No. 653,437. Patented July 10, 1900.

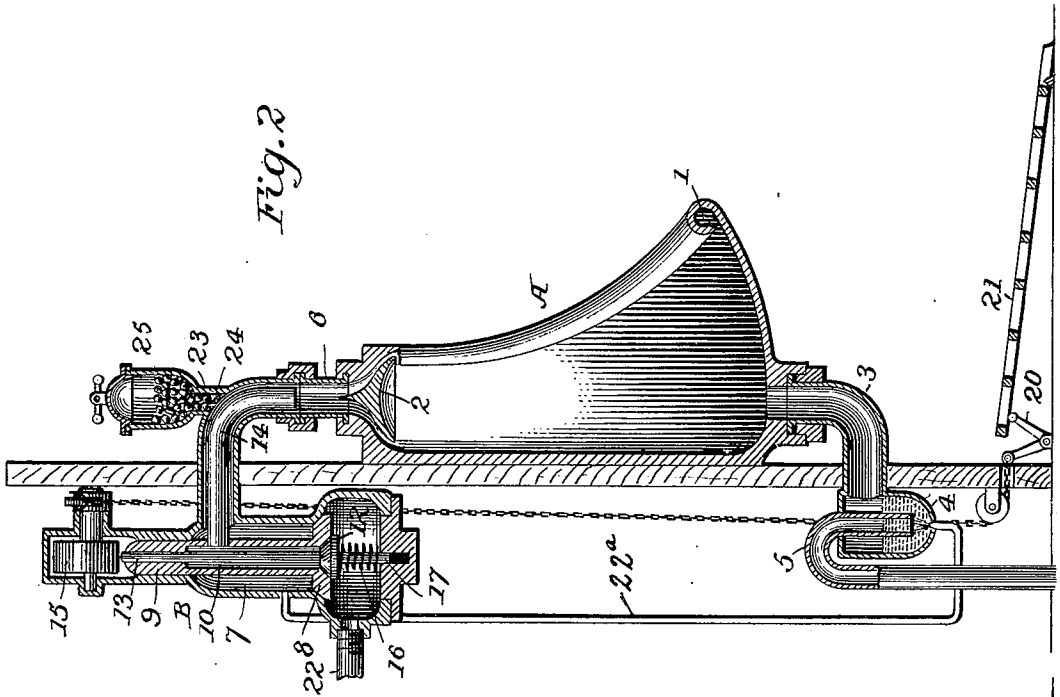
F. BURGER & H. M. WILLIAMS.

URINAL.

(Application filed Apr. 21, 1898.)

(No Model.)

Fig. 2



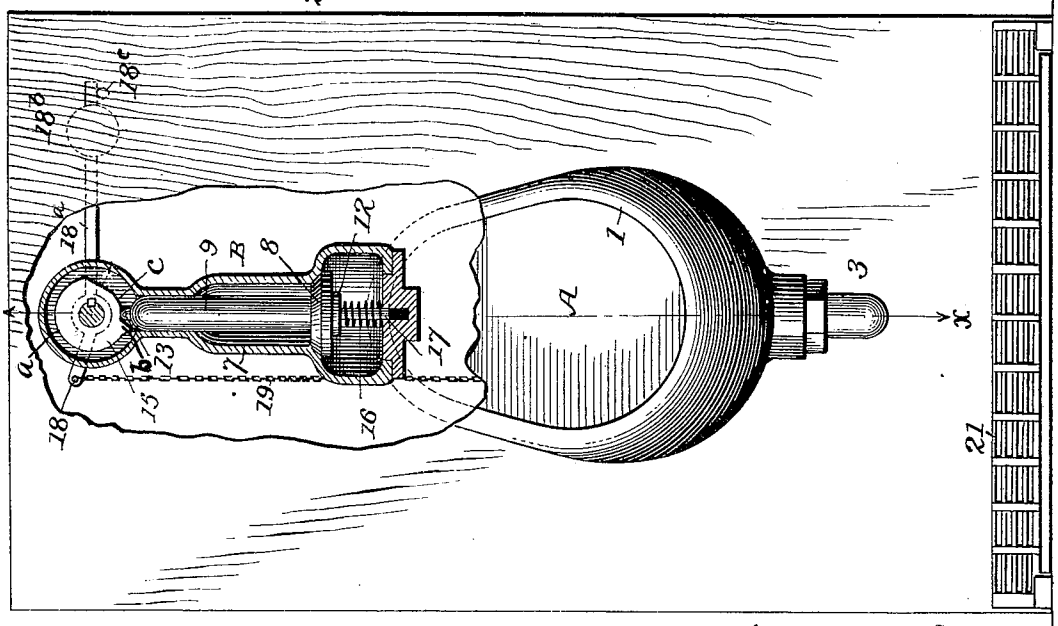


Fig. 1.

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UNITED STATES PATENT OFFICE.

FRANZ BURGER AND HENRY M. WILLIAMS, OF FORT WAYNE, INDIANA; SAID BURGER ASSIGNOR OF ONE-HALF TO SAID WILLIAMS.

URINAL.

SPECIFICATION forming part of Letters Patent No. 653,437, dated July 10, 1900.

Application filed April 21, 1898. Serial No. 678,385. (No model.)

To all whom it may concern:

Be it known that we, FRANZ BURGER and HENRY M. WILLIAMS, citizens of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Urinals, of which the following is a specification.

This invention relates to certain new and useful improvements in urinals, having for one object to provide simple and effective means for automatically flushing the bowl of a urinal both before and after using and during the time it is being used, thus effectually removing any gases which may accumulate in the bowl, and thereby improving the sanitary conditions of a closet.

The invention has as a further object to furnish means for automatically introducing a suitable disinfectant into the bowl of the urinal and to maintain the usual trap in the discharge-pipe thereof free of all sediment or other accumulations.

With these objects in view the invention consists in the novel construction, combination, and arrangement of parts hereinafter more particularly described.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference designate corresponding parts, Figure 1 is a front elevation, partly in vertical section, of an apparatus embodying the invention; and Fig. 2 is a transverse vertical sectional view on the line x x, Fig. 1.

Referring more particularly to the drawings, A designates the bowl of the urinal, which may be of any suitable or well-known construction and supported in any usual or desired manner. Preferably, however, the bowl is formed with a partially-open front, around the edge of which opening is a continuous channel 1, which communicates with the interior of the bowl. At the top of the bowl there is a central diaphragm 2, around which there is practically a continuous opening through which water is directed to the channel 1 and upon the back of the bowl. Leading from the bottom of the bowl is the usual discharge-pipe 3, which communicates with a suitable water-trap 4. In the present instance this trap comprises a chamber from near the lower end of which leads a pipe 5, extending to a point above the chamber, from whence it is bent downwardly and communicates with the usual drain-pipe. (Not shown.)

Communicating with the space above the diaphragm 2 at the top of the bowl is a main inlet-pipe 6, having an angular bend intermediate its ends and communicating with a chamber 7 of a valve-casing B. The casing B is formed near its lower end with a valve-seat for the main inlet-valve 8, and this valve 8 is itself provided centrally in its lower face with a valve-seat, formed above which in the stem 9 of said valve is a chamber 10. Adapted to the valve-seat of the valve 8 is an auxiliary inlet-valve 12, the stem 13 of which extends centrally through the chamber 10, out of contact with the walls thereof, and thence upwardly through a contracted opening in the top of the said stem to project above the upper end of the valve-stem 9. Leading from the chamber 10 is an auxiliary inlet-pipe 14, which passes centrally through the main inlet-pipe 6, out of contact with the walls thereof, and has its end terminating above the diaphragm 2.

Communicating with the valve-casing B below the main and auxiliary inlet-valves is the supply-pipe 22. Arranged to rotate within the valve-casing above the main and auxiliary valve-stems is a cam 15, which is adapted to make contact successively with the ends of the said valve-stems and open the main and auxiliary valves in this order. This cam is formed with three surfaces a, b, and c, and normally it is in a position with the surface c over the valve-stems to permit both valves to be forced against their seats, this being effected by means of a spring 16, surrounding a projection 17 from the lower face of the auxiliary valve and bearing against the face of said valve and against the bottom of the valve-casing.

Fixedly mounted upon one end of the shaft of the cam 15 is a lever 18, connected to the end of which is a chain or cable 19, or a lever or rod may be substituted for the chain or cable, the lower end of the said chain being connected to one arm of a bell-crank lever 20, pivoted between lugs upon the floor of the closet. Upon the opposite arm of the bell-crank lever rests the upper end of an inclined

platform 21, which platform is pivoted or hinged at its opposite or lower end to or slightly above the floor of the closet. Likewise connected to the shaft of the cam 15 and extending upon the opposite side thereof to the lever 18 is an arm 18^a, carried upon which is a counterweight 18^b, and a stop 18^c is provided for limiting the downward movement of the arm 18^a.

Leading from the chamber 7 is a clearing-pipe 22^a, which extends below the water-trap casing and has an upturned end entering the casing immediately below the lower end of the pipe 5.

Communicating with the main inlet-pipe 6, preferably at the bend thereof, through a contracted channel 23, the mouth of which is partially closed by wire-gauze or a perforated plate 24, is a receptacle 25, the chamber of which is adapted to contain a suitable disinfectant.

With the parts thus constructed and arranged and assuming them to be in the positions indicated in Fig. 1, when a person steps upon the platform 21 the upper end thereof will be depressed, causing the bell-crank lever 20 to swing upon its pivot. This has the effect, through the chain 19, lever 18, and cam-shaft, of rotating the cam 15 to the left, bringing it at its surface *b* of greatest diameter into contact with the ends of both the main and auxiliary valve-stems, thereby depressing said stems and opening the valves 8 and 12, permitting a maximum flow of water through the inlet-pipes 6 14 to the bowl A. The water as it flows through the main inlet-pipe coming in contact with the disinfectant within the channel 23 dissolves a portion of it and conveys it to the bowl. This maximum flow of water to the bowl is only momentary, as the continued downward movement of the platform and rotation of the cam 15 carries the surface *b* of the cam past the valve-stem, bringing the surface *a* above the said stem and permitting the main valve 8 to be closed by the pressure of the water below the same. The auxiliary valve, however, remains open during the whole time the platform is depressed, permitting a continuous but relatively-smaller flow of water to the bowl. When the platform is relieved of weight, the counterweight 18^b, which has been lifted by the downward movement of the platform, descends, restoring the upper end of the platform to its normal position, and at the same time causes the cam 15 to be rotated to the right, thereby once more bringing the surface *b* of the cam into contact with the stems of both the main and auxiliary valves, causing both of said valves to be again momentarily opened and permitting the maximum inrush of water into the bowl. The surface *c* of the cam is now brought over the valve-stems 9 13 and both the main and auxiliary valves are closed, shutting off the flow of water. During the time the main inlet-valve remains open water flows forcibly through the clearing-pipe 22^a and entering the bottom of the water-trap casing in a sharp stream forces any sediment retained therein upwardly into the lower end of the pipe 5.

While two valves are disclosed for regulating the flow of water to the bowl, it will be obvious that in some instances only one valve could be employed for this purpose, and it will also be apparent that the inlet-valves may be operated by hand, this being effected by securing a hand-lever upon the shaft of the cam 15. It is preferred, however, to operate the valves automatically, as hereinbefore described.

Without limiting ourselves to the precise construction and arrangement of the parts shown and described, since it is obvious that various changes in such construction and arrangement may be made without departing from the spirit or scope of the invention and some features thereof used without others,

What we claim is—

1. In a urinal, the combination of a bowl, an inlet-pipe leading thereto, an outlet-pipe leading therefrom, a main valve for controlling the flow of water through the inlet-pipe provided with a hollow stem and a valve-seat at one end thereof, an auxiliary valve adapted to control the flow of water through the hollow stem and having a stem projecting through the stem of the first valve, a pipe connecting the hollow stem and the inlet-pipe, a rotatable cam movably supported to engage the stems of both valves, and means for rotating the cam in one direction to cause its initial movement to open both valves, then in its further movement to permit the main valve to close while holding the auxiliary valve open, and independently-operating means for returning the cam to its normal position, substantially as set forth.

2. In a urinal, the combination of a bowl, an inlet-pipe leading thereto, an outlet-pipe leading therefrom, a main valve for controlling the flow of water through the inlet-pipe provided with a hollow stem and a valve-seat at one end thereof, an auxiliary valve adapted to control the flow of water through the hollow stem and having a stem projecting through the stem of the first valve, a pipe connecting the hollow stem and the inlet-pipe, a cam movably supported to engage the stems of both valves, means to move the cam in one direction to cause its initial movement to open both valves, and then in its further movement to permit the main valve to close while holding the auxiliary valve open, and means to move the cam in the opposite direction and cause it to again open the main valve and temporarily hold both valves open, and then to permit both valves to close, substantially as set forth.

3. In a urinal, the combination of a bowl, an inlet-pipe leading thereto, an outlet-pipe leading therefrom, a valve-casing, two inde-

pendent conduits leading from said casing to the inlet-pipe, independently-movable valves to control the flow of water through said conduits, and a common mechanism to control the movement of both valves, and operating first to open both valves to permit water to flow through both conduits simultaneously, then permitting one valve to close, then again opening the closed valve and temporarily holding both valves open, and then permitting both valves to close, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANZ BURGER.
HENRY M. WILLIAMS.

Witnesses:
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F. EVERETT ANDERSON.