

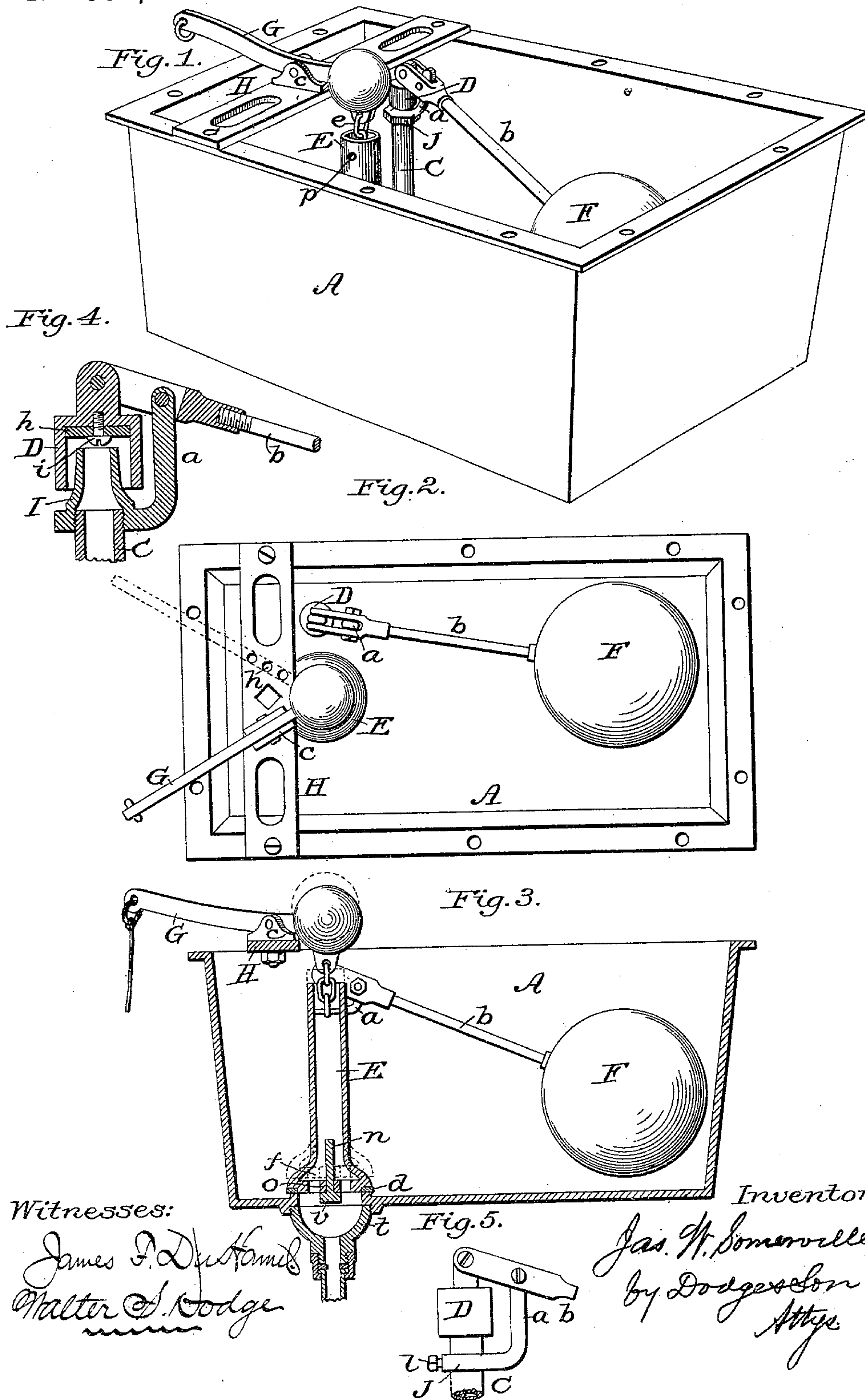
(No Model.)

2 Sheets—Sheet 1.

J. W. SOMERVILLE.  
TANK FOR WATER CLOSETS.

No. 332,758.

Patented Dec. 22, 1885.



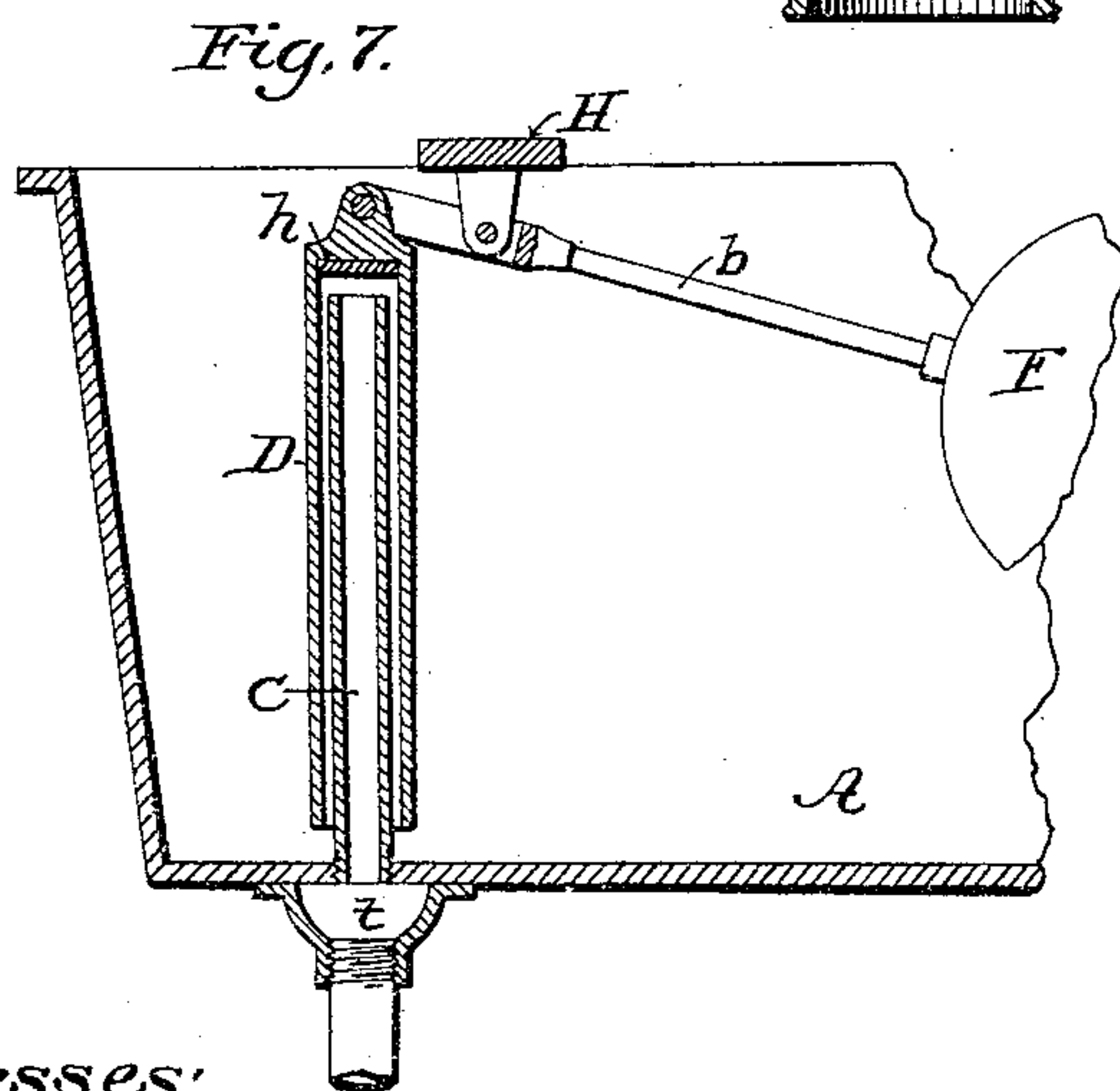
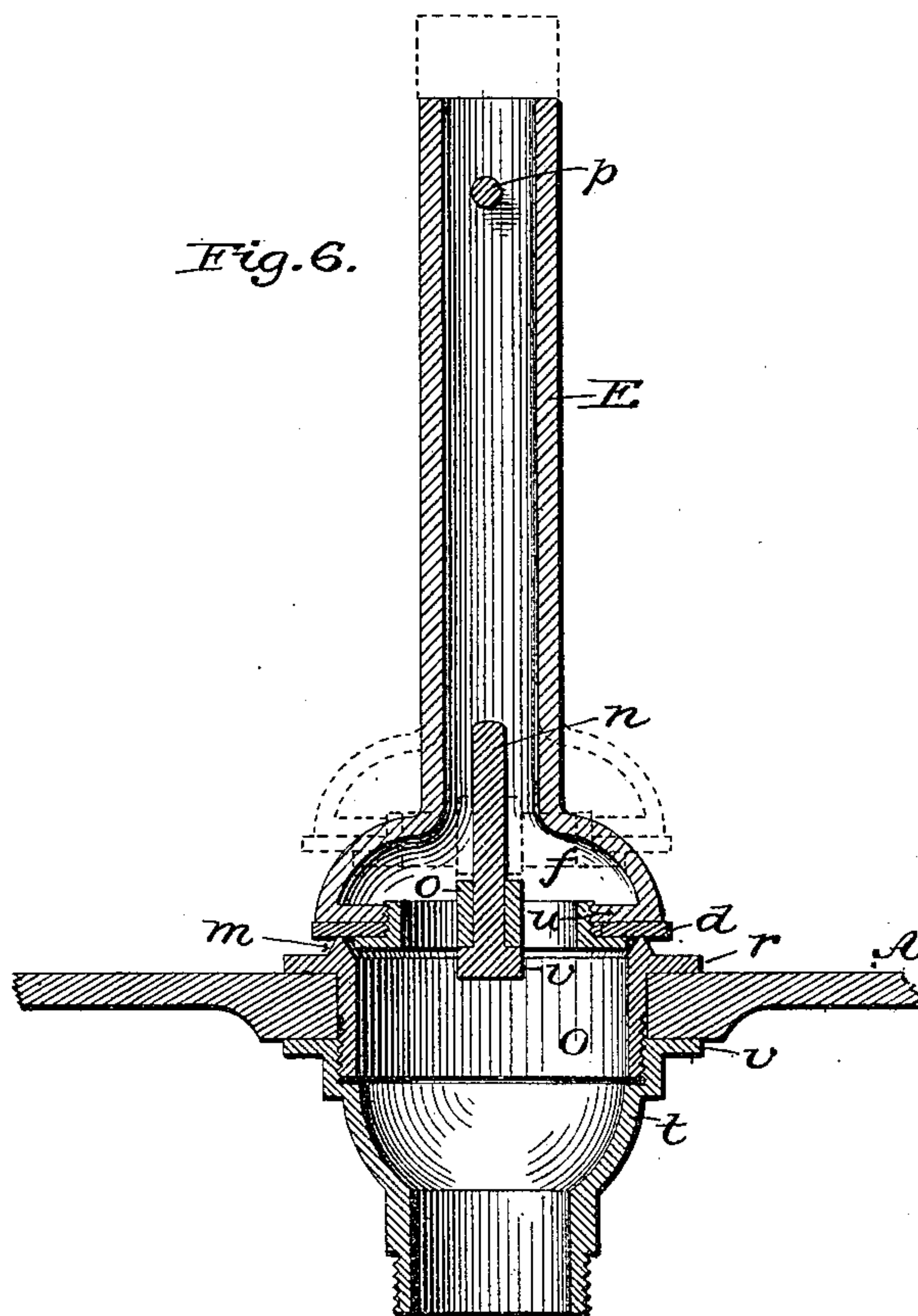
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Witnesses:

James F. DeHamel  
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Inventor  
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# UNITED STATES PATENT OFFICE.

JAMES WILLIAM SOMERVILLE, OF WASHINGTON, D. C.

## TANK FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 332,758, dated December 22, 1885.

Application filed October 7, 1885. Serial No. 179,189. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES W. SOMERVILLE, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Tanks for Water-Closets, of which the following is a specification.

My invention relates to cisterns or tanks for use in connection with water-closets; and the invention consists in certain improvements hereinafter more fully set forth.

Figure 1 is a perspective view of a tank embodying my improvements. Fig. 2 is a top plan view, and Fig. 3 is a longitudinal vertical section of the same. Fig. 4 is a vertical central section of the inlet-valve, and Fig. 5 is a side view of the same, showing its supporting-arm made adjustable. Fig. 6 is a central vertical section of the combined overflow-pipe and outlet valve or plug. Fig. 7 is a modification.

The object of my present invention is more especially to produce a tank for water-closets which shall avoid the noise incident to the inlet and outlet of the water, and which at the same time shall be simple and cheap to construct and not liable to get out of order.

Since the introduction of flushing water-closets many forms of tanks and attachments have been devised; but one of the most serious objections to them, as usually constructed, is the noise produced by the water in entering and leaving the tank, more especially the latter, and which in private residences, as well as elsewhere, is very annoying. By my invention this objection is entirely overcome.

To construct an apparatus on my plan, I provide a tank, A, of suitable size, and which may be made of cast-iron or copper, or of wood lined with lead or other metal not liable to corrode. A supply-pipe, C, which may extend up through the bottom, or be brought through the side or over the top edge of the tank A, is provided, and so arranged that its mouth or upper end shall stand upright within the tank, at a height a little below the top edge of the tank, the simplest manner being to run the pipe C directly up through a hole in the bottom of the tank and render it water-tight, either by screwing into the bottom or by the use of packing-rings held in place by washers screwed on above and below. To this pipe C,

near its upper end, I secure an arm, *a*, which may be cast integral with a mouth-piece, I, arranged to screw onto the end of pipe C, as shown in Fig. 4, or it may be made with a sleeve or ring, J, to fit over the pipe C, and be held in place thereon by a set-screw, *l*, as shown in Fig. 5, this latter plan enabling the float and valve to be adjusted vertically, as may be desired. I then provide a valve for closing this pipe C, which is made in the form of an inverted cup, as shown at D in the several figures, it being of an internal diameter somewhat larger than the exterior of the pipe C, or of the mouth-piece I, in case the latter be used, so as to leave a clear annular space between the walls of the valve D and the exterior of the pipe or mouth-piece I, as clearly shown in Fig. 4. The vertical walls of this cup-valve D, as shown, are made to extend for some distance downward over the pipe or mouth-piece, so that when raised to its fullest extent the water flowing in through pipe C shall be directed downward along the sides of the pipe, thus rendering it noiseless, or very nearly so. A washer, *h*, of leather, rubber, or composition, is secured within the valve D, as shown, to press upon the mouth-piece, or the mouth of the pipe, in case no separate mouth-piece be used, said washer being held in place by a screw, *i*; or, if made of the proper size, it may be crowded into place and held by friction, as there is nothing tending to force it from its seat. The valve D is pivoted to the end of a rod, *b*, having a large float, F, secured to its opposite end, the rod *b* being in turn pivoted to the arm *a*, as shown in Figs. 1, 2, 3, 4, and 5, the fulcrum of the rod *b* being located very close to the pipe C, so that the greater leverage of the longer arm of the rod, together with the buoyancy of the large float, shall exert sufficient force to hold the valve closed under the greatest pressure that the incoming water is ever likely to have.

I would remark that the side walls of the valve D may be made to extend down any desired distance. For instance, it may be in the form of a tube closed at its upper end, and of such a length as to reach to very near the bottom of the tank, as shown in Fig. 7, so that its lower end shall always be immersed



in the water, except when the tank is entirely emptied, or very nearly so; but which will very seldom, if ever, happen, it only being necessary in such case to provide a separate arm, detached from the pipe C, to pivot the float-rod to. In practice, however, I find that the cup-valve made to project down over the mouth of the pipe C to the extent shown in Fig. 4 answers the purpose admirably.

Instead of a separate delivery-compartment into which the water first flows from the tank and from thence to the closet, I simply provide a discharge-hole in the bottom of the tank and secure thereto a coupling, *t*, for the attachment of the pipe leading to the closet. In Fig. 3 I have shown this coupling screwed into a projection surrounding the orifice on the under side of the bottom, there being a similar annular projection on the inside for the outflow-valve to seat itself upon. In Fig. 6 I have shown a modification of this plan, there being a short tube, O, fitted in the hole in the bottom of the tank, this tube O being made with a radial flange, *r*, to fit upon the bottom, and with a vertical annular lip or projection, *m*, for the valve to rest upon when closed, the body of this tube O projecting through the bottom far enough to permit the coupling *t* to be screwed thereon, the coupling *t* being also provided around its upper end with a radial flange, V, which fits close against the under side of the bottom, as shown, it being usual to interpose red lead, or a washer of soft lead or other material, between these flanges and the bottom to render the joint absolutely water-tight.

Instead of using a separate overflow-pipe and a separate discharge valve or plug, I combine these two in one, as shown in Figs. 1, 3, and 6. The overflow-pipe consists of a piece of loose pipe or tube, E, provided at its lower end with an annular enlargement, as shown more clearly in Fig. 6, this enlargement being provided at its bottom with an inwardly-projecting flange, *u*, thus forming within this enlargement an internal annular chamber, *f*, as shown in Fig. 6. An opening is left in the bottom of this chamber J, a little greater in diameter than the bore of the tube above the enlargement, into which is screwed a ring, *w*, which has a radial flange serving to clasp between it and the bottom of the enlargement a packing-washer, *d*, of leather, rubber, or similar material, as shown in Fig. 6. To this ring *w*, or, in case it be omitted, as shown in Fig. 3, then to the bottom of the chamber J, is secured a cross-bar, *o*, which has a hole at its center, through which a vertical guide-pin, *n*, projects, as shown in Figs. 3 and 6, the pin *n* being held in place by another cross-bar, *v*, formed with or secured to the ring O, in case the latter be used, or to the bottom of the tank, or the coupling *t*, as may be most convenient, these parts thus serving to guide the pipe E in a vertical line as it is raised and lowered, and causing the outlet-valve to prop-

erly seat itself when closed. This combined overflow-pipe and valve I connect by a chain, *e*, to a lever, G, pivoted to a movable bracket, *c*, secured to a cross-bar, H, resting across the top of the tank, as shown in Figs. 1, 2, and 3, the outer end of said lever having a cord or chain attached to it, so that by pulling on the cord the pipe and valve can be raised, and thus permit the water to escape so long as it is held open. In the cross-bar H two sets of holes, *h*, are arranged diagonally at opposite sides of the center, or of the position where the outlet is located, as shown in Fig. 2, so that the bracket *c*, to which the lever G is pivoted, can be secured at either side of the outlet at an angle, whereby its outer end can be thrown to the one or the other side, as shown by the dotted lines in Fig. 2, thus enabling the tank to be secured with either of its longer sides to the wall, and still have the lever G in such a position that the cord attached thereto will pass down near the wall, where it is out of the way and not so liable to be interfered with. The advantage of this is that it enables the tank to be located in any position that may be required, it sometimes being necessary to locate it at one side of the closet and sometimes at the other, according to circumstances, the shape of the room, &c.

It will be observed that the coupling *t* is considerably larger in diameter than the pipe leading therefrom, and is semispherical, or funnel-shaped, and that the chamber *f* is of equal diameter, or nearly so.

In practice I find that when the pipe E is raised the water not only flows into the mouth of the coupling *t* equally from all sides, but also rises within the tube E to a considerable height, and, filling the chamber *f*, excludes the entrance of air, and thereby prevents the gurgling and noise usually produced when the water is permitted to flow from these tanks.

The apparatus, as a whole, is efficient, simple, and cheap, and by avoiding the noise overcomes one of the greatest objections to the use of flushing-tanks as heretofore constructed.

I am aware that an overflow-pipe has heretofore been made to serve also as a valve or plug, but not with an enlarged internal chamber. I am also aware that a cup-shaped valve has been described as made with a series of holes or grooves in its side walls, and that a cup-shaped valve has been shown applied to the mouth of a horizontal delivery-pipe inclosed within a case, having a nozzle delivering the water, the same as an ordinary spigot, and therefore I do not claim such; but,

Having thus fully described my invention, what I claim is—

1. In combination with the vertical supply-pipe C, the cup-shaped valve D, having its vertical walls arranged to project downward around said pipe, with an unbroken annular space between them, said parts being constructed and arranged to operate substantially as and for the purpose set forth.



2. The combined overflow-pipe and valve E, provided at its lower end with an internal annular chamber, *f*, formed by an enlargement of the pipe, and the inwardly-projecting flange *u* at the bottom of said enlargement, substantially as shown, and for the purpose herein set forth.

3. In combination with the tank A, the cross-bar H, provided with the two sets of

holes *h*, and the adjustable bracket or lever- support *c*, said parts being arranged to operate substantially as described, whereby the valve-lever can be adjusted to one or the other side, as and for the purpose set forth.

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