

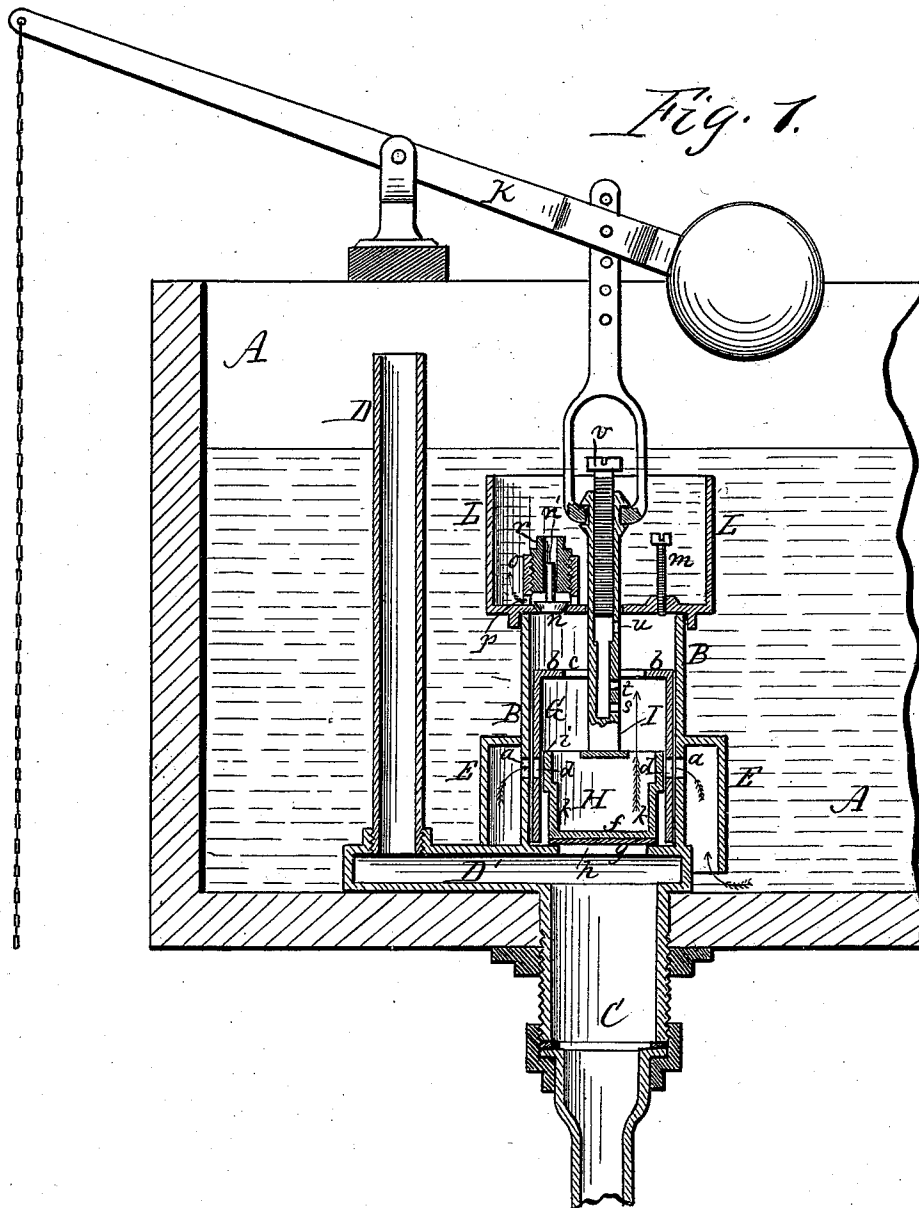
(No Model.)

3 Sheets—Sheet 1.

J. A. O'CONNOR & G. H. GRAHAM.
FLUSHING ATTACHMENT.

No. 531,212.

Patented Dec. 18, 1894.



Witnesses.

Chas. A. Videner
J. J. Culver

Inventors.

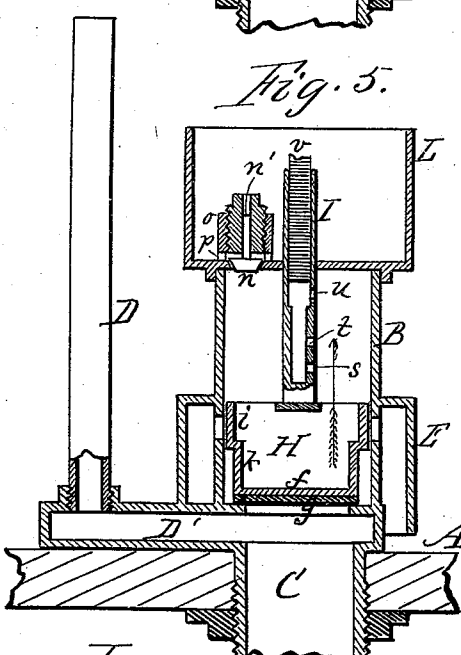
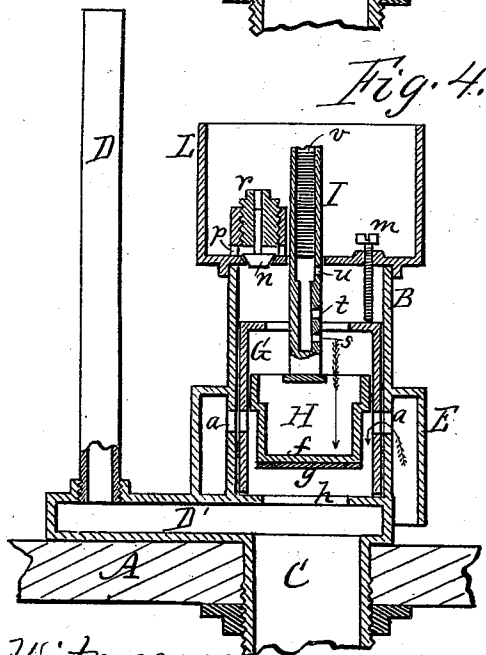
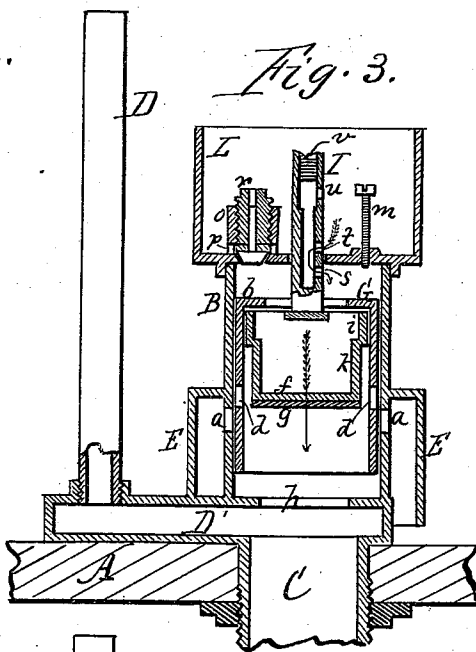
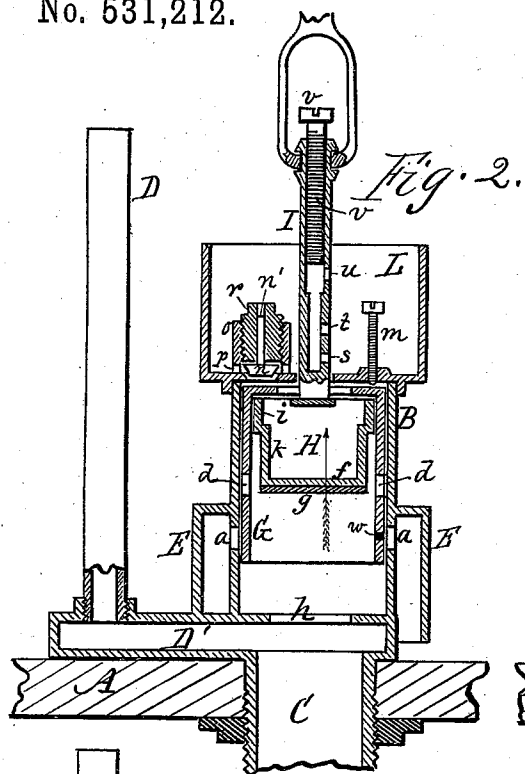
James A. O'Connor,
George H. Graham,
per R. L. Osgood,
Atty.

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George H. Graham,
Per R. F. Osmond, Atty.

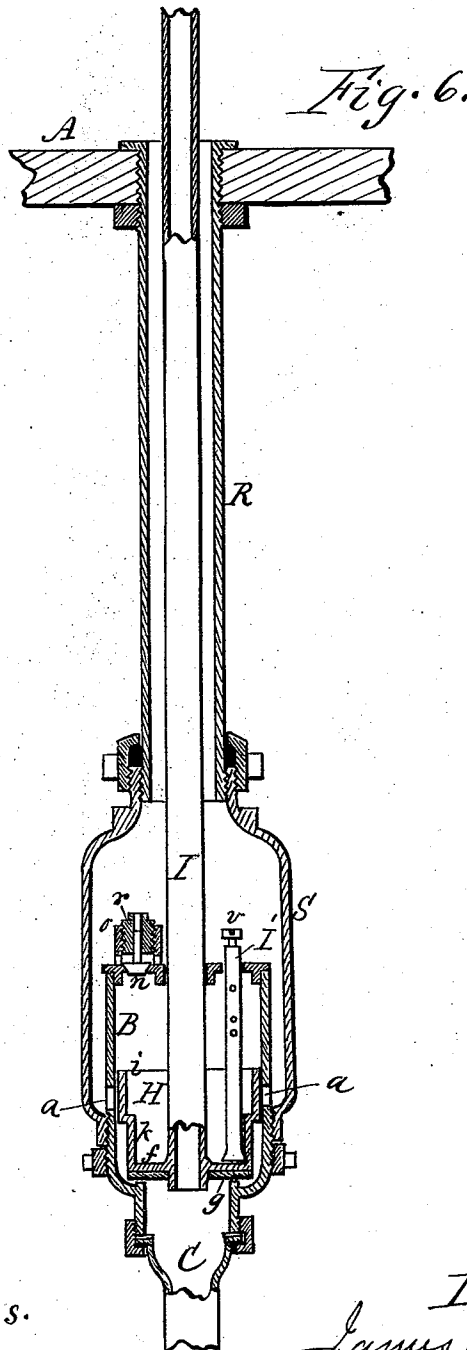
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3 Sheets—Sheet 3.

J. A. O'CONNOR & G. H. GRAHAM.
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UNITED STATES PATENT OFFICE.

JAMES A. O'CONNOR AND GEORGE H. GRAHAM, OF ROCHESTER, NEW YORK;
SAID O'CONNOR ASSIGNOR OF ONE-FOURTH TO MICHAEL J. LENNON, OF
SAME PLACE.

FLUSHING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 531,212, dated December 18, 1894.

Application filed June 16, 1894. Serial No. 514,824. (No model.)

To all whom it may concern:

Be it known that we, JAMES A. O'CONNOR and GEORGE H. GRAHAM, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Flushing Attachments; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

Our improvement relates to that class provided with elevated flushing tanks, and the invention consists in the construction and arrangement of parts hereinafter described and claimed.

In the drawings—Figure 1 is a central, vertical section with the piston lowered and the water cut off as when at rest. Fig. 2 is a similar view with the piston raised to its full extent as when drawn up to produce the flushing action. Figs. 3 and 4 are similar views showing the piston in different positions in the down movement. Fig. 5 is a similar view with the cylinder removed. Fig. 6 is a similar view showing a modification.

A indicates an elevated tank, such as is used in ordinary water closets and urinals.

B is a barrel of cylindrical form resting inside the tank and provided with an exit pipe C which leads to the closet bowl. On one side is an overflow pipe D, open at its top and communicating at its bottom with a discharge passage D', that leads to the exit pipe C.

E is a jacket outside the barrel, and of larger diameter, closed at the top but open at the bottom, said bottom extending nearly to the bottom of the tank. In the act of flushing the water is drawn from the tank through this jacket space, and passes through ports *a a* in the sides of the barrel to the interior. Hence all, or nearly all, the water can be drawn from the tank, which cannot be done when the jacket is not used.

G is an inverted cylinder inside the barrel, fitting closely to the sides but having free movement up and down. Its bottom is entirely open and its top partially so, having a flange *b* all around, with a waterway *c* in the center. It has ports *d d* in its sides which

coincide with the ports *a a* of the barrel when the cylinder is down at its lowest point.

H is the piston. It has a closed bottom *f*, provided with a packing *g* which shuts down on a seat *h*, and thereby cuts off the passage from the interior of the barrel to the exit pipe C. Its upper portion *i* is cylindrical and fits closely the sides of the cylinder G in which it rests, while its lower portion, *k*, is of less diameter and leaves an annular space between itself and the cylinder.

I is a piston rod attached to the piston, extending up through the barrel and pivoted at its top to the lever K, by which the piston is operated, or connected by suitable lever work with the hinged and movable seat of the closet, or some other suitable arrangement by which the piston is operated.

L is a cup or vessel, open at its top but closed at its bottom, resting on the upper end of the barrel B and forming a cover to the same. The piston rod passes freely but closely through a central hole in the bottom of the cup. In the bottom of this cup is a screw *m*, which can be turned down as shown in Fig. 4 to hold the cylinder G in the bottom of the barrel and prevent it from rising. When the screw is turned up the cylinder can rise to the top of the barrel. The bottom of the cup is also provided with a conical valve *n*, resting in a seat and provided with a vertical stem *n'*. The valve is held in a curb *o*, in the bottom of which are small ports *p p* which allow passage of water from the interior of the barrel outward through the valve when the piston is raised. In the top of the curb screws a plug *r*, having a central hole to receive the stem of the valve. By screwing this plug up or down the opening of the valve is regulated to the desired rapidity of the escape of the water outward from the barrel.

The piston rod I is made tubular from the top downward a portion of its length, and in it are three orifices, *s t u*, opening outward. Two of these orifices, *s t*, are near together, while the third one, *u*, is farther up and at some distance from the others.

Instead of the two holes *s t* a slot of proper length may be used.

v is a screw which screws down into the open top of the piston rod and intersects the upper hole *u* when forced fully down.

In flushing the bowl the piston is drawn up by operating the lever *K*, or such other means as are provided. In passing up from the stationary position in Fig. 1, the upper part of the piston uncovers the ports *a a* and *d d* of the barrel and cylinder, which ports are then in alignment, and a preliminary flushing action then takes place, the water from the tank having free passage from the tank into the barrel, and from thence into the exit pipe. This flushing action continues till the piston in its ascent strikes the top of the cylinder *G* and draws the latter up with it, and until the ports of the cylinder are raised above the ports of the barrel, when the lower closed part of the cylinder cuts it off. This preliminary flushing action is for the purpose of wetting and cooling the bowl and washing it free of any adhering matter. The piston and cylinder continue to rise together till they reach the top of the barrel. When released again they commence to fall very slowly, as the openings *st u* are all above the bottom of the cup *L*, as shown in Fig. 2, and the parts can fall only so fast as the barrel is filled above them by the natural leakage of the water through the joints from the cup above. This interval gives time for the use of toilet paper before the second flushing action takes place, in case the attachment is operated by the ordinary elevated seat. This second flushing action cannot occur until the bottom of the ports *d d* of the cylinder reach the top of the ports *a a* of the barrel, as shown in Fig. 3. At this moment the lower opening *s* of the piston rod passes through the bottom of the cup *L*, while the second opening *t* rests above it, as shown in Fig. 3. The water in the cup now runs into the opening *t* and out of *s* into the barrel, and consequently accelerates the downward motion of the cylinder and piston. Soon the second opening *t* also passes below the bottom of the cup, and the water then passes into the opening *u* and out of both *s* and *t* into the barrel. The accelerated motion opens the ports wide and a rapid flushing action takes place, and this action continues after the cylinder has been seated and until the piston comes down and its upper enlarged portion cuts off the ports. This is done before the piston itself is seated. The moment the bottom of the enlarged upper part *i* of the piston rod comes to the top of the ports the opening *u* comes below the bottom of the cup, as in Fig. 4, and although the flush still continues, the piston is retarded, as the barrel can be filled above it only by the natural leakage through the joints. Therefore it moves down slowly to be seated and produces no pounding action as is produced in many water closets. The length of flushing action is regulated by means of the screw *v*, which can be forced down to cut off more or less of water that enters the upper hole *u*. In

the up motion of the piston and cylinder the water in the barrel is discharged through the valve *n*, as before described.

In this apparatus the down motions of the piston and cylinder are regulated by the passage of the water from the cup *L* into the barrel, while the flushing water passes into the bottom of the barrel directly from the tank. The elevated cup is an important feature of the invention, since it always holds a body of water sufficient to regulate the movements of the piston and cylinder, however low the water may be in the tank. When the tank is filled alternately with each flushing the cup is also filled and holds a supply when the water is drawn off from the tank.

When it is desired to produce but a single flushing action instead of the double one before described, the cylinder *G* is fastened down by the screw *m* as before described and as shown in Fig. 4, in which case the piston itself plays up and down, alternately covering and uncovering the ports. The cylinder may be removed and the piston play directly in the barrel with the same effect, as shown in Fig. 5; but the elevated cup *L* is essential to regulate the movement of the piston. In some cases a small hole *w*, is made through the cylinder at such position that when the cylinder is elevated said hole will come in coincidence with the ports in the barrel, as shown in Fig. 2, in order to produce a small stream sufficient to wet and wash the bowl when the latter is in use. This is effective especially in urinals.

Fig. 6 shows the flushing attachment located below the tank and in proximity to the bowl. In such case the piston rod *I* is tubular its whole length and serves as the overflow pipe. It is inclosed in an exterior pipe *R*, at the bottom of which is a casing *S* inclosing the barrel *B*.

The regulating device consists of a separate pipe *I'* extending from the piston up through the top of the barrel and provided with the holes *st u* and screw *v*. Its action is the same as the piston rod shown in the other figures, but as the water is fed down directly through the pipe *R* and in a constant supply, the cup *L* is not required.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a flushing attachment, the combination of a barrel provided with a port or ports near its bottom and connected with an exit pipe, a piston resting in the barrel operated by suitable means to cover and uncover the port or ports, a cup connected with the barrel for holding water independently of the barrel, means for supplying water from the cup to regulate the movement of the piston in the down stroke, and means for allowing the discharge of such water in the up stroke, as shown and described and for the purpose specified.

2. In a flushing attachment, the combina-

tion of a barrel provided with a port or ports and connecting with an exit pipe, a cylinder resting in the barrel also provided with a port or ports aligning with the port or ports of the barrel when the cylinder is lowered, a piston resting in the cylinder, operated by suitable means to cover and uncover the port or ports in the cylinder, and a cup connected with the barrel, with means for supplying water to regulate the drop of the piston and cylinder when elevated, and means for allowing discharge of such water when the piston and cylinder are lowered and in the act of being elevated.

3. In a flushing attachment, the combination of a barrel provided with a port or ports, a cylinder resting in the barrel, also provided with a port or ports, a piston resting in the cylinder operated by suitable means, a cup connected with the barrel with means for supplying water to regulate the drop of the piston when elevated, means for allowing the discharge of such water in the act of raising the piston, and a device for holding the cylinder down so that the piston can be operated independently of it, as and for the purpose specified.

4. In a flushing attachment, the combination of a barrel provided with a port or ports, a piston in the barrel capable of forward and back movement, a cup connected with the barrel for supplying water thereto during the drop of the piston, a valve for allowing the discharge of such water in the rise of the piston, and a piston rod connected with the piston made tubular and provided with openings which allow passage of water in the cup to the interior of the barrel, as and for the purpose specified.

5. In a flushing attachment, the combination of a barrel provided with a port or ports near its bottom and communicating with an exit pipe, a piston in the barrel capable of

forward and back motion, a cup connected with the barrel for holding water, means for supplying water from the cup to the barrel to regulate the movement of the piston in the downstroke, means for allowing the discharge of such water in the up stroke, and a jacket surrounding the lower end of the barrel and reaching nearly to the bottom of the tank, as shown and described and for the purpose specified.

6. In a flushing attachment, the combination of a barrel provided with a port or ports, a piston resting in the barrel and capable of forward and back movement, a cup connected with the barrel for supplying water to the same, a valve for allowing the discharge of such water, a piston rod connected with the piston passing through the cup and provided with holes by which the water in the cup can be carried to the interior of the barrel, and an adjusting device which is capable of intersecting one of said holes to regulate the escape of the water, as specified.

7. In a flushing attachment, the combination of a barrel provided with a port or ports near its bottom and connected with an exit pipe, a piston resting in the barrel operated by suitable means to cover and uncover the port or ports, a tube connected with the piston provided with holes through its sides which serve to admit water from above the barrel to regulate the down movement of the piston, and a valve in the barrel to allow discharge of such water in the up movement of the piston, as herein shown and described.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

JAMES A. O'CONNOR.
GEO. H. GRAHAM.

Witnesses:

R. F. OSGOOD,
A. W. WILBUR.

Correction in Letters Patent No. 531,212.

It is hereby certified that in Letters Patent No. 531,212, granted December 18, 1894, upon the application of James A. O'Connor and George H. Graham, of Rochester, New York, for an improvement in "Flushing Attachments," an error appears requiring correction, as follows: In the grant, it is stated that said O'Connor has assigned one-fourth of his right, title, and interest to Michael J. Lennon, whereas it should have been stated that he had assigned *one-fourth of the entire interest* to said party; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 22d day of January, A. D. 1895.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.