

(No Model.)

T. CAMPBELL & J. H. McPARTLAND.

DOUBLE FLUSH VALVE FOR WATER CLOSETS.

No. 383,858.

Patented June 5, 1888.

Fig. 1-

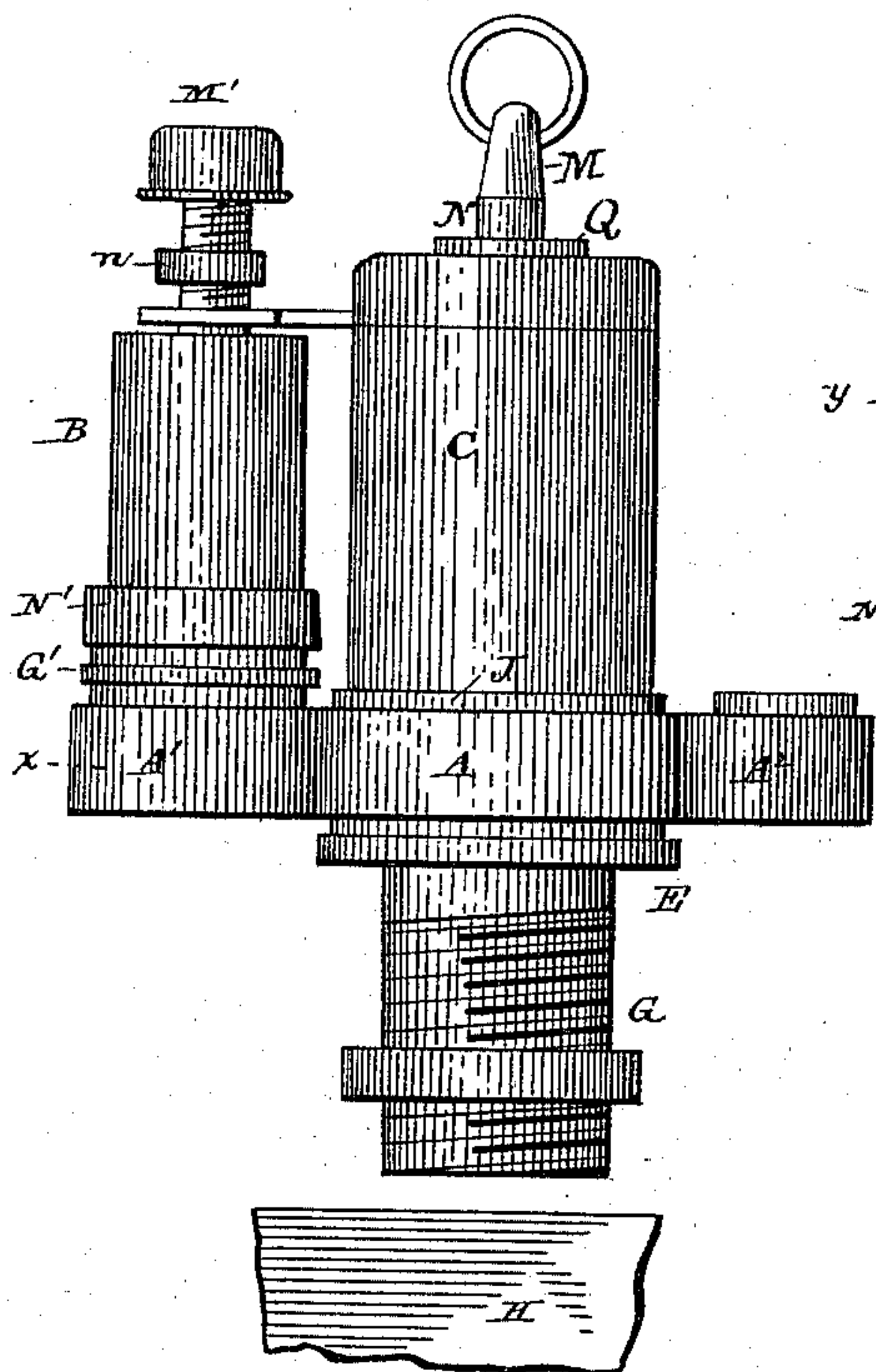


Fig. 2-

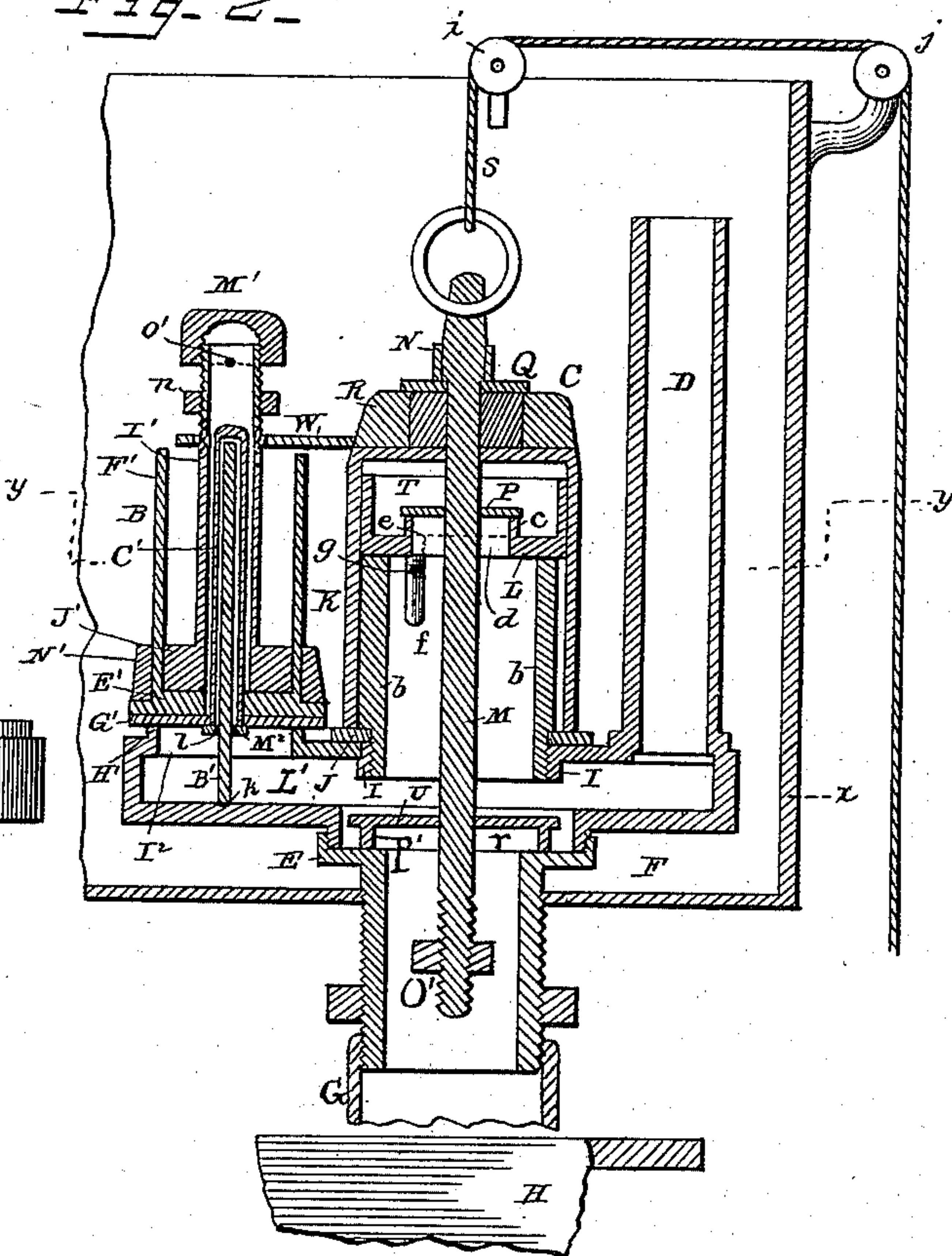


Fig. 3-

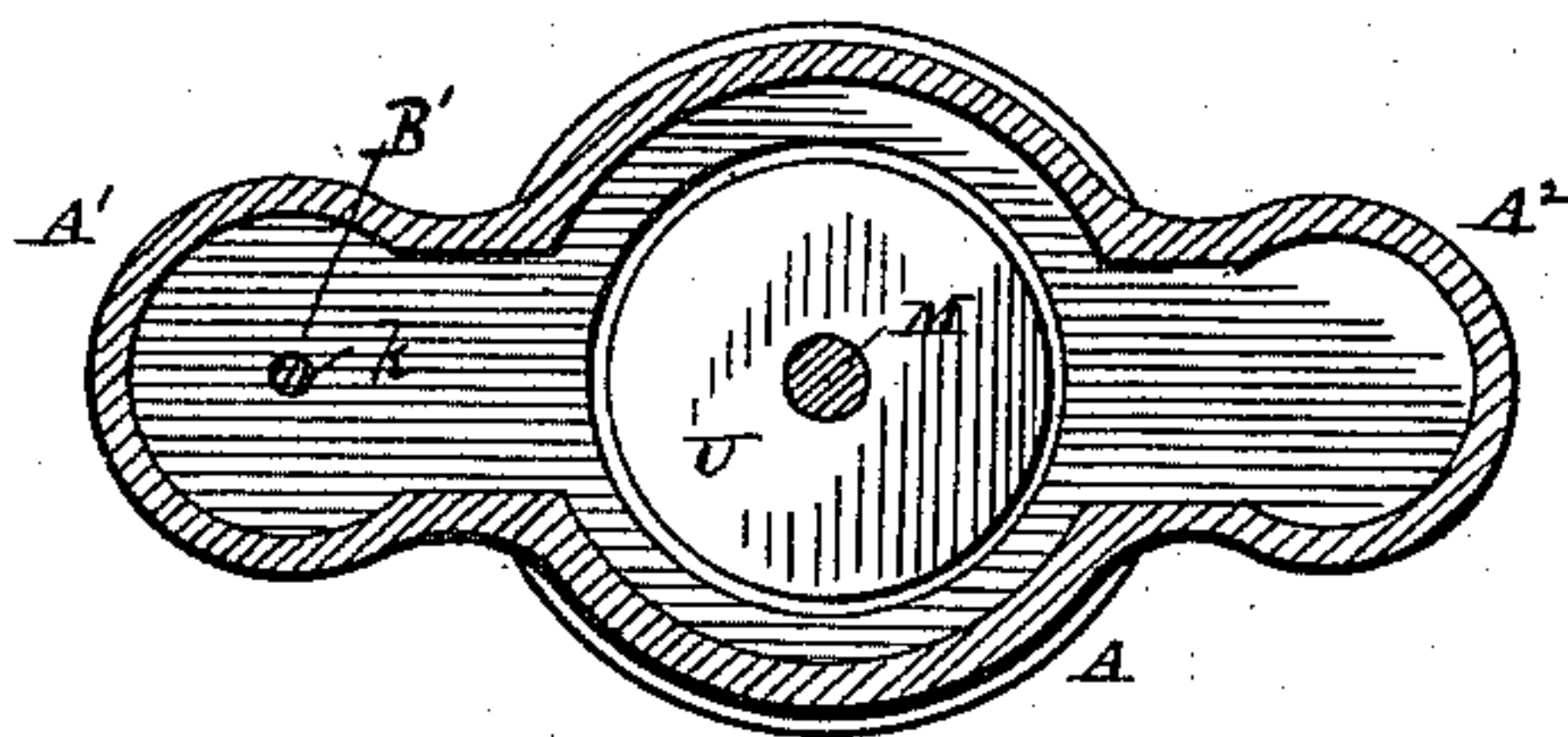
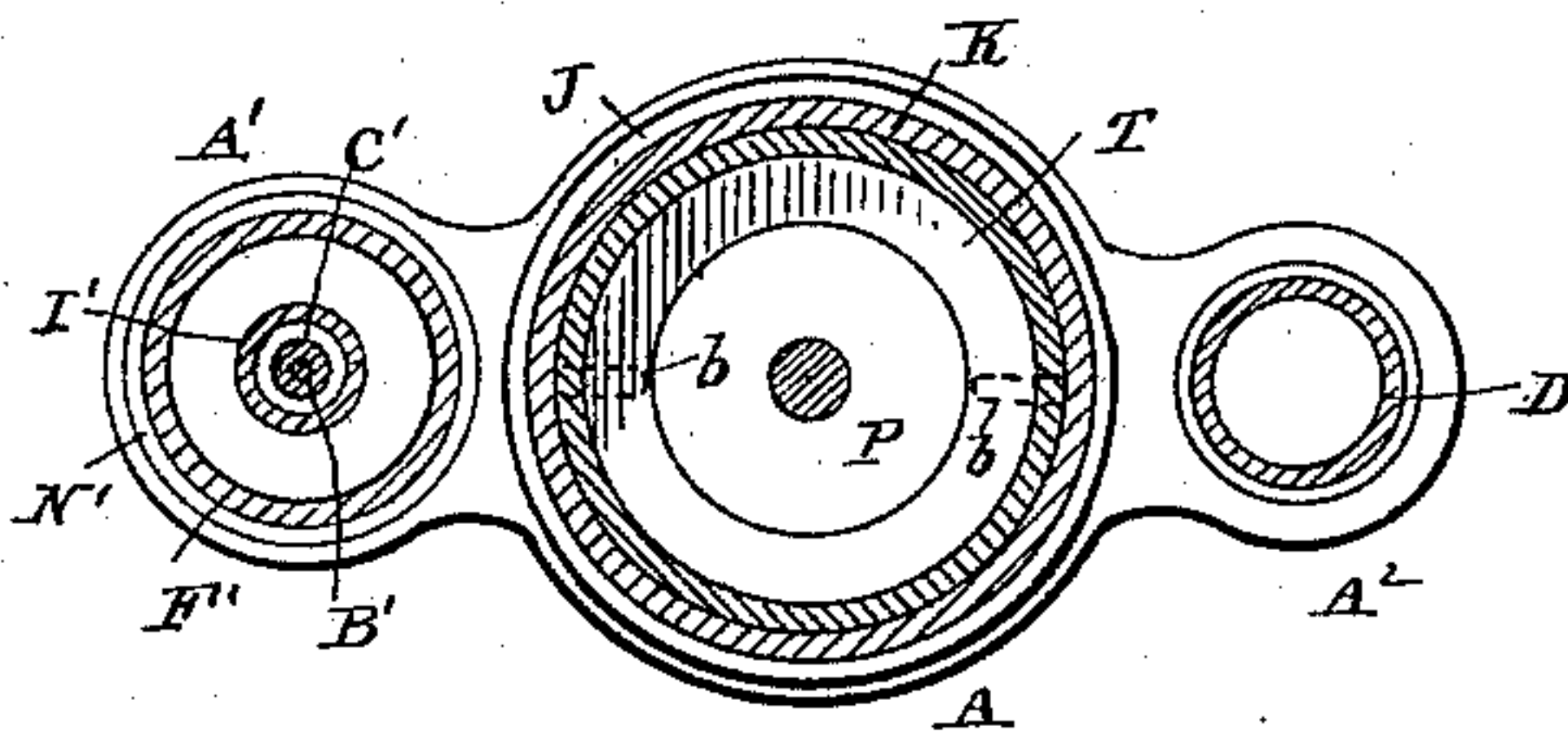


Fig. 4-



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# UNITED STATES PATENT OFFICE.

THOMAS CAMPBELL AND JAMES H. McPARTLAND, OF ST. JOHN, NEW  
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## DOUBLE FLUSH-VALVE FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 383,858, dated June 5, 1888.

Application filed August 5, 1887. Serial No. 216,219. (No model.)

*To all whom it may concern.*

Be it known that we, THOMAS CAMPBELL and JAMES H. McPARTLAND, of St. John, in the county of St. John and Province of New Brunswick, Dominion of Canada, have invented a new and useful Improvement in Double Flush-Valves for Water-Closets; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to improvements in double flush-valves which are especially designed for water-closets where a head of water is attainable, which improvements will be fully understood from the following description, taken in connection with the annexed drawings, in which—

Figure 1 is a side elevation of the improved device. Fig. 2 is a vertical sectional detail of the device as applied to an elevated water-tank. Fig. 3 is a horizontal section taken in the plane indicated by dotted line *xx* on Figs. 1 and 2. Fig. 4 is a horizontal section through the device, as indicated by dotted line *yy* on Fig. 2.

Referring to the annexed drawings by letter, A designates a hollow shell of suitable diameter and vertically arranged. This shell is formed with vertical branches A' and A<sup>2</sup>, of less diameter than the central branch. To this shell and these branches are suitably applied a wash-valve, B; also, what we denominate the "afterwash" C, and the overflow-pipe D. Secured to the bottom of the shell A is a flange-coupling, E, by which the shell A is secured to the bottom of the water-tank F, and to which the pipe G is connected, which leads into the basin H. Upon the upper annular surface of the shell A is held, by the hollow screw-threaded gland I, the packing J, of such material as will form a water-tight joint or seal with the lower edge of the cylinder K. From the gland I rise two uprights, *bb*, which are narrower, as shown by dotted lines on Fig. 4, and on which rests a piston, T, which is adapted to fit the inner bore of the cylinder K, which piston is formed with the base L and the annular rim *c*. Through the base L is an opening, *d*, screw-threaded, and the screw-

threaded passage *e*, which latter receives the vent-screw *f*, formed with a vent-aperture, *g*, through which the water and air may be either admitted or emitted to or from the space in the cylinder K, above the washer P and the base L of the piston T, as circumstances may require. The cylinder K fits over and on the piston T.

Through the center of the base L of the piston T is passed the rod M, which also passes through the top of the cylinder K, and to the upper end of this rod and to the top of the said cylinder is secured a collar, N, which is adapted to make such a tight joint that water will not enter at the top of the cylinder K.

Upon the upper annular edge of the piston T is the washer P, which, when the main valve is being raised, will admit the water through the opening *d* of the base L of the piston T, for a purpose hereinafter explained.

Between the top of the cylinder K and the washer Q is the weight R, for the purpose of forcing the valve downward by gravity after the seat of the water-closet has been released.

The rod M is secured to the top of the cylinder K by the collar N and the washer Q in such manner that when the rod M is drawn upward by the operating-cord S the cylinder K will also rise with it, and thereby permit a flow of water between the bottom of the cylinder and the packing J.

The operating-cord S is attached, as shown, to the upper end of the rod M, and passes thence over pulleys *i* and *j* and to convenient position to the seat of the water-closet.

On the lower end of the rod M is attached the plate U, which when the said rod is raised closes the opening of the gland I and prevents the escape of water from the tank F through the shell A into the basin H, until the pressure on the seat of the water-closet has been released. We thus insure a forewash of the basin H before it has been used, and also an afterwash when it has been used.

Secured to the bottom of the branch A' at K is a small guide-rod, B', upon which the tube C' slides when pressure is applied upon the seat of the water-closet. Through a central opening, *l*, of the bottom E' of the cylinder F' and the washer G' is passed and secured, 100



by the nut  $M^2$ , the tube or hollow rod  $C'$ , closed or sealed at the top to prevent water entering through it into the hollow shell  $A$  when the valve is closed. The washer  $G'$ , when the cylinder  $F'$  is down or closed, fits closely to the collar  $H'$  of the branch  $A'$ , making a sealed joint.

The tube or piston-rod  $I'$  is fitted over the tube  $C'$  and attached to the cylinder  $K$  of the afterwash  $C$  by the arm  $W$ . On the lower end of the piston-rod  $I'$  is the plunger  $J'$ , which fits the bore of the cylinder  $F'$ , so that when the tube or piston-rod  $I'$  is lifted by the said arm  $W$  the cylinder  $F'$  of the forewash  $B$  will lift with it, thus permitting a flow of water beneath the cylinder into the branch  $A'$ , thence through the opening  $I^2$  into the shell  $A$ , and down into the basin  $H$  through the pipe  $G$ , thereby insuring a thorough washing of the basin before being used.

On piston-rod  $I'$ , above the arm  $W$ , (which is free to move on the piston-rod  $I'$ ), is a nut,  $n$ , by which the said rod is lifted when the cylinder  $K$  of the afterwash is raised by the operating-cord  $S$ . The nut  $n$  is also designed for regulating the length of the stroke or lift of the piston-rod  $I'$  by screwing said nut upward or downward, as may be required.

On the upper end of the tube or piston-rod  $I'$  is a small vent,  $o'$ , and a cap-nut,  $M'$ . By adjusting this cap-nut more or less over the vent-hole  $o'$ , the time which the valve will admit the water to flow may be lengthened or shortened.

On the outside of the cylinder  $F'$  at its bottom is fitted the weight  $N'$ , by which the cylinder is forced downward as the air and water are gradually admitted through the opening  $o'$  into the tube  $C'$  and down into the cylinder between the plunger  $J'$  and the bottom plate,  $E'$ .

The operation is as follows: The upward movement of the rod  $M$ , by a pressure applied to the water-closet seat, which is attached to the operating-cord  $S$ , will first lift the cylinder  $K$ , when the arm  $W$  will strike the fly-nut  $n$ , when both the cylinder  $K$  and tube or piston-rod  $I'$  will rise simultaneously with the rod  $M$ , drawing with them by suction the cylinder  $F'$ . The nut  $O'$  on the bottom of the rod  $M$  will also lift the plate  $U$  until it strikes the lower edge of the gland  $I$ , and thus, during the pressure on the seat, preventing the water from passing through the opening of the gland  $I$  into the hollow shell  $A$ , but admitting it to pass between the leather washer  $G'$ , on the bottom of the cylinder  $F'$ , and the collar  $H'$  into the branch  $A'$ , thence through the opening  $L'$  in the hollow shell  $A$ , and down into the basin  $H$  through the pipe  $G$ . In this manner a thorough flushing of the basin  $H$  is always insured before being used.

The valve of the forewash  $B$  is gradually closed by the admittance of the air and water through the vent-hole  $o'$  into the interior of the piston rod or tube  $I'$  and down under the plunger  $J'$ , thereby forcing the cylinder  $F'$  to fall slowly until the leather  $G'$  again rests upon the collar  $H'$ , effectively cutting off the flow of water from the basin while in use; but when the pressure on the seat of the basin is removed the plate  $U$ , formed with the two short uprights  $P' P'$  on the under side, will fall until these uprights will rest upon the bottom of the head of the coupling  $E$ , leaving the opening  $r$ , between the plate and the bottom of the shell, thus admitting water to flow freely from the tank  $F$  into the basin  $H$ , until the bottom of the cylinder  $K$ , which will gradually fall again, rests upon the leather washer  $J$ , when the flow of the water will stop. In this manner a thorough flushing or afterwash of the basin  $H$  is always insured. During the operation of raising the main valve the suction thus caused will lift the washer  $P$  and admit water to flow up through the opening  $d$  of piston  $T$  into the chamber above this piston, and after the said main valve is arrested in its ascent the washer  $P$  will close on its seat and trap the water above it, after which this trapped water will slowly flow back through the vent  $g$ .

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

In combination with a tank, the double flush-valve consisting of a hollow base having end branches and an outlet leading to a basin, an overflow-pipe,  $D$ , a loaded cylinder,  $K$ , vertically movable and provided with a packing,  $J$ , and guides  $b b$ , as described, a piston,  $T$ , provided with a central opening, a vent,  $g$ , and a washer,  $P$ , a rod,  $M$ , secured to said cylinder and provided with a nut,  $O'$ , a plate,  $U$ , provided with short uprights  $P'$  and adapted to be lifted by said nut for closing the passage surrounded by gland  $I$ , the loaded cylinder  $B$ , vertically movable and provided with a packing,  $G'$ , the arm  $W$ , for lifting cylinder  $B$ , the piston  $J$ , with its hollow rod passing freely through said arm and provided with an adjustable nut, a vent and a cap-screw therefor, the tube  $C'$ , secured to the piston  $J'$ , as described, and the central guide-rod,  $B'$ , secured to the hollow base  $A$ , all constructed and adapted to operate substantially in the manner and for the purposes described.

In testimony whereof we affix our signatures in presence of two witnesses.

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Witnesses:

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