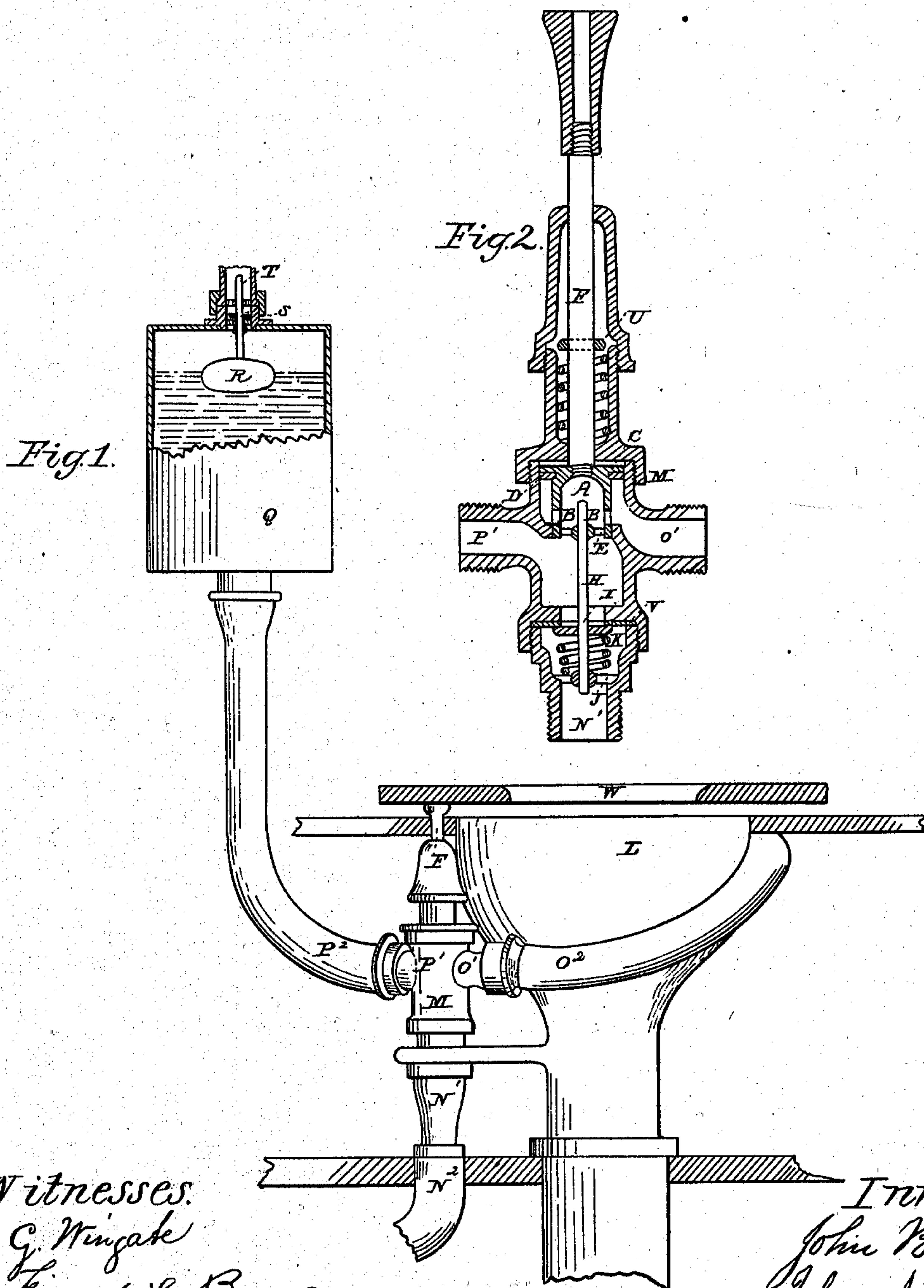


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WATER CLOSET.

No. 97,639.

Patented Dec. 7, 1869.



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Letters Patent No. 97,639, dated December 7, 1869.

IMPROVEMENT IN WATER-CLOSETS.

The Schedule referred to in these Letters Patent and making part of the same.

We, JOHN B. HOBSON and JOHN MIDDLETON, Jr., of the city and county of San Francisco, and State of California, have invented a new and useful Improvement in Water-Closets.

Nature and Object of the Invention.

The primary object of our invention is the adaptation of the washing-apparatus of the closet, without complication of parts, to discharge regularly, after each use of the closet, a sufficient quantity of water to cleanse the bowl, and no more, and to be incapable of discharging without the depression and elevation of the seat accompanying use, in order to prevent waste of water.

Our invention consists—

First, in a novel construction and arrangement of the valves of the three-way cock employed to connect the supply-cistern and bowl-discharge pipes, adapting them to be operated by the depression of the seat in proper order to first completely close the passage connecting the cistern and bowl, and subsequently to open the passage from the supply-pipe to the cistern, being instantaneously reversed, on the release of the seat by their elevation, by means of separate springs.

Second, in providing the upper valve with a horizontal flange or disk, supplied with suitable packing, and serving to close the top of the stock, and, as a stop, to regulate the extent of movement of the valves.

Third, in arranging the opening of the supply-pipe directly under the lower valve, (employed to govern it,) in order to cause the pressure of the water to assist in closing said valve.

Fourth, in the employment of a tank or cistern, of contracted size, so as to contain only a sufficient quantity of water for the requisite discharge, and provided with an air-valve, actuated by the water therein, to open and close it to the atmosphere, as required, to permit the free flow of the water into and from it, and to prevent its overflow.

Description of the Drawings.

In the accompanying drawings—

Figure 1 represents an elevation, partly in section, of the complete "closet."

Figure 2, a longitudinal section, on an enlarged scale, of the three-way cock or "valve," detached.

General Description.

In references to the drawings, similar letters and marks indicate like parts in the two figures.

L, in the drawings, represents the bowl of a hopper;

W, the seat;

Q, the cistern;

M, the three-way cock or valve;

N¹ P¹ O¹, the three branches or couplings of the cock M, for the attachment, respectively, of the supply-cistern and bowl-discharge pipes;

N², the supply-pipe;

P², the pipe connecting the cistern and cock;

O², the pipe leading from the cock to the bowl;

A, the upper valve of the cock, or the valve governing the bowl-discharge;

I, the lower valve, or that governing the supply-port;

H, the stem of the lower valve;

F, the stem of the upper valve, or that through which the cock is operated;

G K, the spring, for elevating or supporting the valves A I and their accessories;

J, a bridge in the supply-passage, for the support of the spring K, and guidance of the stem H of the valve I; and

E, a corresponding bridge in the lower end of the valve A, for the guidance of the upper end of the stem H;

U, a flange or shoulder on the stem F, for the engagement of the spring G;

B B, perforations of the valve A;

C D, the flange or disk and elastic washer or packing of the valve A;

V, an elastic annular disk, forming the seat of the valve I;

S, the air-valve of the cistern;

T, its stem; and

R, the float by which it is operated.

The several parts may be of any material and form consistent with their use and operation, as stated. Those forming no part of the invention, may be of the usual or other suitable construction.

A practical manner of constructing the stock of the cock M, and arranging its passages, seats, &c., is clearly shown in fig. 2 of the drawings.

The opening of the supply-pipe in the cock being directly under the lower valve, as shown, the hydraulic pressure from the main serves to assist in elevating said valve.

When the opening is otherwise located, side pressure on the spring is liable to retard its closure.

The form of the lower valve is unimportant so long as it opens downward.

The upper valve is made in the form of a hollow plunger, having its water-ways in its bottom and sides, as shown, to enable it to be depressed below its seat, to operate the lower valve after it has been completely closed.

The air-valve of the cistern may be of any suitable form to adapt it, through its connections, to close on the elevation of the water, and open on its descent.

The size of the cistern, as before stated, should be such as to adapt it to contain only so much water as is necessary to cleanse the bowl after its use, and its elevation sufficient to impart the necessary pressure.

A pipe, X, may, as shown, lead from the air-valve S to some safe point to prevent damage in case of leakage of said valve.

Operation.

As represented, the seat W has just been released, and (being thereby allowed,) the valves A I thrown into their elevated position by the springs G K, assisted by the pressure of the water, closing the supply-port and opening the bowl-discharge; the air-valve S of the cistern opened by the descent of the water therein by gravity, acting through the float R and stem T; and the water flowing freely through the pipe P², water-way P¹, the interior of the valve A and its perforations or slots B B, the water-way O¹, and pipe O², to the bowl or hopper. On the exhaustion of the supply of water in the cistern Q, the discharge ceases.

The seat W being depressed, as by a person sitting on it, through the stem F, the valve A is first actuated and depressed until its perforations B are below its seat, and the passage between the cistern and bowl or hopper completely closed. Its continued depression bringing it in contact with the stem H of the lower valve I, said valve is also actuated, opening the passage O, N², N¹, P¹, P², and allowing the cistern, to be filled therethrough.

The air-valve S of the cistern, which had been held open by the gravity of its float R, on the water reaching said float, is closed, and the flow stopped.

On the seat being released, it is elevated, and supported by the spring G through the stem F, the valve A, by the same means, being also elevated, opening the bowl-discharge. During this action, and previous to the opening of the bowl-discharge passage, the supply-port is closed by the independent projection of the valve I by the spring K and the pressure of the water.

On the opening of the bowl-discharge, the water in

the cistern is released, and discharged in the manner before described.

During the discharge, the flange or disk C, of the valve A, with its washer or packing D, prevents the escape of water at the top of the cock, the necessity for stuffing-boxes being thus obviated by it.

In the movements of said valve, it forms a stop, to regulate or limit the same; the packing in this use, serving to prevent scratching.

It will be seen that the passages are opened by their valves only on the completion of the movements of the seat, and thus any operation of the apparatus by less than this is prevented.

The valves opening and closing in the order described, all leakage is prevented; and in connection with such valve-mechanism, the cistern is enabled to determine accurately the quantity of water used.

Claims.

We claim, as our invention—

1. The bowl-discharge valve A, constructed and arranged, substantially as represented and described, to operate in combination with the supply-port valve I, in the manner and for the purpose set forth.
2. The combination, with the valve A, arranged and operating as described, of the flange or disk C, and packing D, as and for the purpose shown.
3. In combination with the supply-port valve I, its stem H, and spring K, the stem or coupling N¹ J, for the connection of the supply-pipe, as constructed and arranged, in the manner shown and described, for the purposes set forth.
4. In the described combination with the other parts of a water-closet washing-apparatus, substantially as herein described, the measuring-cistern or tank Q, as provided with an automatic air-valve, R S, and constructed and arranged as set forth, for the purpose shown.

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