

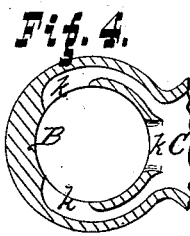
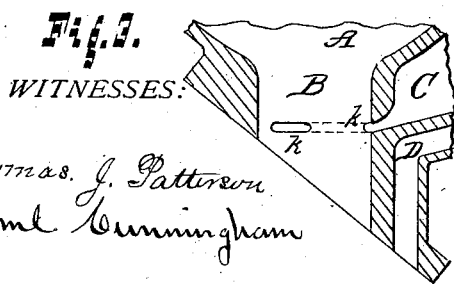
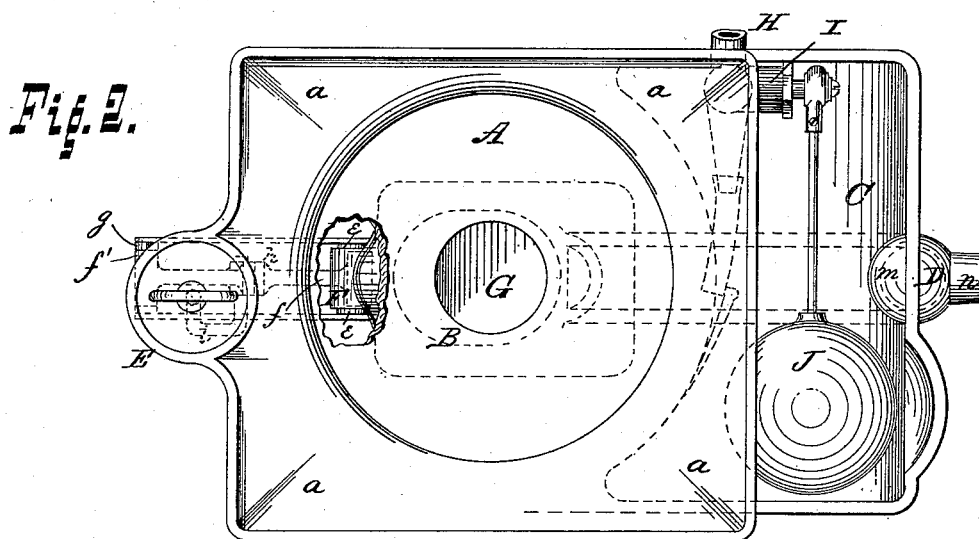
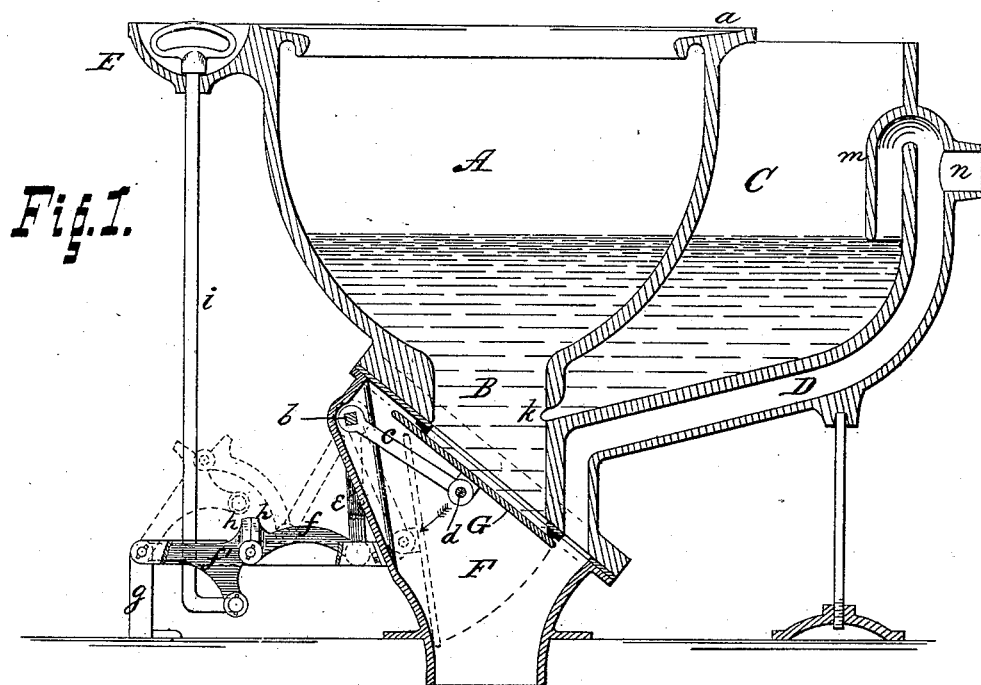
(No Model.)

J. HAY & R. H. LECKY.

WATER CLOSET.

No. 264,693.

Patented Sept. 19, 1882.



INVENTORS

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UNITED STATES PATENT OFFICE.

JAMES HAY AND ROBERT H. LECKY, OF ALLEGHENY, PENNSYLVANIA.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 264,693, dated September 19, 1882.

Application filed January 10, 1882. (No model.)

To all whom it may concern:

Be it known that we, JAMES HAY and ROBERT H. LECKY, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Water-Closets; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 is a longitudinal vertical section, the float and service valve not being shown. Fig. 2 is a top view, partly broken away at the bowl to show the toggles. Fig. 3 is a modification in vertical section of the bowl-neck. Fig. 4 is a horizontal section of same.

This invention has reference to water-closets of the class wherein the neck of the bowl is closed by a valve and the inflowing water rises in the bowl and in a tank or cistern communicating with the bowl, the flow of water into the bowl and its cessation depending upon the movement of a float in the cistern actuating a valve or cock in the service pipe.

Our invention consists in forming the bowl with a neck depending vertically from the center of the bottom thereof, said neck having its lower edge inclined, and combining therewith a swinging valve adapted to close against the inclined edge of said neck; further, in the use of toggle-levers between the hand-pull and valve provided with locking-shoulders or abutments to prevent said levers from passing the point of maximum pressure and thereby loosening the valve; further, in the construction in one integral piece of the bowl, neck, cistern, overflow-pipe, trap, and air-vent, as herein after shown; further, in forming the bowl with a pull-socket integral therewith, whereby fitting of the wood-work and adjusting of valves and rods, &c., are dispensed with; and, finally, in the construction, combination, and arrangement of parts, all substantially as hereinafter fully set forth and claimed.

It is very desirable in valve-neck closets and important to have the neck depending straight downwardly from the center of the bottom of the bowl, so that the ordure may not find a resting-place upon or against the walls of the neck. In such closets as are pro-

vided with such a central vertical neck the valve usually rests horizontally against the neck, and in opening the valve must be given a wide range of motion to escape contact with the descending ordure, and it seldom prevents the lodgment of some portions, which subsequent flooding does not always effectually cleanse it. We wish to combine the efficiency of the central vertical neck with the cleanliness of the valve by giving the bottom of the neck an inclination, so that the valve may be quickly and suddenly thrown out of the reach of the descending ordure and escape contact with it. The valve is usually held to its seat by a lever or system of levers in which a heavy "weight" is interposed, whose gravity forms the sole resistance to the opening of the valve. In consequence of the friction of the joints of such levers and friction of the pull-rod the weight is not always effective, the valve is not held tightly to its seat, (particularly after the parts become rusty,) gradually becomes leaky, water is wasted, and the poisonous gases from the soil-pipe find their way into the apartment. We aim to dispense with the weight entirely, and yet produce a perfectly-tight closing of the valve, and to lock it in that position until positively opened by the lifting of the pull-rod. More particularly our invention is as follows:

In the drawings, A is the bowl, having central vertical neck, B, cistern C, overflow-pipe D, and pull-socket E all in one integral piece, either porcelain or cast-iron enameled. The top of bowl A is formed with a wide flange, *a*, whose upper surface inclines from all points toward the mouth of the bowl. This is designed to prevent the possibility of slops, when poured into the bowl, finding their way over the edge of the bowl to lodge on the closet-floor and become a source of disagreeable odors. The drip-flange *a* will catch the slops and direct all into the bowl A. The lower edge of the central vertical neck, B, is formed at an inclination, preferably from thirty to forty-five degrees from the horizontal. The trunk F is correspondingly inclined at its upper edge, which is flanged like the neck B, and the two are held together by suitable clamps or bolts; or they may be cup-jointed and cemented. Passing out through suitably-packed openings in the upper corner of the

trunk F is a rock-shaft, *b*, which inside the trunk carries the crank-arm *c*, to whose other extremity is pivotally attached the valve G by the pin *d*. Outside the trunk F the rock-shaft *b* is fitted with the cranks *e*, one at each side of the trunk. Cranks *e* are connected at their lower ends to the toggle *f*, extending horizontally. Toggle *f* at its outer end is jointed to another toggle, *f'*, whose other end is pivotally hung on a suitable bearing, *g*, fixed to the floor or to the side board of the closet. The two toggles *f f'* can move upwardly, but downward movement past the point where their pivots are in line is prevented by the abutments *h* meeting and locking against further movement downwardly. To a suitable point on toggle *f'* we attach the end of the pull-rod *i*. In order to avoid excessive swaying of the rod *i* while operating the toggles, we prefer to connect as shown, so that the pull of the rod may be as nearly as possible in a straight line.

The cistern C is formed beside the bowl integral with the bowl, and communicating therewith through an opening, *k*, at the neck above the valve G, and at a point diametrically opposite the valve when the latter is swung open. The effect is to cause a jet from opening *k* to spurt across downwardly and strike the valve and thoroughly cleanse it of any ordure which may have settled upon it while closed. As a modification, there may be two additional openings, *k*, located each one-third way around the neck from the main opening, so that three jets will simultaneously spurt into the neck from three different directions.

The overflow-pipe D is formed integral with the cistern C, and communicates below directly with trunk F and above with the cistern by a trap, *m*, which also communicates with the main soil-pipe or ventilator-shaft at *n*.

The main service-pipe H leads into the horn in the usual manner to flood the bowl, and is provided exterior thereto with the cock or valve I, whose operating stem or crank is connected to the float J, which rises and falls in cistern C, and thereby regulates the admission of water to the bowl in the usual manner.

The operations of our devices are as follows: Normally the condition will be as at Fig. 1, the valve G closed, the bowl A and cistern C partly filled with water, trap *m* on the cistern side sealed by the water, and float J elevated by the water so that cock I is shut. Having used the closet, rod *i* is pulled up, which draws toggles *f f'* away from the "dead-center" position, the valve G is thrown suddenly to one side, and being free to oscillate into line with the descending water by reason of the joint at *d*, there is no possibility of ordure lodging upon it. The rod *i* remains up as long as desired without holding, and the water and soil in bowl A rushes out into the trunk F, followed by that in cistern C. Float J lowers, and cock I is opened, admitting fresh water through the horn

into the bowl. These operations will effectually cleanse the bowl and neck and valve. Then rod *i* is pushed down, and toggles *f f'* allow a moderate pressure on the handle to exert a very great pressure upon the valve G, forcing it air and water tight against its seat, (which is provided with a suitable gasket or packing,) abutments *h* prevent excessive movement, and when the maximum pressure is upon the valve G the toggle-joint is on a dead-center, and no amount of pressure upon the valve can cause it to give way and leak or admit gas. Consequently the water in pipe H will not be allowed to waste.

We are aware that it is not broadly new to construct an inclined valve to the outlet of water-closet bowls having an inclined seat, and we do not therefore claim such, as it will be seen that our invention, in so far as it relates to the valve and seat, requires that the bowl should have a neck depending vertically from its center, and the lower edge of the neck so depending is inclined and forms a seat for the swinging valve.

We claim as our invention—

1. In a water-closet of the described class, a bowl, A, having a neck, B, depending vertically from the center of the bottom thereof with its lower edge inclined, in combination with a swinging valve, C, adapted to close against said inclined lower edge, substantially as described.

2. In a water-closet provided with a flooding-cistern, and having a valve closing against the lower edge of the neck and opening downwardly and away to one side of the neck or trunk, an opening, *k*, into the neck from the cistern at a point above and opposite the valve, substantially as described, whereby a jet in flooding impinges directly upon said valve and cleanses the same.

3. The combination, with the valve and the pull-rod, of two interposed toggles, *f f'*, having the locking-abutments *h*, substantially as described.

4. The combination, with neck B, valve G, and rod *i*, of the interposed toggles *f f'*, having abutments *h*, the arms *e*, shaft *b*, and cranks *c*, substantially as described.

5. In a water-closet, the bowl A, having central vertical neck, B, cistern C, overflow-pipe D, trap *m*, and air-vent *n* all in one integral piece, substantially as described.

6. In a water-closet, the bowl A, having formed integral therewith the pull-socket E, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

JAMES HAY.
ROBERT H. LECKY.

Witnesses:

T. J. MCTIGHE,
T. J. PATTERSON.