

(No Model.)

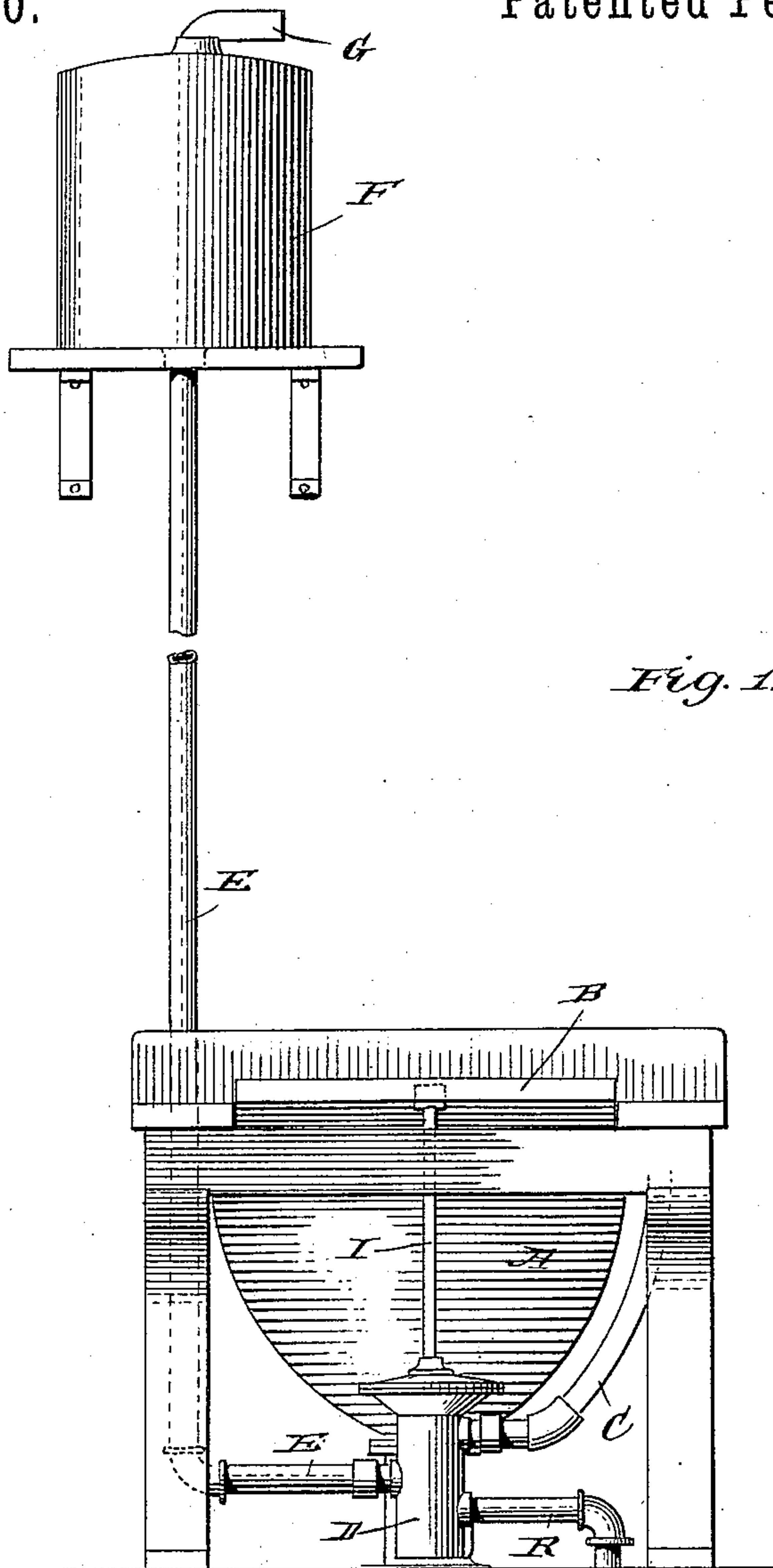
2 Sheets—Sheet 1.

J. J. BALLS.

WATER CLOSET.

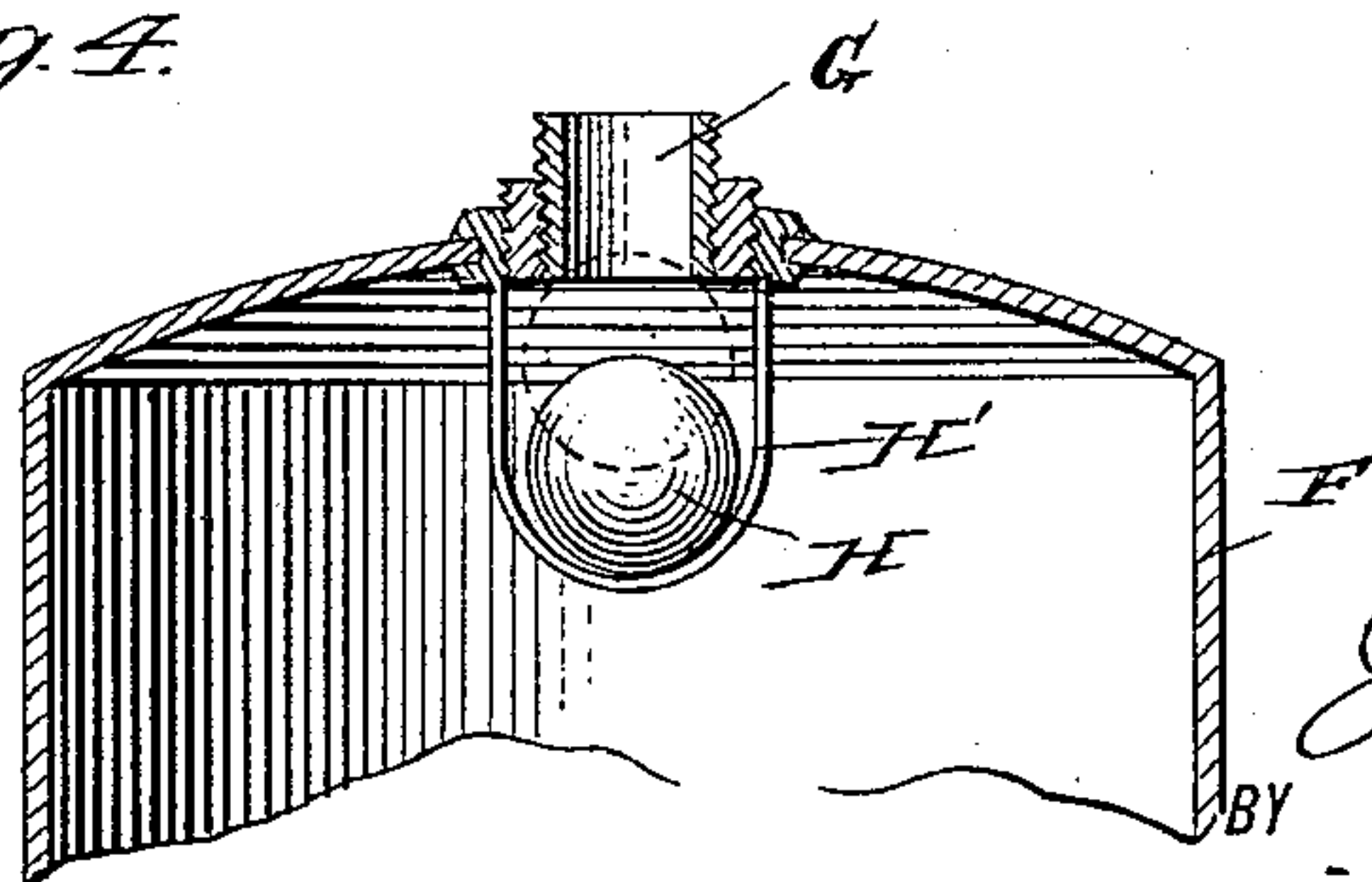
No. 398,020.

Patented Feb. 19, 1889.



*Fig. 1.*

*Fig. 4.*



WITNESSES:

*W. R. Davis.*  
*C. Sedgwick*

INVENTOR:

*J. J. Balls*  
BY *Munn & Co.*  
ATTORNEYS.

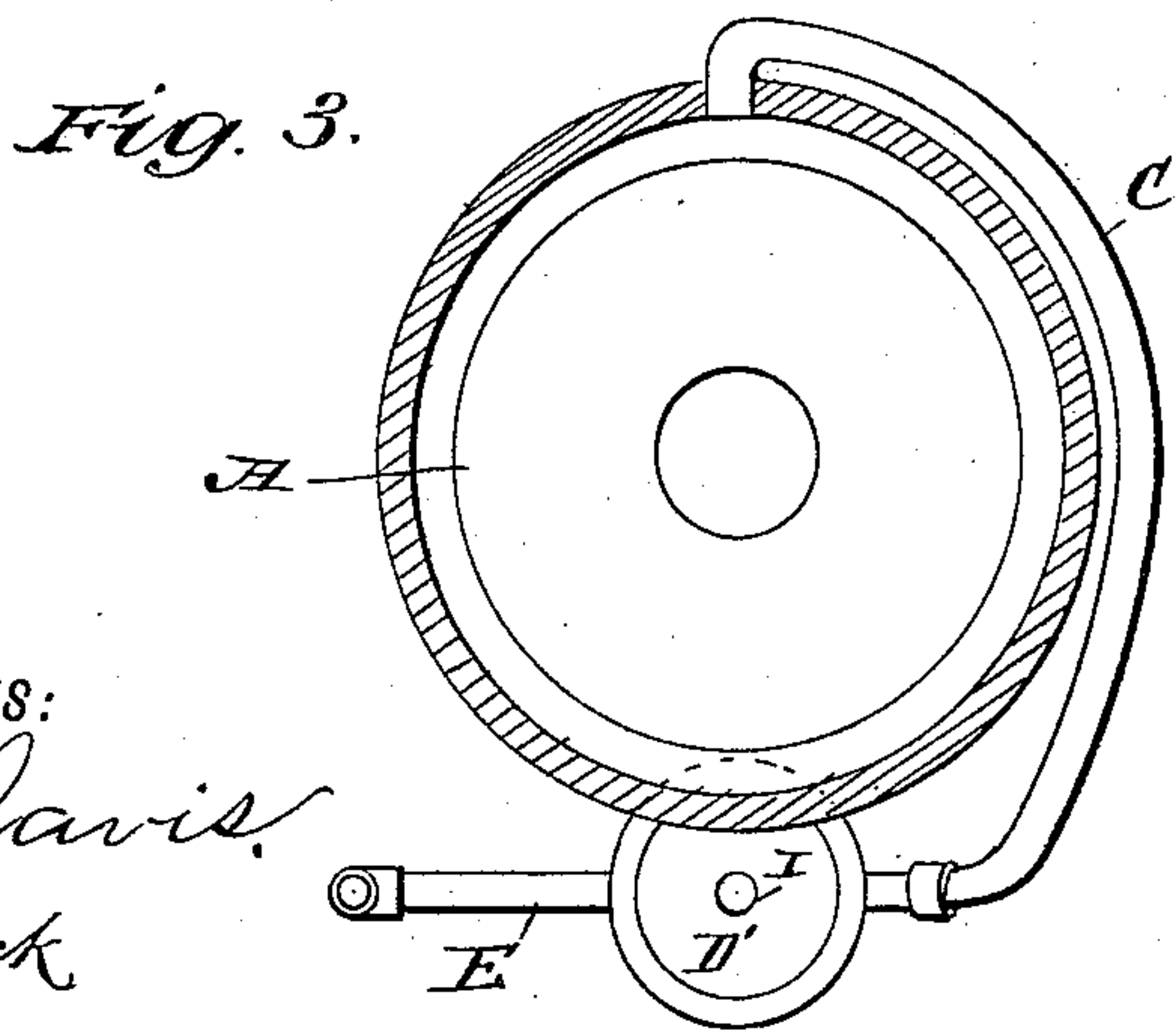
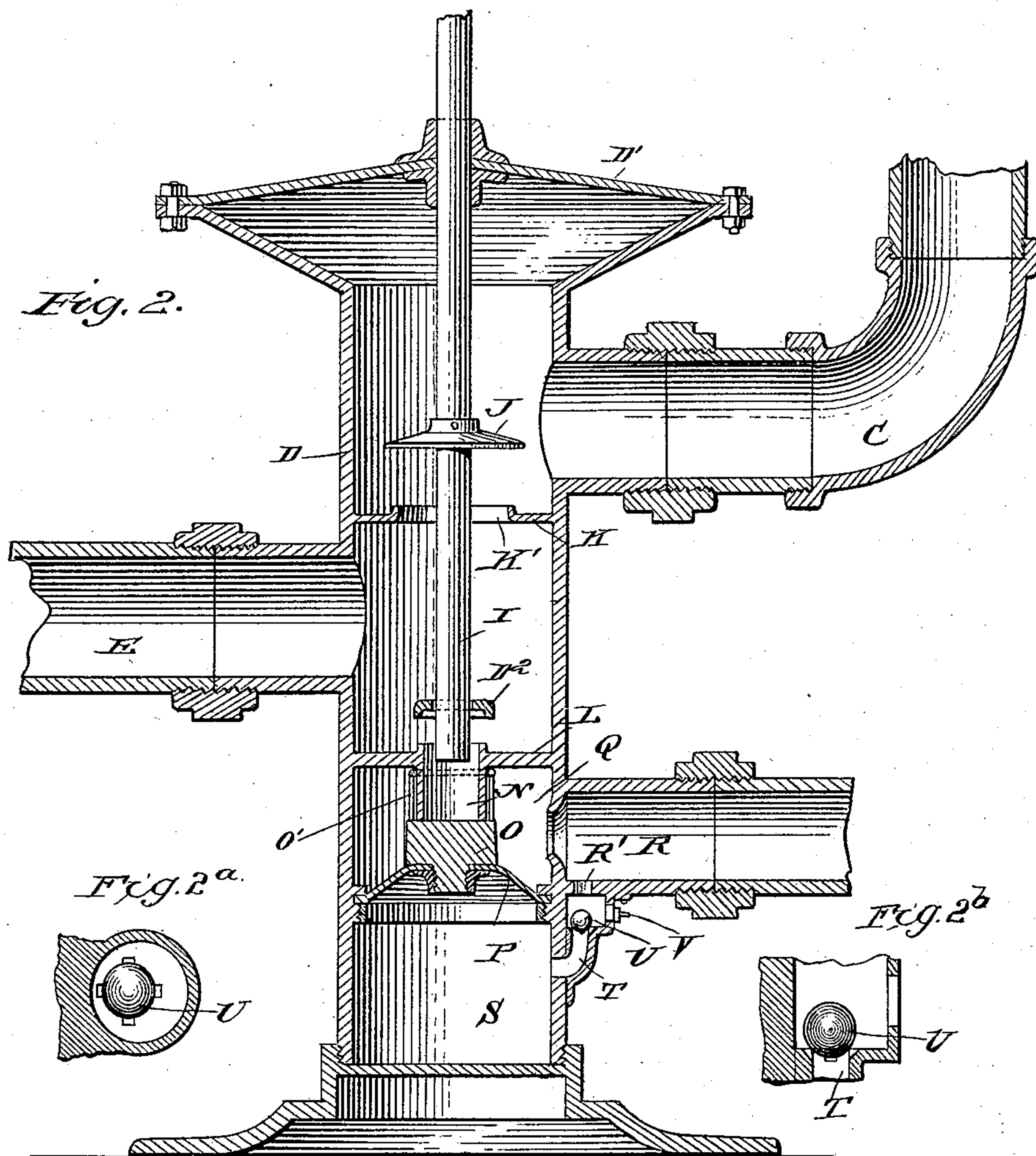
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# UNITED STATES PATENT OFFICE.

JOHN JAMES BALLS, OF JACKSONVILLE, FLORIDA.

## WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 398,020, dated February 19, 1889.

Application filed October 30, 1888. Serial No. 289,514. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN JAMES BALLS, of Jacksonville, in the county of Duval and State of Florida, have invented new and useful Improvements in Water-Closets, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in water-closets of that class in which the bowl is flushed automatically by the action of the movable seat.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is an enlarged sectional front elevation of part of the improvement. Fig. 2<sup>a</sup> is a horizontal section of pipe T enlarged. Fig. 2<sup>b</sup> is a vertical section of pipe T enlarged. Fig. 3 is a sectional plan view of the bowl and its connection. Fig. 4 is an enlarged sectional side elevation of the upper part of the reservoir.

The improved water-closet is provided with the usual bowl, A, adapted to be closed on top by the hinged spring-seat B. Into the upper end of the bowl A opens the flushing-pipe C, leading to a cylinder, D, set on the floor supporting the water-closet frame. The cylinder D is connected below the entrance of the flushing-pipe C by the reservoir-pipe E with the reservoir or tank F, located above the bowl A on a suitable bracket secured to the wall in the usual manner.

From the upper end of the reservoir F extends a vent-pipe, G, adapted to be closed by a ball, H, held in a cage, H', secured to the top of the reservoir F at its inside, as shown in Fig. 4. When the water rises in the reservoir, the ball H also rises and closes the vent-pipe G.

In the cylinder D is adapted to move vertically a rod, I, secured to the flexible diaphragm D', forming the cover or head of the cylinder D. The upper end of the rod I rests under the free end of the hinged spring-seat B, and the said rod I is caused to slide downward by the operator seating himself on the seat B.

On the rod I, inside of the cylinder E, is held a disk-valve, J, adapted to be seated on the valve-seat K', formed on the partition K, extending horizontally in the cylinder D between the entrance of the pipes C and E. The lower end of the rod I is guided in a bridge, D<sup>2</sup>, formed in the cylinder D a short distance above the horizontal partition L, carrying in its center a downwardly-extending pipe, N, the lower end of which is adapted to be closed by a valve, O, held in the center of the flexible diaphragm P, secured in the cylinder D below the partition L, thus forming with the latter a compartment, Q, into which opens the water-supply pipe R, connected with a suitable source of water-supply. The partition L is located a short distance below the entrance of the reservoir-pipe E.

A compartment, S, is formed in the cylinder D below the flexible diaphragm P, and the said compartment is connected by a pipe, T, and the aperture R' in the pipe R with the latter. A metal ball, U, is located in said pipe, and its seat is grooved radially, for a purpose hereinafter explained. A plug, V, is applied to pipe T above said ball-valve, for the purpose of facilitating cleaning the pipe when necessary. The valve O is provided with a suitable guide-frame, O', fitted over the outside of pipe N, as plainly shown in Fig. 2.

The operation is as follows: In the position shown in Fig. 1 the seat B is raised, and the water-reservoir F connects by the pipe E, the cylinder D, and the pipe C with the bowl A, so that the water from the reservoir flushes the bowl, the lower end of the pipe N being closed by the valve O, so that the water can only pass from the pipe E to the pipe C through the open valve-seat K'. Now when the operator seats himself on the seat B the seat moves downward and presses the rod I in the same direction until the disk-valve J is seated on the seat K', and thereby disconnects the pipes C and E. At the same time the downward motion of the rod I unseats the valve O from the lower end of the pipe N, as the said rod I presses on the top of the valve O and moves the latter, with its flexible diaphragm, downward. The water from the supply-pipe R now passes from the



latter through the pipe N into the pipe E, and through the latter to the reservoir F, which is thus filled and causes the ball H to rise to close the vent-pipe G. The moment the  
 5 operator leaves the seat B the rod I is moved upward by the action of the diaphragm D' of the cylinder D, so that the diaphragm P again moves upward and its valve O closes the pipe N, thereby disconnecting the sup-  
 10 ply-pipe R from the reservoir-pipe E. At the same time the disk-valve J moves upward with the rod I, so that the pipe E is again connected with the pipe C, and the accumulated water in the reservoir F now flows through  
 15 pipe E, cylinder D, and pipe C into the bowl A and flushes the same. When the valve O and its diaphragm P are moved downward, they press against the water in the compartment S, so that a quantity of the water is dis-  
 20 placed and forced through pipe T and opening R' into the supply-pipe R past the ball U. When the seat is relieved of pressure, a like quantity of water passes back through pipe T, and thus refills the compartment S, so  
 25 that the diaphragm P and its valve O move upward and resume their original normal position. The passage of water outward through said pipe T is rapid, the ball U being raised from its seat, but the reflow is hindered and  
 30 therefore slow, since the valve is then on its seat, and the only passages for water are the grooves in said seat; but this insures noiseless closing of the valve O upward against its seat.

35 Having thus described my invention, what

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

1. In a water-closet, the combination, with a cylinder and a valve-seat formed in the said cylinder, of a rod held to slide in the said  
 40 cylinder through the said valve-seat, a valve adapted to be seated on the said valve-seat and operated on by the said rod, a diaphragm held in the said cylinder and supporting the  
 45 said valve, a supply-pipe leading into the said cylinder above the said diaphragm, and a pipe connecting the said cylinder below the diaphragm with the said supply-pipe, substantially as shown and described.

2. In a water-closet, the combination, with  
 50 a cylinder and a valve-seat formed in the said cylinder, of a rod adapted to slide in the said cylinder through the said valve-seat, a valve adapted to be seated on the said valve-seat  
 55 and operated on by the said rod, a diaphragm arranged in the said cylinder below the valve-seat and supporting the said valve, a supply-pipe leading into the said cylinder above the  
 60 said diaphragm, and having a branch, T, which extends down and connects with the cylinder below the valve, and has a grooved valve-seat, a ball-valve held in the said pipe, and a reservoir connected with the said cylinder above the valve-seat, as shown and described.

JOHN JAMES BALLS.

Witnesses:

JOHNSON LAW,  
 JOS. M. HARPER.