(No Model.)

J. W. HALE.

VALVE OPERATING MECHANISM FOR LAVATORY VESSELS.

No. 551,861. Patented Dec. 24, 1895.

Fig. 1.

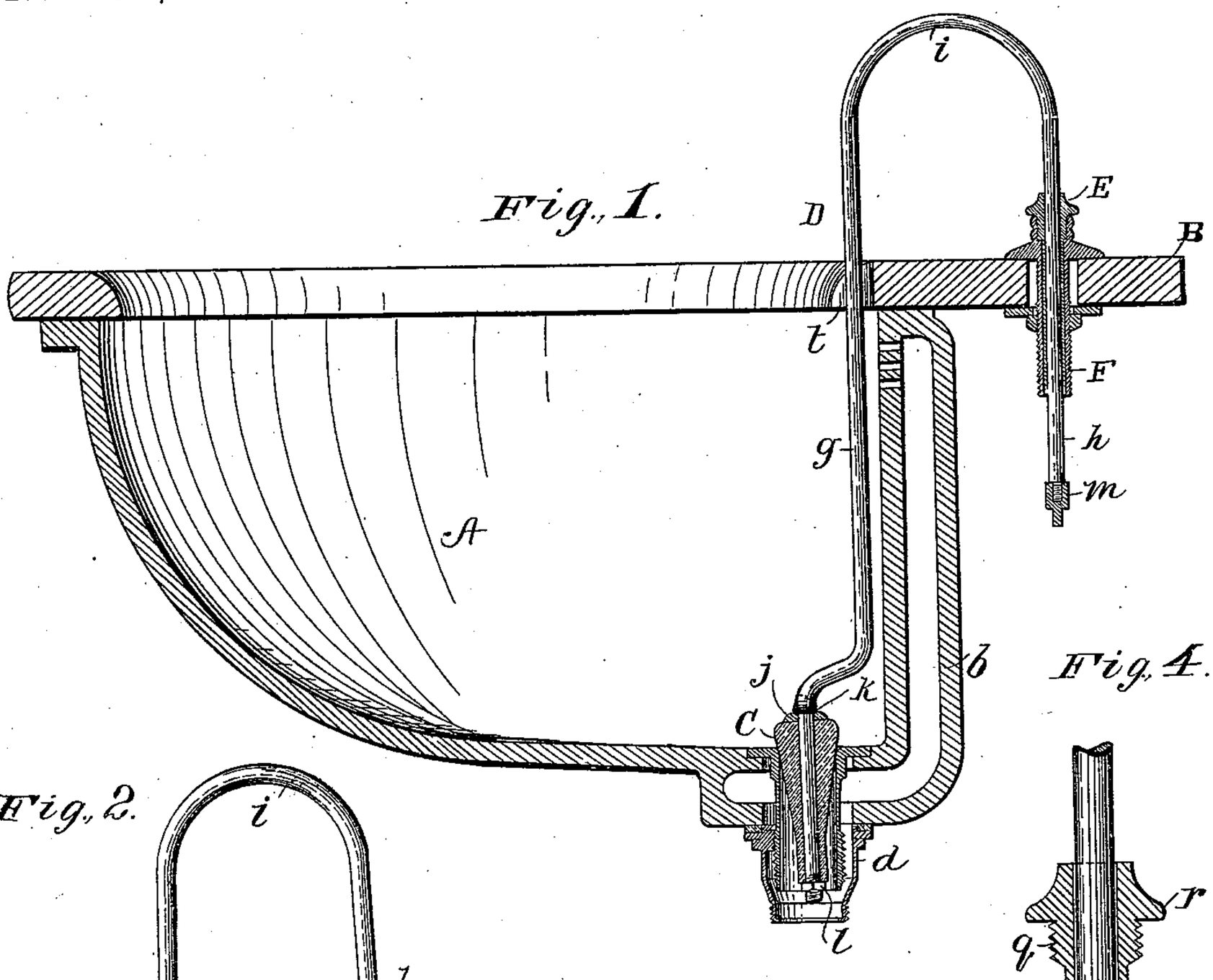


Fig. 2.

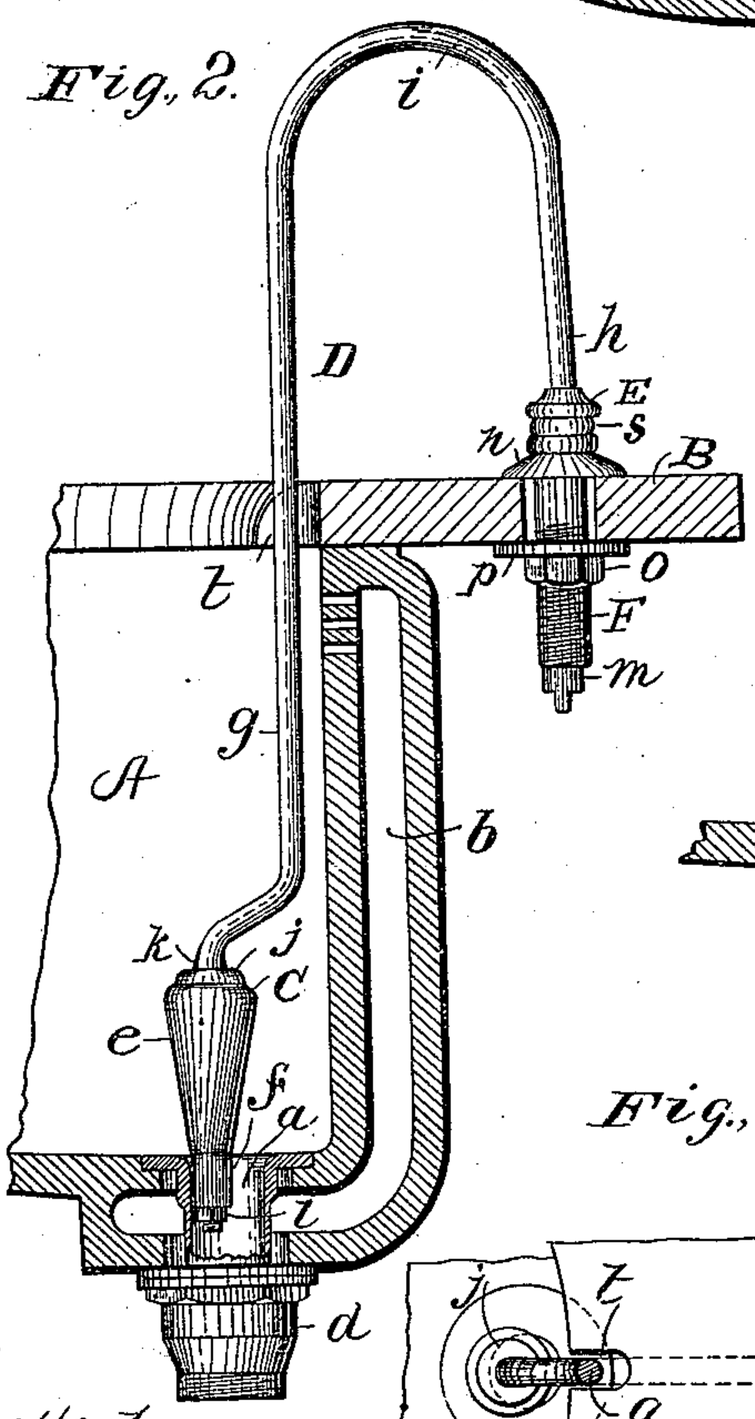


Fig. 3.

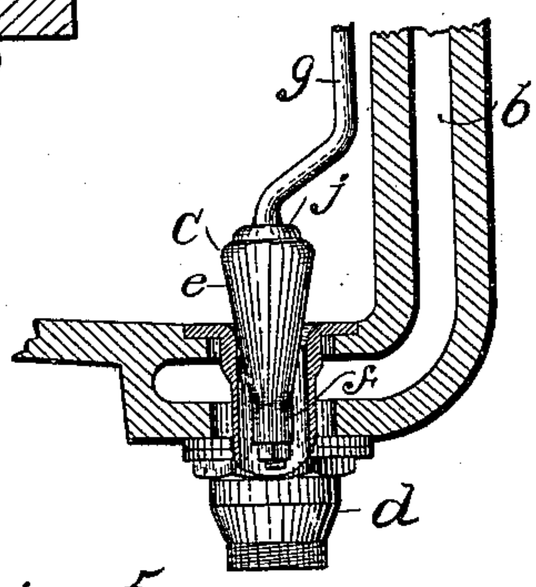


Fig. 4.

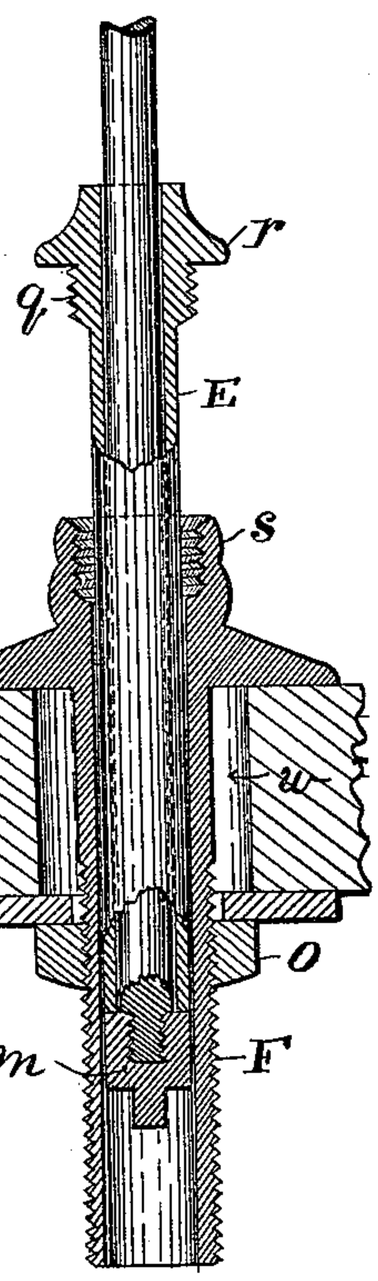
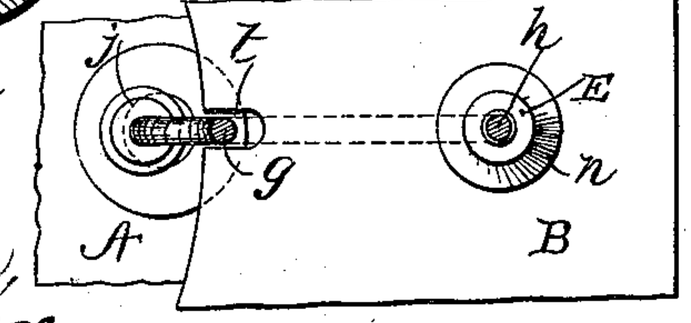


Fig. 5.



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VALVE-OPERATING MECHANISM FOR LAVATORY VESSELS.

SPECIFICATION forming part of Letters Patent No. 551,861, dated December 24, 1895.

Application filed August 1, 1895. Serial No. 557,859. (No model.)

To all whom it may concern:

Be it known that I, JAMES WHITE HALE, of Newburyport, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Valve-Operating Mechanism for Lavatory Vessels, of which the following is a specification.

The object of the present invention is to provide mechanism for moving the outlet-valves of lavatory vessels—such as washbasins, bath-tubs, sinks, and the like—which shall be simple and economical in construction, simple and easy in operation, cleanly, and readily removable for cleaning. In order that the improvements may be readily appreciated, they will be described and illustrated as applied to a stationary washbasin.

The improvements are illustrated in the accompanying drawings, wherein—

Figure 1 is a central vertical section of a straight-backed rear-outlet stationary washbasin equipped with the present improvements, showing the valve closed and in section. Fig. 2 is a similar section, (only part of the bowl being shown,) the valve being fully opened and in elevation. Fig. 3 is a similar section of a fragment of the bowl, showing the valve in an intermediate position. Fig. 4 is a vertical section on an enlarged scale of the guiding devices for the valve-operator. Fig. 5 is a plan view of a portion of the bowl and slab, the operator being shown partly in section.

The bowl A is one of the straight-backed rear-outlet type, having waste-outlet *a* at its rear and overflow-passage *b*. The waste-outlet is shown as formed by a pipe or thimble, to which is secured the coupling *d*, of substantially the same construction as the corresponding parts in United States Letters Patent No. 451,324, granted to me April 28, 1891.

B is the usual slab of the basin, ordinarily of marble. This slab is the frame to which the basin is secured and which carries the water-fixtures, and hence by the term "slab," as used herein, is meant any rim, table, or support used in connection with a lavatory vessel.

C is the valve consisting of a plug or stopper adapted when down, as shown in Fig. 1, to seat in and close the waste-outlet *a*, and when fully open, as shown in Fig. 2, to leave a free discharge-passage through said outlet. Said valve is preferably made of elastic material, such as rubber. The valve consists of two parts, an upper conical part *e* and a lower cylindrical part *f*, preferably integral with each other. The vertical length of the valve is greater than its extent of longitudinal movement, so that in all of its positions it is partly within the waste-outlet. The diameter of the upper part of the cone of the valve is equal to or greater than the waste-outlet, whereas the cylindrical portion is smaller than the waste-outlet.

The valve is secured to the valve-operator D. Said operator has two substantially vertical limbs *g h*, connected by a semicircular loop *i*. The two limbs and intermediate loop are made of one piece of resilient rod or wire, preferably of brass, bent to the desired shape. The valve is secured to the lower end of the limb *g*, which extends within the bowl, being slipped over the limb against a loose collar *j*, seating against a fixed shoulder *k* on the limb, and is held in place thereon by a nut *l*, screwing on the lower end of the limb *g*. The limb *g* is bent above the valve toward the vertical back wall of the bowl, and thence extends upwardly adjacent to said back wall. The other limb *h* of the operator extends downwardly through a guide-sleeve E, extending through and secured to the slab. A stop-nut *m*, screwed onto the lower end of limb *h*, limits and determines the upward movement of the operator by coming in contact with the lower end of the guide-sleeve E, as shown in Fig. 2, and this upward limit is reached when the cylindrical lower end *f* of the valve is raised and in contact with the waste-outlet *a*. Preferably the guide-sleeve E is not fastened directly to the slab B, but is connected, as shown, through the mediation of the coupling-sleeve F. The coupling-sleeve F extends through an aperture *w* in the slab and has a flange *n* resting on the slab. Below the slab the coupling-sleeve F is externally screw-threaded to receive a nut *o*, which seats against a washer *p*, and thereby clamps the coupling-sleeve securely to the slab. The guide-sleeve E extends vertically through the central bore of the coupling-sleeve, and has an exteriorly-threaded portion *q* near its head *r*, which screws into an interiorly-threaded socket *s* at the upper end of the coupling-sleeve F, above the slab. The head *r* of the guide-sleeve is milled or knurled to

enable the guide-sleeve to be readily screwed into and out of the coupling-sleeve. The interior bore of the coupling-sleeve is of greater size than the stop *m* on the lower end of limb *h* of the operator. In order, therefore, to entirely remove the operator and valve, for cleaning or otherwise, it is only necessary to detach the guide-sleeve from the coupling-sleeve by unscrewing, which is readily done without the use of any tools because the milled head of the guide-sleeve is above the slab within convenient reach. This obviates the necessity of removing the stop *m* from the operator or the nut *o* from the coupling-sleeve, either of which operations would be inconvenient because they are located beneath the slab, back of the bowl, close to the wall, and usually between the water-supply pipes and back of and above the trap for the waste-outlet.

The loop *i* is in all positions of the operator located above the coupling-sleeve, and it serves as the handle by which the valve is operated.

The limb *g* of the operator extends through a notch *t* in the slab B. The slab usually projects inwardly beyond the vertical walls of the bowl, and because it is desirable that the limb *g* should be as close to the back wall of the bowl as possible, so as not to obstruct the interior of the bowl and to be inconspicuous, this notch is used. This notch also performs another function. Its walls act as stops to prevent the distortion or twisting of the operator by side straining, to which it may be subjected.

In order that the valve may remain in its uplifted position the resilience of the operator is preferably relied upon. As shown in the drawings, the entire operator, including the limbs and connecting-loop, is a single metal rod or wire bent to proper shape. Before the operator is inserted in place its two limbs are spread apart so that the horizontal distance between them is greater than the horizontal distance between the axis of the outlet *a* and that of the guide-sleeve E. Consequently to bring the operator and the valve into place the lower ends of the two limbs are pressed together against the resilience of the loop *i*, which constitutes a spring tending to separate the free ends of the limbs. As a result when the operator and valve are in place the resilience of the operator—that is, of the spring-loop *i*—causes the front wall of the valve to hug the front wall of the waste-outlet during all positions of the valve, and to cause the limb *h* of the operator to bind in the guide-sleeve. The force of the spring-loop is sufficient to maintain the operator and valve in any place in which they may be left within their operative range of movement. In case the spring should at any time lose its resilience to such an extent as to fail to maintain the valve uplifted, it is only necessary to remove the operator and spread its limbs apart.

When the valve is in its uplifted position its cylindrical part *f* bears against the outlet *a*, and then the two limbs *g h* are parallel with each other, as shown in Fig. 2. The conical portion of the valve is so constructed when new that when closed it is not entirely within the waste-outlet. Hence wear on the valve does not prevent its forming a water-tight joint since as it becomes worn it is only necessary to move it down until it closes the outlet. Since the valve is preferably elastic, it conforms itself to the waste-outlet.

The valve is exceedingly simple and obvious in its operation. To open and close it, it is only necessary to move the operator up and down by using the loop *i* as a handle. At the same time it is so strong that careless persons cannot injure it.

Since the valve is at all times more or less within the waste-outlet, and is always held frictionally against the front wall of the outlet by the spring-loop, all of the mechanical advantages of a tight fit are secured, such as accuracy of movement, correctness of position, and absence of rattling, and at the same time the movement of the valve is as easy as if the fit was loose.

The improved valve mechanism is cleanly because none but smooth surfaces are within the bowl, and it is easily removable and easily cleaned. Owing to the conical construction of the valve and its direct movement it will close tightly even if dirt or lint should catch between it and the waste-outlet walls.

The connection of the limbs of the operator by the loop *i* enables the aperture *w* in the slab to be placed at any desired distance back from the margin of the slab around the edge of the bowl, thereby enabling the sleeves E F to be symmetrically located with reference to the hot and cold water fixtures and diminishing the liability of breaking or cracking the slab in case it is made of marble.

The construction of valve and valve-operator mechanism which has been specifically illustrated and described is what I deem to be the best embodiment of the principles of my invention. It will be obvious however that many changes in construction can be made without departing from the spirit and scope of my invention as the same is specified in the subjoined claims.

I claim as my invention—

1. A vessel having an outlet, in combination with a stationary guide-sleeve outside of said vessel, a valve controlling said outlet, and an operator having two limbs connected at their upper ends, one of said limbs being located within said vessel and carrying said valve, and the other of said limbs being located outside of said vessel and entering said guide-sleeve and sliding therein, substantially as set forth.

2. A vessel having an outlet, in combination with a stationary guide-sleeve outside of said vessel, a valve controlling said outlet and being partly located within said outlet when in the fully open position, and an operator having two limbs connected at their up-

per ends by a loop, one of said limbs being located within said vessel and carrying said valve, and the other of said limbs being located outside of said vessel and entering said guide-sleeve and sliding therein, substantially as set forth.

3. A vessel having an outlet, in combination with a stationary guide-sleeve, a valve controlling said outlet and being partly located within said outlet when in the fully open position, and an operator having two limbs, one of said limbs being located within said vessel and carrying said valve, and the other of said limbs entering said guide-sleeve and sliding therein, and means elastically connecting said limbs, whereby the valve is kept in frictional contact with one wall of the outlet and the other limb of the operator is kept in frictional contact with said guide sleeve, substantially as set forth.

4. A vessel having an outlet, in combination with a stationary guide sleeve, a valve controlling said outlet, and an operator having two limbs connected at their upper ends by a spring loop, one of said limbs being located within said vessel and carrying said valve, and the other of said limbs entering said guide sleeve, and sliding therein, substantially as set forth.

5. A vessel having an outlet, in combination with a stationary guide-sleeve, a valve controlling said outlet and being partly located within said outlet when in the fully open position, said valve being an elongated cone, widest at the top, and terminating at its lower end in a diminished cylindrical part, and an operator having two limbs connected at their upper ends, one of said limbs being located within said vessel and carrying said valve, and the other of said limbs entering said guide-sleeve, and sliding therein, substantially as set forth.

6. A vessel having an outlet, in combination with a stationary guide-sleeve outside of said vessel, a valve controlling said outlet, and an operator having two limbs connected at their upper ends, one of said limbs being located within said vessel and carrying said valve, and the other of said limbs being located outside of said vessel and entering said guide-sleeve and sliding therein and having, below said guide sleeve, a stop for limiting the upward movement of the operator, substantially as set forth.

7. A vessel having an outlet, and the slab of said vessel, said slab having a notch above said outlet, in combination with a guide sleeve on said slab, a valve controlling said outlet, and an operator having two limbs connected at their upper ends, one of said limbs being located within said vessel, carrying said valve and extending through said notch in the slab, and the other of said limbs entering said guide-sleeve and sliding therein, substantially as set forth.

8. A straight-backed, rear-outlet, lavatory vessel, its outlet, valve, and a stationary guide-sleeve outside of said vessel, in combination with an operator having a limb extending into said vessel and connected with said valve, said limb having a vertical portion to which said valve is attached, a second vertical portion located adjacent to the rear wall of the bowl, and a section uniting said vertical portions, and said operator having a second limb located outside of the vessel and sliding in said guide-sleeve, substantially as set forth.

9. The combination of a support or slab, a coupling sleeve passing through an aperture in the support or slab and being rigidly secured to the same, a guide-sleeve passing through said coupling sleeve and detachably connected therewith, and an operating limb sliding within said guide-sleeve and through said coupling sleeve, said limb having a stop which limits its movement by coming in contact with said guide-sleeve but which passes freely through said coupling sleeve, substantially as set forth.

10. A vessel, its outlet, slab, and valve, in combination with a coupling sleeve rigidly secured to said slab, a guide sleeve removably connected to, and extending into the bore of, said coupling sleeve, said guide sleeve being manipulated from above said slab, and the limb of an operator for said valve extending through said guide sleeve and hence through said coupling sleeve and having a stop below said guide sleeve for limiting its upward movement by coming in contact with said guide-sleeve, said stop being adapted to pass freely through the bore of said coupling sleeve, substantially as set forth.

11. A vessel, its outlet, slab, and valve, in combination with a coupling sleeve rigidly secured to, and passing through, said slab, said guide sleeve having a screw threaded socket at its upper end and above said slab, a guide sleeve extending through the bore of said coupling sleeve and screw threaded near its upper end to fit said socket, said guide sleeve having its upper end or head milled or knurled, and a valve operator having two limbs connected together above said slab, one of said limbs extending into the vessel and connected with said valve, and the other extending through said guide sleeve and beneath said slab, and having below said guide sleeve a stop for limiting the upward movement of said operator, said stop being adapted to slide freely through the bore of said coupling sleeve, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES WHITE HALE.

Witnesses:
CHARLOTTE E. HALE,
MARTHA E. FREDRICKSEN.