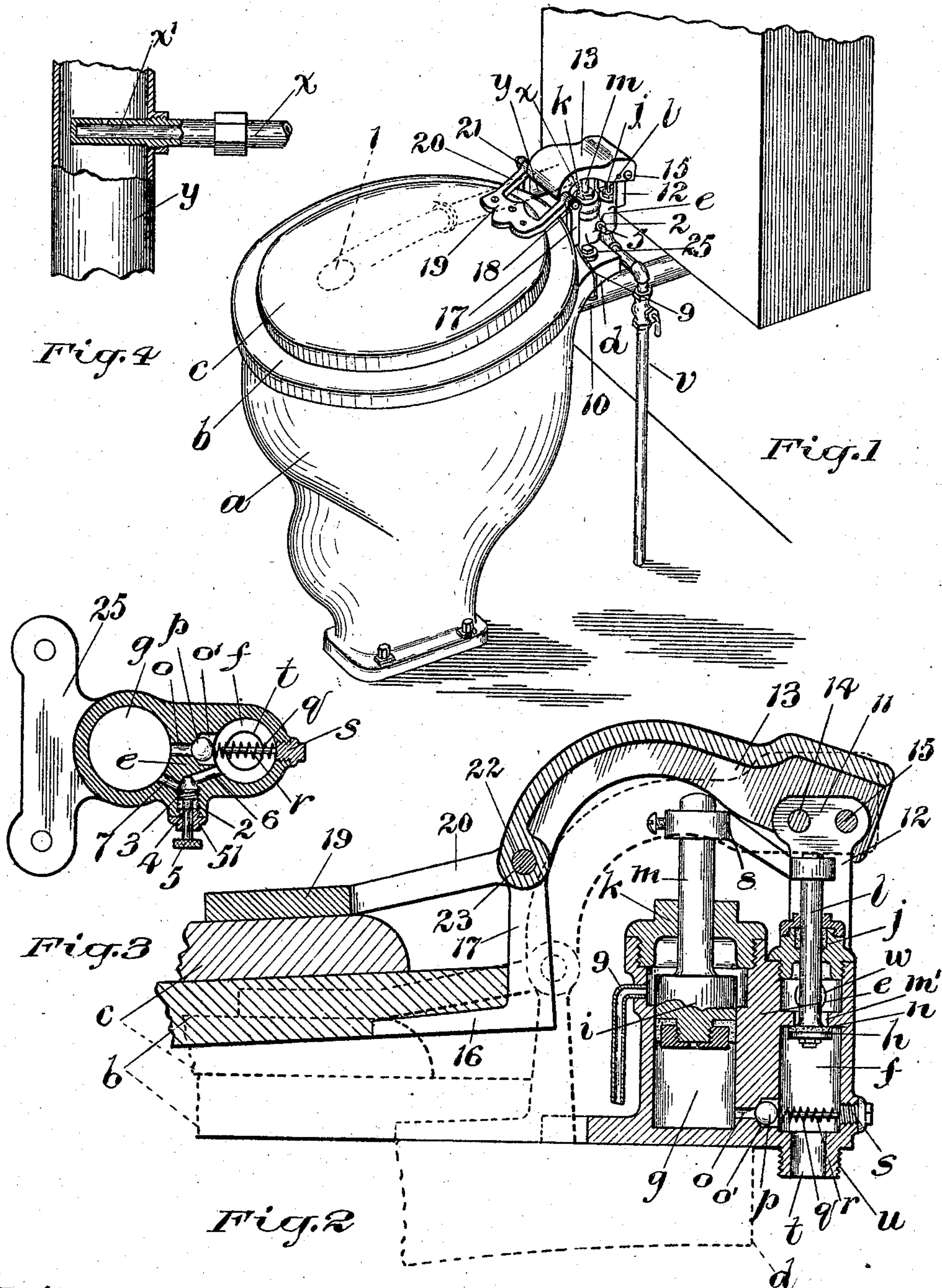


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PATENTED JULY 2, 1907.

C. H. THOMPSON.  
VENTILATING WATER CLOSET.  
APPLICATION FILED JAN. 11, 1905.



Witnesses,  
A. S. MacKay  
A. Graham

Inventor  
Carl Holmes Thompson  
by his Attorneys  
Smith & Barnum



# UNITED STATES PATENT OFFICE.

CECIL H. THOMPSON, OF TORONTO, ONTARIO, CANADA.

## VENTILATING WATER-CLOSET.

No. 858,427.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed January 11, 1905. Serial No. 240,579.

*To all whom it may concern:*

Be it known that I, CECIL HOLMES THOMPSON, a subject of the King of Great Britain, residing in the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented a new and useful Improvement in a Ventilating Water-Closet, of which the following is a specification.

My invention relates to the arrangement of the combination of a series of valves, whereby in the use of the water closet, and the weight applied to the seat, by the user of the closet, will cause the water to pass through the valve casing, through the valves, and escape into a spray nozzle arranged in a vent pipe communicating with the bowl of the closet. By the escape or the egress of the water through the nozzle a suction is created, which draws all the odor from the closet, and forces the same with the spray up through the vent pipe. The water after it has lost its force from the nozzle flows back into the bowl through the vent pipe.

The device is so arranged and constructed that the spray and suction will be continued while the weight is on the seat, and after the weight is removed from the seat the water causes the different valves to close, and the different parts to return to their respective or starting positions, and the water to shut off. Further the operating valves are arranged in combination with a small regulating valve, whereby the valves may be set to close off at any desired speed or pressure, so that any desired or length of time may be given for ventilating the closet. I may also arrange the device to operate in combination with the flushing operation of the closet.

I attain these objects by the device as illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a water closet bowl, with the parts of my invention in combination; Fig. 2 is a sectional elevation of the valves and connecting parts; Fig. 3 is a cross sectional view through the valves; and Fig. 4 is a detail sectional view of the nozzle and vent pipe.

Like letters refer to like parts throughout the drawings and specifications.

In the drawings I show a water closet bowl *a*, of the ordinary type, provided with a hinged seat *b*, and a lid or cover *c*. Extending rearward from the top plane of the bowl is an extension *d*, and on this extension is bolted the valve casing *e*. The valve casing is cast to form a pair of parallel cylinders *f* and *g*, in which work up and down a valve *h* and a piston *i* respectively. Screwed into the top of the cylinders *f* and *g*, are suitable caps *j* and *k*, provided with any ordinary packings to fit around the spindles *l* and *m*, of the respective valve and piston *h* and *i*, which extend up through and above the top of the valve casing, and are formed integral with the pistons. Arranged in the cylinder *f* is a valve seat *n*, on which engages the valve *h*, and passing from the cylinder *f* into the cylinder *g* is a port *o*, pro-

vided with a counter bore *o'*, in which engages a ball *p*. The ball is retained in the bore *o'*, by a small spiral spring *q* supported and retained by a pin *r*, projecting from a plug *s*, screwed into the side of the cylinder *f*, opposite the port *o*. Passing through the bottom of the cylinder *f* is an inlet *t*, surrounded by a screw threaded collar *u* by which may be coupled the feed pipe *v*, through which the water is supplied to the valves.

In the upper part of the cylinder above the valve seat *n*, is an outlet port *w*, which communicates with the spray pipe *x*, which terminates in a nozzle *x'*, and enters into the vent pipe *y*. The vent pipe *y* is coupled with an opening *l* in the side of the bowl, and may be carried to the roof of the house. The nozzle *x'* may be of any desired shape or construction adaptable for the purpose specified. The design of the one shown in the drawings is of the simplest form, and is shown merely for description.

Extending into the web of the valve casing between the cylinders *f* and *g*, is a small regulating screw valve 2. The screw valve 2 consists of a tapered head 3, provided with a shank 4 and terminating in a thumb nut 5, which projects through and beyond the packing nut 5'. The head 3 may be turned to regulate the amount of passage from the cylinder *f* to the cylinder *g*, through which the water passes into the cylinder *g*, and causes the piston *i* to rise.

Communicating with the valve 2 and engaging with the tapered head 3 is a port 6 from the cylinder *f*, and communicating with the valve 2, and the cylinder *g* is a port 7, by which the water may be regulated to flow from one cylinder to the other. The water enters in through the inlet *t* in the bottom of the cylinder *f*, and passes through the port 6, through the valve 2, and through the port 7 into the cylinder *g*, and forces the piston upwards, until its limit is checked by the valve *h*, engaging with the valve seat *n* in the cylinder *f*. The spindles *l* and *m* of the respective valve and piston *h* and *i*, are coupled together by a yoke 8, fastened to their upper ends, so that both valve and piston travel in unison and simultaneously. Connected into the upper end of the cylinder *g* is a small vent pipe 9, by which the air or any water that may get above the piston may be drained off. The vent pipe 9 may be carried down to discharge into the flushing pipe 10, or may be carried directly into the bowl.

Formed integral with the valve casing *a*, and projecting upwards from each side and terminating in an elongated head 11 is a lug 12, to which is pivoted a hinge operating plate 13. Through the head 11 of the lug 12 are a series of bolt holes 14, by which the plate 13 may be pivoted to the lugs 12 by bolts 15, the series of bolt holes 14 are for the purpose of adjusting the parts for the different conditions of seats. Fastened to the back edge of the seat *b* is a fastening plate 16, having two upright extending lugs 17 provided with circular heads 18,



adapted to engage with the front edge of the operating plate 13. Fastened to the top back edge of the lid or cover *c*, is a hinge plate 19, provided with two rearwardly extending lugs 20 terminating in circular heads 21. The lugs 20 and 17 are so arranged that they fit on either side of the front edge of the operating plate 13, and passing through the heads 18 and 21 respectively, and through a circular opening 22 in the plate 13 is a bolt 23, by which the seat and the cover will be hinged to the operating plate 13, and also hinged to the valve casing *e*. The plate 13 is so arranged that the under side rests on the top of the spindle *m*, of the piston *i*, and by reference to Fig. 2 of the drawings it will be noticed that when the piston is in its raised position, it keeps the back edges of the seat and cover slightly raised from the top plane of the bowl *a*.

When in operation a weight is placed on the seat *b*, the seat is caused to lower to the horizontal, which draws the operating plate 13 downward, and presses on the top of the spindle *m* of the piston *i*. With the downward travel of the piston *i* the water in the cylinder *g* is forced out through the port *o*, and by the force of the water the ball *p* is forced away from the port, at the same time being kept in its relative position with the counter bore *o'* by the spring *q* on the pin *r* within the cylinder *f*. At the same time the piston *i* is traveling downward in the cylinder *g* the valve *h*, in the cylinder *f* travels with it, and moves away from the valve seat *n*, which allows the water to pass through the port *m'* into the upper part of the cylinder, and out through the port *w*, into the pipe *x*, where it sprays through the nozzle *x'*, into the vent pipe *y*. The nozzle will be pointed to discharge away from the closet bowl, and any suitable design of a nozzle may be adapted, suitable for the purpose. A small amount of the water will find its way of escape through the ports 7 and 6 of the valve 2, but the port *o* will provide for the greater, and quicker escape of the water from the cylinder *g* into the cylinder *f*. This operation of the valves takes place as the piston *i* is being forced downward by the seat, and the plate 13 bearing on the spindle *m*. As the valve *h* and piston *i* are coupled together to operate in unison by the yoke 8, fastened to their respective spindles *m* and *l*, their travels will be simultaneous, and as soon as the weight is removed from the seat the valve and piston start to travel upwards, by the pressure of the water on the underside of the piston *i*, that has passed through the ports 6 and 7 into the cylinder *g*. All the time the water is filling the cylinder *g*, the water continues to spray through the nozzle *x'*, and continue spraying until the water is cut off by the valve *h* engaging with the valve seat *n* in the cylinder *f*. The valve *h* engaging with the valve seat *n*, closes off the supply of water from the spray pipe *x*.

By regulating the port of ingress from the cylinder *f* into the cylinder *g* through the valve 2 it will be understood the spray may be continued any desired length of time, and the adjustment may be effected by screwing the plug 3 in or out, and as the weight has been removed from the piston *i*, the water is free to force its way into the cylinder *g*, and the ball *p* is forced by the water to fit against the port *o*, thereby closing any inlet through the port *o*, which will only allow the water to find inlet through the ports 6 and 7 in the valve 2, which will be adjusted to be as slow as possible

providing for as long a spraying operation as is necessary.

The front part of the valve casing is provided with a lug 25, having a series of bolt holes by which it may be fastened to the bowl, or the projection of the bowl *d*.

What I claim as new and desire to secure by Letters Patent is—

1. In a ventilating water closet, a valve casing fastened to the edge of the closet bowl, an operating hinge plate pivoted with said valve casing, a piston working within said valve casing, a spindle formed integral with said piston, said spindle projecting through the top of said valve casing, said spindle adapted to engage with the underside of said operating plate, the front part of operating plate being hinged with the seat and cover of said closet, a feed water supply pipe engaging with said valve casing, a spray pipe extending from the said valve casing into a vent pipe coupled with said closet bowl, valve ports within said valve casing by which the water may pass into said spray pipe, a valve working up and down within said casing by which communication is opened and closed to said spray pipe substantially as described.

2. In a ventilating water closet, a valve casing fastened to the edge of the closet bowl, two parallel cylinders formed within said valve casing, a piston adapted to work up and down within one of said cylinders and a valve within the other of said cylinders, spindles formed integral with said piston and valve, said spindles projecting through the top of said valve casing, an inlet port between said cylinders, means by which the said port may be opened and closed, a hinged operating plate pivoted with the said casing and closet seat, said closet seat adapted to operate the said piston and valve, substantially as described.

3. In a ventilating water closet, a valve casing, said casing fastened to the edge of the closet bowl, two parallel cylinders formed within said valve casing, a piston adapted to work up and down within one of said cylinders and a valve adapted to work up and down within the other of said cylinders, a valve port communicating between the said cylinders, a ball engaging in said port, a spiral spring engaging with said ball, a water inlet into one of said cylinders and an outlet from the said cylinders, means by which the said piston and valve may be operated to open and close the said inlet and outlet, substantially as described.

4. In a ventilating water closet, a valve casing, said valve casing fastened to the edge of the closet bowl, two parallel cylinders formed within said casing, a piston working within one of the said cylinders and a valve working within the other of the said cylinders, a water inlet into one of said cylinders, a valve seat formed within said cylinder, the said valve adapted to engage with said valve seat, a spray pipe coupled with an outlet in the upper part of said cylinder, valve inlets between the said cylinders, means by which the said piston and valve may be operated to work up and down in said cylinders by engaging with a hinged plate coupled with the said valve casing, seat, and cover of the said closet, substantially as described.

5. In a ventilating water closet, a valve casing, two parallel cylinders formed within said casing, a piston adapted to work up and down within one of said cylinders and a valve adapted to work up and down within the other of the said cylinders, a valve port communicating between the two cylinders, said valve port opened and closed by a spring actuated ball by the action of the water, a regulating valve between the two cylinders and arranged in the side of the said casing, said regulating valve consisting of a tapered screw plug, said plug engaging with bores, one bore engaging with each of the said cylinders and the point of the said plug, means by which the water may pass through one of the said cylinders and out through the same cylinder into a spray pipe coupled to the side of the said valve casing, said spray pipe adapted to enter into a vent pipe coupled with the side of the closet bowl, means for operating the piston and valve, substantially as described.

6. In a ventilating water closet, a valve casing adapted



to be fastened to the edge of the closet bowl, two cylinders formed within said casing, a piston adapted to work up and down in one of the said cylinders, a valve adapted to work up and down within the other of the said cylinders, 5 said piston and valve having spindles projecting through the top of said casing, said spindles adapted to engage with the underside of a hinge plate pivoted to lugs projecting upward from the said casing, said hinge plate hinged with the seat and cover, or lid of the closet, an inlet into 10 one of the said cylinders, a spray pipe coupled through the side of said casing, and communicating with one of the said cylinders, valve ports within the said casing communicating between the said cylinders, means by which the water may be freed to flow from the said cylinders into 15 the said spray pipe, substantially as described.

7. In a ventilating water closet, a valve casing, two cylinders formed within said casing, a piston contained within one of said cylinders, valve ports arranged between 20 the said cylinders, one of the said valve ports adapted to let the water pass from one cylinder into the other to raise the said piston, the other valve port adapted to allow the said water to be forced from the cylinder in the downward travel of the said piston, an outlet port from one of the said cylinders, said outlet port adapted to communi- 25 cate with a spray pipe, a valve seat arranged within the said cylinder, a valve adapted to work up and down with-

in the said cylinder, said valve and valve seat adapted to open and close the flow through the said cylinder and open and close the communication to the spray pipe.

8. In a ventilating water closet, a valve casing fastened 30 to the edge of the closet bowl, a piston and valve working within cylinders formed in said casing, said piston and valve having spindles projecting through the top of said casing, lugs projecting from the upper sides of the said casing, an operating hinge plate pivoted to said lugs, a 35 seat and cover pivoted to the front edge of the said operating plate, an inlet into one of the said cylinders, valve ports communicating between the said cylinders, means by which the valve ports open and close, one of the said valve ports opened and closed by a ball actuated by a 40 coiled spring supported within one of the said cylinders, the other valve port opened and closed by a regulating tapered screw plug, the shank of said plug projecting through the side of said casing, an outlet from one of the 45 said cylinders, said outlet adapted to communicate with a spray pipe adapted to enter into a vent pipe communicating with the bowl of the closet, substantially as described.

Signed at Toronto this 16th day of November, 1904.

CECIL H. THOMPSON.

In the presence of—

A. S. MACKAY,

S. ALFRED JONES.