

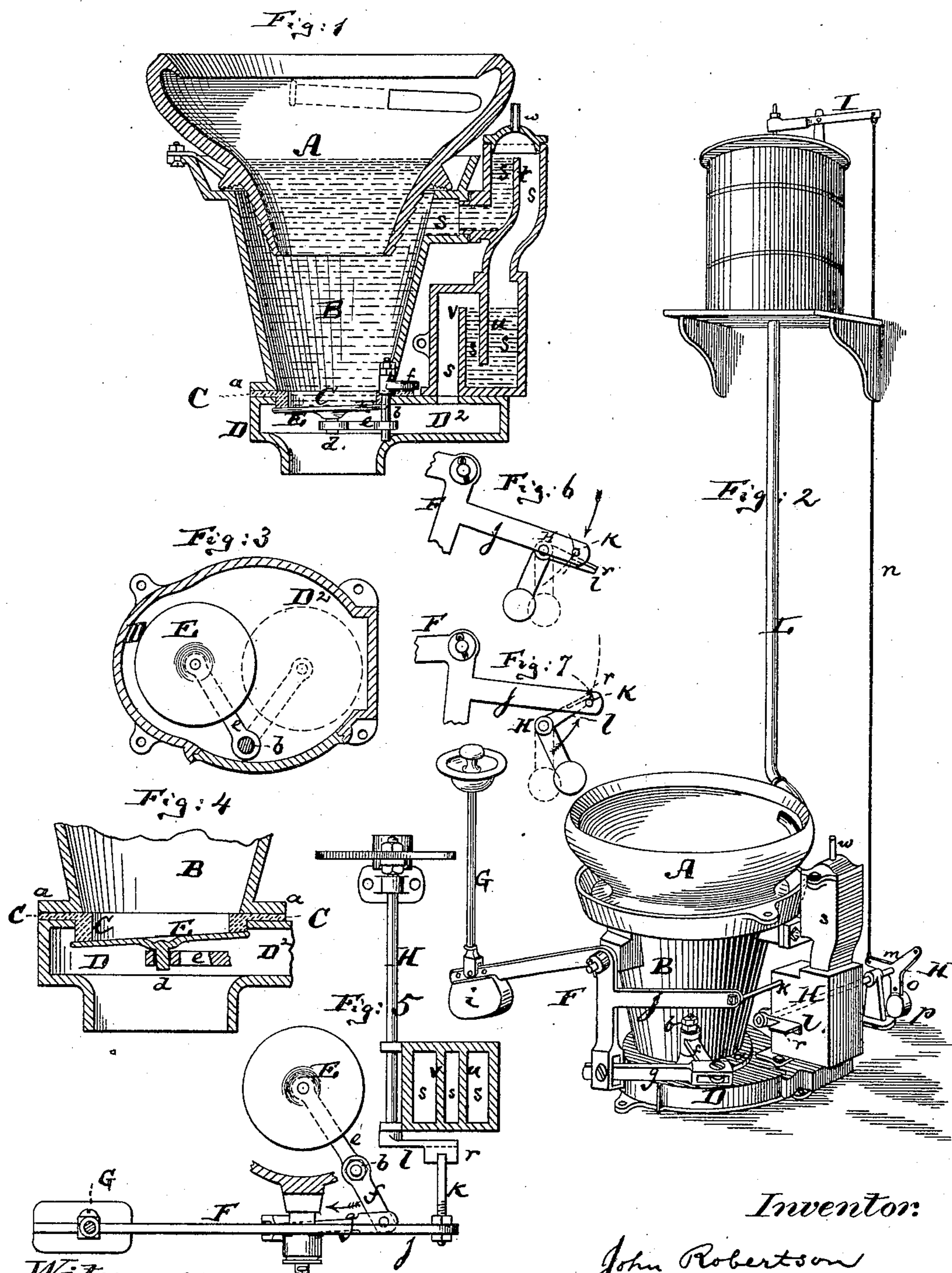
(Model.)

J. ROBERTSON.

WATER CLOSET.

No. 245,319.

Patented Aug. 9, 1881.



Witnesses.
Henry P. Parker
John C. Tunbridge.

Inventor:
John Robertson
by his attorney
A. Briesen

UNITED STATES PATENT OFFICE.

JOHN ROBERTSON, OF MONTREAL, QUEBEC, CANADA.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 245,319, dated August 9, 1881.

Application filed April 6, 1881. (Model.)

To all whom it may concern:

Be it known that I, JOHN ROBERTSON, of Montreal, in the Dominion of Canada, have invented an Improvement in Water-Closets, of which the following is a specification.

Figure 1 is a vertical central section of the trunk of a water-closet containing my invention. Fig. 2 is a perspective view of the same. Fig. 3 is a detail horizontal sectional view, showing the valve for closing the discharge-orifice in two positions. Fig. 4 is an enlarged sectional view of said valve and of the packing against which it bears. Fig. 5 is a detail top view, partly in section, of the mechanism for operating the valve and of the trip mechanism for opening the water-supply. Figs. 6 and 7 are detail side views of the mechanism for actuating the trip.

This invention relates to a new construction and arrangement of valve for closing the outlet-orifice of a water-closet, and to the novel mechanism for actuating it, to a new arrangement of water-passage for supplying and washing the closet, and to new trip mechanism for admitting the water to the pan of the closet, all as hereinafter more fully described.

The invention consists in the use of a swinging and also vibratory valve or disk, which closes against an inclined packing in the lower chamber of the closet below the trunk, and thus insures the proper and tight closing of the closet and prevents the ascent of gases.

The invention also consists in the new mechanism for conveniently moving this valve and for adjusting it so as to regulate its pressure against the packing as the latter may become worn in use, and in other details of improvement which I shall hereinafter fully describe.

In the drawings, the letter A represents the suitable bowl or basin of the closet, and B is the chamber into which this bowl or basin discharges, and on which it rests. This chamber is preferably of inverted truncated conical form, and has a flange, *a*, at its lower part, which rests upon the flange of the packing C, confining it between the chamber B and the lower chamber, D, of the closet. The flange *a* is bolted or otherwise properly secured to the chamber D, so as to insure also the proper retention of the packing. This packing C is inclined on its lower face and oblique to the flange *a*, be-

ing so formed that it extends farthest down at the place which is farthest distant from the pivot *b* of the valve E, that closes against the packing, as clearly shown in Fig. 1. The valve E is a circular disk with a downwardly-projecting central stem, *d*, that passes loosely through an eye in the end of a link, jib, or crank, *e*. This link or crank is rigidly secured to the stem or vertical pivot-pin *b*, and by turning this pin *b* the valve or disk E will be carried either beneath the packing, as shown in Fig. 1, which is the position shown by full lines in Fig. 3, and as shown also in Fig. 4, or into the extension D² of the chamber D, as shown by dotted lines in Fig. 3. When under the inclined packing the disk or valve E is by frictional contact tilted into the inclined position on the packing, which is shown in Fig. 4, and thus makes a tight joint, so as to prevent the escape of gases in an upward direction. If the packing C should wear, the valve will always accommodate itself to the wear, owing to this tilting action; and, moreover, it can be adjusted up and down by setting the pin *b* farther up or down in its bearings, or adjusting the arm *e* on said pin.

The chamber D D² has a sliding gate, *y*, Fig. 3, which, when opened, admits ready access to the interior of the chamber and to the valve-disk E.

The pin *b* has a moving crank, *f*, which is more fully shown in Fig. 5, and which connects by a link, *g*, (see Fig. 2,) with an elbow-lever, F, to which the draw-handle G is attached. By pulling on G the link *g* is pulled in the direction of the arrow shown in Fig. 5, and the crank-pin *b* turned so as to carry the valve E out of the way of the outlet from the closet. As soon as the handle G is let go a suitable weight, *i*, or spring brings the parts back to their normal position, which is shown in Figs. 1 and 4.

The lever F has also a projecting arm, *j*, with a pin, *k*, at the end thereof, and when this lever F is vibrated by pulling the arm G so as to discharge the contents of the closet the pin *k* is carried upon the crank-projection *l* of a rock-shaft, H, which is shown in Fig. 2. The rock-shaft H has another crank, *m*, that connects by suitable rod or wire, *n*, with the lever I of the water-supply cistern, and the shaft H has

a still further crank, *o*, which carries a weight, *p*. The tendency of this weight *p* is to hold the trip-crank *l* in the horizontal position and to hold the rod *n* down. When, on pulling
 5 handle *G*, the pin *k* strikes the trip-crank *l* and the lip *r*, that projects therefrom, (see Fig. 6,) it at first tilts the crank *l* downward until the pin *l* has reached the inner edge of the lip *r*, which is about the position shown in Fig. 6.
 10 Just as the pin *l* has passed this inner edge of the lip *r* the weight *p* becomes operative and carries the crank *l* immediately back to its horizontal position and draws on the rod *n*. Now, as the weight *i*, after the handle *G* is let go,
 15 exerts its influence the pin *k* ascends and reaches the under side of the lip *r*, as in Fig. 7, and begins to draw farther on the rod *n*, so as to move the lever *I* sufficient to open the valve that admits water to the pipe *L*, with which the
 20 closet-pan is washed. This movement leaves the trip motion free. Thus, by means of the mechanism shown, and particularly by the arrangement of the pin *k* and lip *r* in their correlation with the weight *p* in the manner
 25 shown, admission of water is made part of the operation of the link mechanism, and made to be effective as the disk *E* resumes its proper position under the packing *C*. The water that is admitted to the basin *A* washes the same in
 30 the usual manner and has its outlet through a pipe, *s*, that starts from the upper portion of the chamber *B*, as shown in Fig. 1. This pipe *s*, by means of partitions *t*, *u*, and *v*, is made to first ascend, then descend, then ascend, and,
 35 finally, again descend until it reaches the portion *D*² of the chamber *D*, whence there is a free outlet for the water to the waste-pipe below the valve *E*, and yet, by means of the partition *u* and the other partitions mentioned, a
 40 complete double seal of water is insured and obtained, and the escape of gases in an upward direction from the chamber *D*² effectually prevented. When the valve is opened all the contents of the pan *A* and chamber *B* rush di-
 45 rectly down into the waste-pipe; but whenever the valve is reclosed and water readmitted the water rushes in until the level is equal to the upper edge of the partition *t*.

The upper end of the pipe *s* has a small air-hole, *w*, which supplies air between the two
 50 traps at the time the water flows downward from the pipe *s* into the chamber *B*, which is the case as soon as the valve *E* is opened.

I claim—

1. In a water-closet, the combination of the
 55 swinging valve *E* with the vibrating carrying-arm *e*, and with the annular packing *C*, having inclined lowerface, all arranged so that the valve will be tilted on the arm *e* and wedged between the inclined seat and on the arm *e*
 60 when carried beneath the seat, substantially as herein shown and described.

2. The combination of the swinging valve *E*, which is capable of vibrating on its stem *d*, with the pin *b*, having cranks or jibs *e* and *f*,
 65 link *g*, and weighted operating-lever *F*, substantially as herein shown and described.

3. The chamber *B*, made with flange *a*, in combination with the packing *C*, forming a valve-seat that is oblique to the line of the flange
 70 *a*, with the chamber *D*, having extension *D*², and with the valve *E*, all arranged substantially as specified.

4. In a water-closet having a vibrating valve, *E*, which is adapted to close under the annu-
 75 lar packing *C*, which is beneath the pan *A*, the combination of the intermediate chamber, *B*, with the pipe *s* and partitions *t u v*, all arranged so that there is a continuous passage between the chamber *B* and the branch or ex-
 80 tension *D*² and the soil-pipe, and so, also, that the water must seal said pipe *s* whenever the valve *E* is properly closed, substantially as herein shown and described.

5. The combination of the lever *j*, having
 85 pin *k*, with the rock-shaft *H*, having crank *l* and lip *r* thereon, and with the weighted crank *o*, all arranged so that by vibrating the lever *j* the shaft *H* will first be rocked in one direc-
 90 tion and then in the opposite direction, substantially as herein shown and described.

JOHN ROBERTSON.

Witnesses:

E. G. WELLS,
 PATRICK GORMAN.