

(No Model.)

J. HANKENHOF.
WATER CLOSET CISTERN.

No. 505,601.

Patented Sept. 26, 1893.

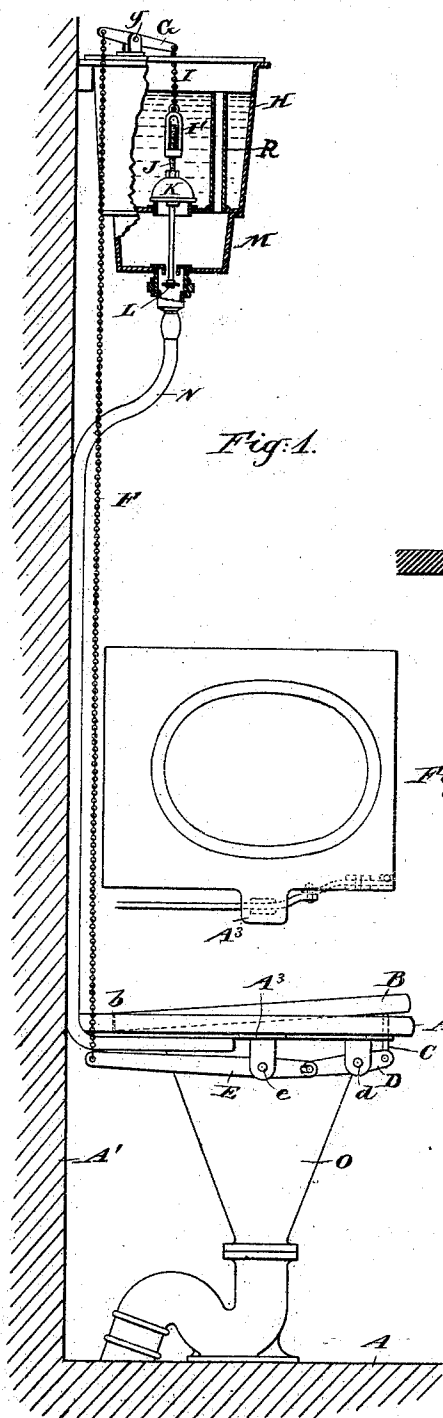


Fig. 1.

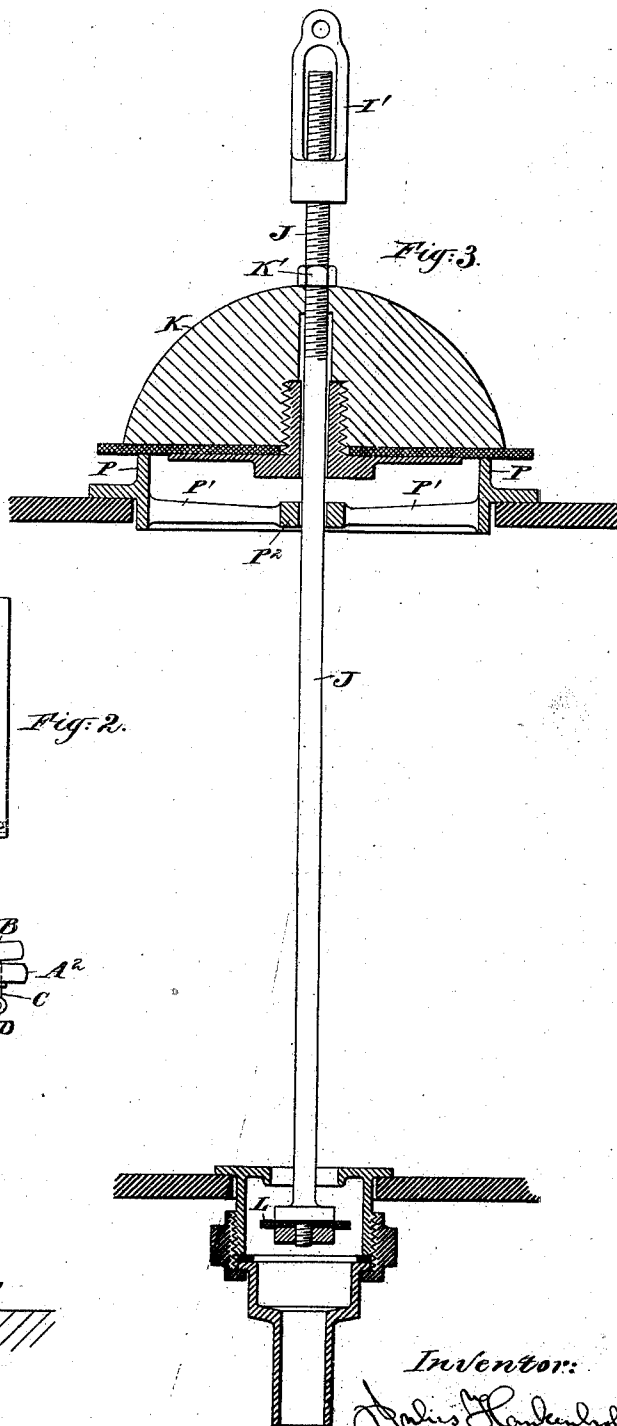


Fig. 3.

Witnesses:
Charles R. Charles.
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Inventor:
J. Hankenhof
By his attorney
Thomas D. Jackson

UNITED STATES PATENT OFFICE.

JULIES HANKENHOF, OF NEW YORK, N. Y.

WATER-CLOSET CISTERN.

SPECIFICATION forming part of Letters Patent No. 505,601, dated September 26, 1893.

Application filed May 2, 1892. Serial No. 431,427. (No model.)

To all whom it may concern:

Be it known that I, JULIES HANKENHOF, a citizen of the United States, residing in the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Water-Closet Cisterns, of which the following is a specification.

The improved water-closet is of that class in which a certain definitely determined quantity of water is measured out and held in readiness for each flushing operation, and the operation is effected by the movement of a hinged seat which is lifted sufficiently by a weight or spring. At each depression of the seat a valve allows the water to flow into the measuring space. When the seat is liberated and rises the valve communicating between the measuring space and the supply tank is closed and another valve which communicates from the measuring space down to the bowl is opened, allowing the measured quantity of water to flush the bowl. This feature is important because it avoids the necessity for any high pressure of water. It is always ready to act successfully whenever there is pressure enough in the street main to bring the water to the tank.

I have devised important improvements in the details. The two valves are mounted on a single rod, arranged to open in opposite directions. The movement in the direction to open one being carried sufficiently far will close the other. The uppermost is the largest, and the valves are arranged so that the uppermost opens by the upward movement of the rod and closes by the downward movement of the rod,—the lower valve being closed by the upward movement and being opened by the downward movement. The upper valve is adjustable up and down on the rod and the distance of the valves apart may be adjusted with nicety to vary the extent of the motion required to open one and close the other.

The levers which are adjacent to the seat are pivoted on the metal part which is sometimes termed the "pan" resting on the bowl, thus giving a specially reliable support. In case the bowl settles or shifts its position from any cause, the center carrying these levers shifts correspondingly, and the change in the action is but slight under any circumstances.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical section partly in elevation, showing the entire apparatus. Fig. 2 is a plan view of the pan. Fig. 3 is on a larger scale. It is a vertical section partly in elevation, showing the two valves and their connecting rod and adjusting device at the top.

Similar letters of reference indicate like parts in all the figures where they appear.

A is the floor and A' the wall of the water-closet.

A² is a fixed portion of the bench or supporting frame.

B is a movable seat hinged to the frame A² at b. It is, when unloaded, held in a slightly inclined position by resting on a pin C which is supported by a lever D, turning on a fixed center d. The back end of this lever D engages by a slot in the longer lever E, turning on a fixed center e, and connected by a chain F to the lever G, turning on a fixed center g in the top of the supply tank H. The front end of the lever G connects by a link I to a vertical rod J which carries two valves K and L. The uppermost valve, K, controls a sufficiently liberal passage between the tank H and a measuring space M. The lower valve L controls a delivery passage which communicates from the measuring space M through the pipe N to the water-closet bowl O. The upper portion of the rod J is screw-threaded and is tapped into a loop I' engaged with the link I, and forming a continuation thereof.

The upper valve, K, is tapped and engaged with the screw-threads on J. A jam-nut K' also engaged on the screw-threads holds it fast in any position in which it may be adjusted. The valve-seat P on which this valve K rests is provided with spider-arms P' and a central guide P² which steadies the rod J. It will be understood that this valve closes by sinking upon its seat. It may be faced with rubber, or otherwise equipped to make a tight joint. The lower valve, L, closes by a rising motion and matches against the under face of its seat.

There are two separate adjustments of the valves. One is an adjustment of the rod J

and its attached valves up and down relatively to the link I', and consequently to the seat B, without changing the distance of the valves K and L apart. This adjustment of the rod J and both valves up and down is effected by holding the link I' and turning the rod J with the valves attached in one direction or the other, thus screwing the rod J up or down in the link I'. This adjustment should be such that the valve L forms a contact with its seat when the seat of the water-closet is pressed firmly down.

The other adjustment is that of the distance of the valves K and L apart. This adjustment is effected by slackening the nut K' and turning the upper valve K in one direction or the other to raise and lower it relatively to the valve L. When this is properly adjusted and the jam-nut K' again tightly set, it keeps its place permanently. This adjustment of the distance apart of the valves K and L should be such that the valve K will bear on its seat when the seat B has been set free and has risen to a proper height.

The pan or bowl O of cast iron, or other suitable material, has an arm A³ which extends over the lever E. The center e for the lever E is carried on this arm. The construction insures an exact uniformity of position of the centers without requiring a special bracket therefor.

I attach importance to the fact that the measuring vessel is filled by the elevating and emptied by the depression of the rod and the valves. The upper valve is large and is held down strongly by the pressure of a small head of water, and when it is raised delivers the water rapidly into the measuring vessel.

R is an upright tube, one end opening into the top of the measuring tank M, and the other opening into the supply tank H, a proper distance below the top of the latter. This pipe performs a double function. One function is that of an overflow for the supply-tank, allowing any water which leaks through the supply valve, not shown, and which from any cause would flood the tank H, to escape freely down this pipe into the measuring tank M during the period while the apparatus is at rest, and by reason of the valve L being wide open this lower tank is empty. Another function performed by this pipe R is that of a liberal and prompt vent for the supply tank as it is rapidly filled and emptied. This pipe allows the air to escape instantly

and easily from the supply tank when the valve K is opened, and the supply tank is being filled, and it allows the air to be inducted with freedom to supply the place of the water in this tank M when the water closet is to be flushed by the sinking of the rod J and its two valves, and the whole contents of the measuring tank are being discharged rapidly through the bowl. The facility of induction of air through this pipe R avoids any retardation of the flow of the water during this flushing operation. If the adjustment be such that in the sinking of the water closet seat B down upon the firm support below it the bottom valve L does not quite close but allows a little water to flow down to the bowl during the whole period while the seat is depressed, no harm will result. It may be of advantage to so adjust it. My invention allows this valve to be exactly closed or to remain a little open when the closet seat is firmly and fully down.

I claim as my invention—

1. In combination with the tank having a measuring space, the loop, the vertical rod having the upper end threaded, the lower valve on said rod, and the upper valve also on said rod having a threaded opening engaging said rod so as to make the valves adjustable on said rod, the said loop also having a threaded opening engaging said rod and being adjustable relatively thereto, substantially as described.

2. In combination with the tank having a measuring space, the link, the loop depending from the link, the vertical rod having on its upper end a continuous or single thread engaging a threaded opening in said loop, the lower valve mounted on said rod, and the upper valve also mounted on said rod having a threaded opening of similar size and pitch to that of said loop engaging a continuation of the same thread on the rod, so that both said loop and said upper valve are adjustable on the continuous or single thread of said rod, said rod and both its valves being free to turn independently of the said loop, substantially as described.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JULIES HANKENHOF.

Witnesses:

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J. L. FINGLETON.