as herein shown and described.

2. The combination, with a receiving-bowl, a flushing-tank above said bowl, a flush-pipe between the tank and bowl, an air-chamber in the tank engaged with a sliding upper end of the flush-pipe, an air-escape pipe on the air-chamber or float, a pivoted lever having a weight on one end, and a pendent valve, and adapted to hold said valve on the air-escape pipe normally closed, a guide-tube extending from below the lever end to a point below the bowl, and a branch pipe ex-

tending from the bowl to the guide-tube extension, of a sealing-cup suspended below the guide-tube by a rod and chain passing up through the guide-tube and connecting
5 with the unweighted end of the lever, a siphon-tube in the sealing-cup adapted to remove part of its contents, and an inclosing chamber for the sealing-cup having a connection with a drain-pipe and also with a soil-pipe to respectively remove liquid and sewer-gas, substantially as described.

CHARLES G. ZEILMAN.

Witnesses:

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W. A. WALLACE.