

No. 855,786.

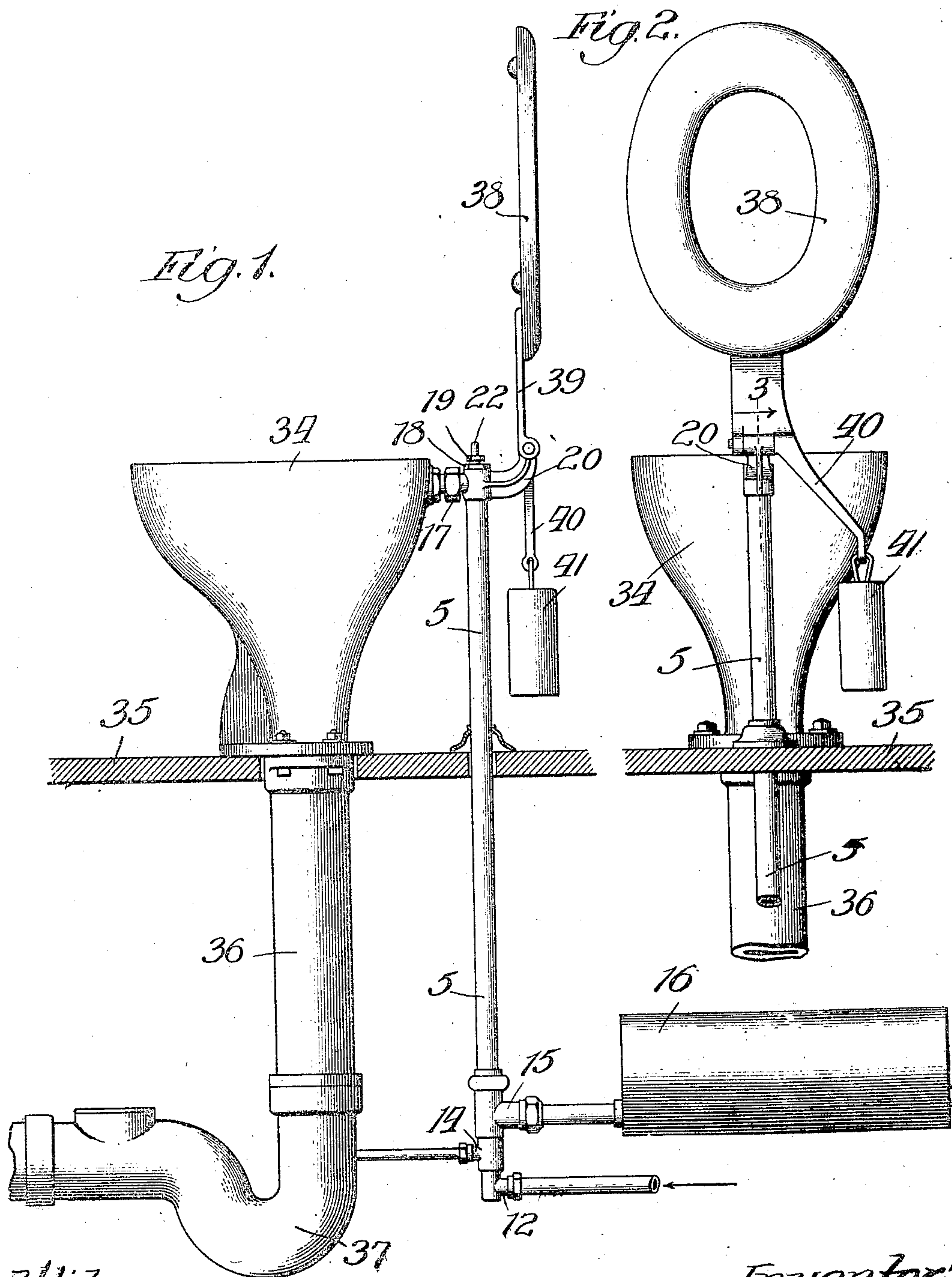
PATENTED JUNE 4, 1907.

J. KELLY.

WATER CLOSET FLUSH VALVE DEVICE.

APPLICATION FILED NOV. 24, 1906.

2 SHEETS—SHEET 1.



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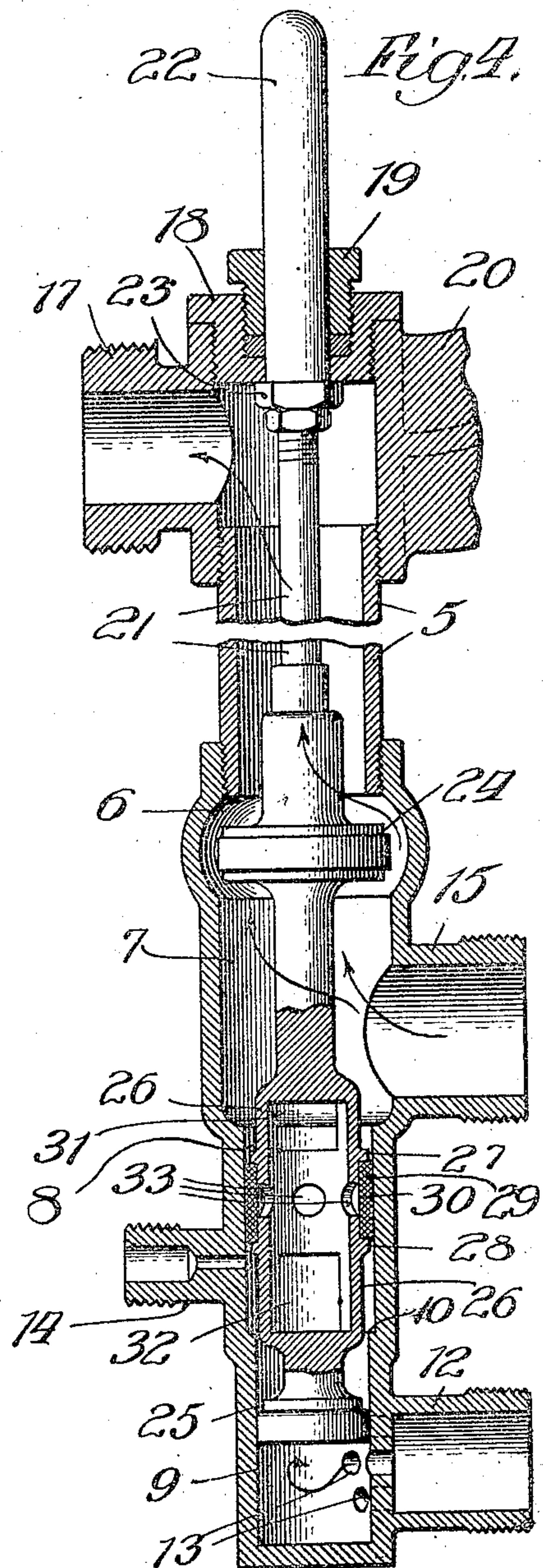
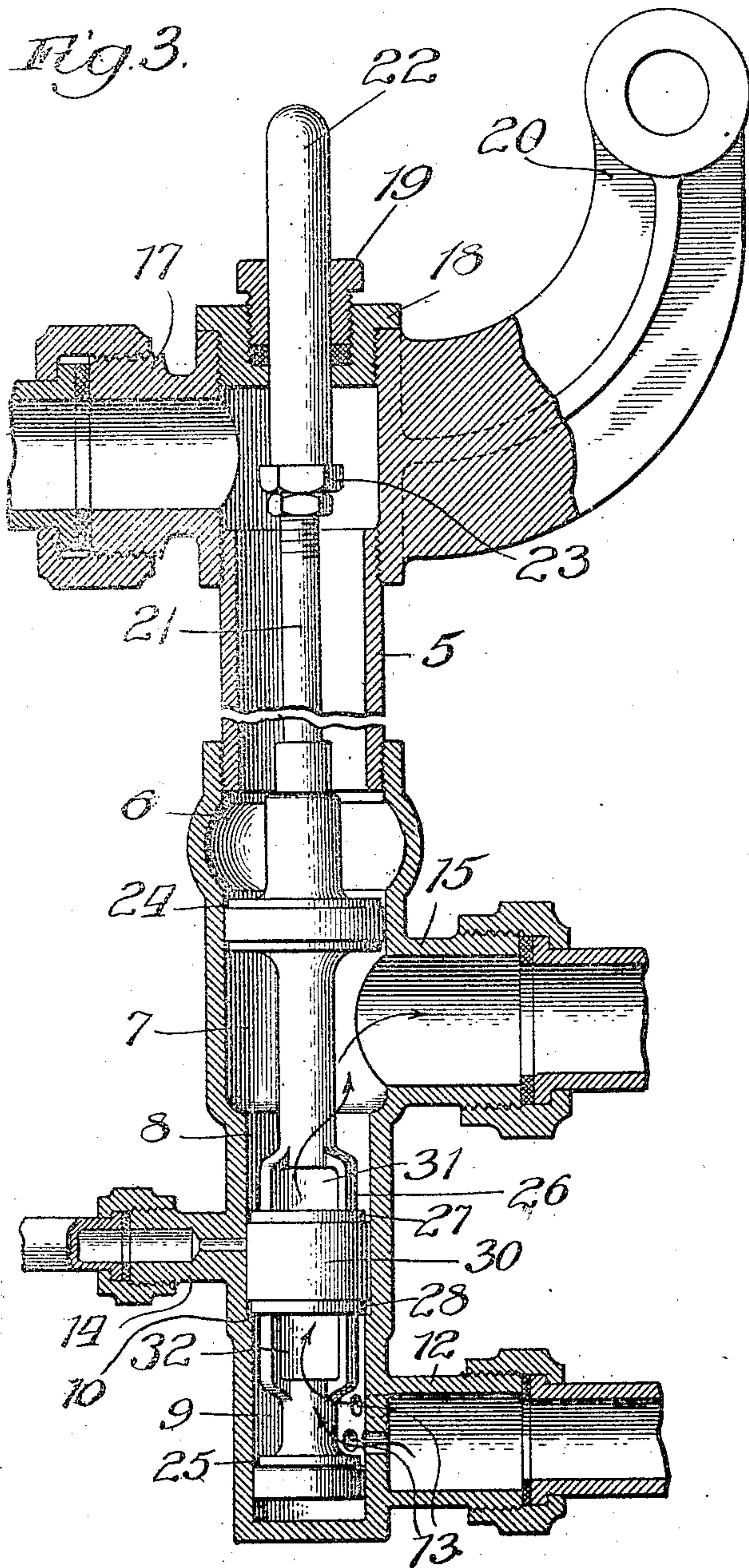


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2 SHEETS—SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN KELLY, OF CHICAGO, ILLINOIS.

## WATER-CLOSET FLUSH-VALVE DEVICE.

No. 855,786.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed November 24, 1906. Serial No. 344,809.

*To all whom it may concern:*

Be it known that I, JOHN KELLY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Water-Closet Flush-Valve Devices, of which the following is a specification.

My invention relates to an improvement in the class of valve-devices for use in controlling the supply of water to the flush-rim of a water-closet bowl for flushing the latter; and it consists in the construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 shows a known type of water-closet in side elevation, equipped with my improved valve-device; Fig. 2, a broken view of the same in rear elevation; Fig. 3, an enlarged broken sectional view of the valve-device, the section being taken at the line 3 on Fig. 2, viewed in the direction of the arrow, and showing the valve in its normal condition of admitting the supply of flushing water to the tank, and Fig. 4, a similar view of the same showing the valve-device in its condition of shutting off that supply.

The valve-casing 5, which is of general cylindrical shape, is shown to be formed of tubular sections, coupled together, with an enlargement forming a chamber 6 in the lower section, a narrower enlargement forming a chamber 7 below the chamber 6, below which is the chamber 8 above the lowermost and narrowest chamber 9, with a shoulder 10 between the two affording a stop. A nipple 12 leads from the chamber 9 about a plurality of openings 13 in the casing, and is adapted to be connected with a suitable supply (not shown) of water under pressure; a draining-nipple 14 leads from the chamber 8 and is adapted to be connected with a trap, hereinafter referred to; a nipple 15 leads from the chamber 7 and is adapted to be connected with a flush-tank 16, which is preferably a closed tank, as represented in Fig. 1; and a nipple 17, which is adapted to be connected with the flush-rim of a water-closet bowl, leads from the upper part of the casing.

As represented, the nipple 17 forms part of the uppermost section of the casing 5, which is closed at its upper end by an annular screw-cap 18 containing a stuffing-box 19; and this upper section also has extending from it, backwardly, a curved seat-supporting arm 20. The casing is also closed at its lower end.

Within the casing is reciprocably confined a valve-stem 21, the upper portion of which is a diametrically enlarged section to adapt it to fit guidingly in the annular cap 18 and stuffing-box 19, through which it works, and which is screwed, to render it adjustable, on the upper end of the lower section of the stem where it is provided with a hexagonal circumferential flange 23, affording a stop for a purpose hereinafter mentioned. Adjacent to the chamber 6, the rod carries rigidly a circumferentially packed valve 24, closely fitting the interior wall of the casing below that chamber; on its lower end the stem carries a valve 25 closely fitting about the interior of the chamber 9, and between these two valves the stem is expanded into an elongated hollow section 26 provided between its ends with circumferential flanges 27 and 28 spaced apart to form between them a circumferential recess 29 for confining an annular band 30, of rubber or other expansible packing material, constituting a valve. Openings are provided at 31 and 32 in the expanded section 26, above and below the recess 29, in which latter are also provided a circumferential series of port-like openings 33.

To apply my improved valve-device in the operative position represented in Fig. 1, the nipple 17 is suitably coupled with the flushing-rim of a water-closet bowl 34 rising from a floor 35, below which extends the soil-pipe 36 containing a trap 37 having connected with it the draining-nipple 14; and with the tank 16, represented as occupying a position below the floor 35, is coupled the nipple 15. A seat 38 has an arm 39 extending from it, at which it is hinged to the curved arm 20, and from the hinge extends a rigid arm 40 having a weight 41 suspended on it tending to raise the seat to the position in which it is represented. The upper end of the valve stem registers with the seat-carrying arm 39.

The operation is as follows: With the parts of the valve-device in the relative positions they are shown to occupy in Fig. 4, lowering the seat and pressing the arm 39 against the upper projecting end 22 of the stem, depresses the latter with the result of lowering the valve 25 below the plane of the inlet-ports 13, of bringing the valve 30 into position to close the outlet in the nipple 14, and the valve 24 into position to close communication between the chambers 7 and 6. Thus water from the supply thereof may enter the



chamber 9 by way of the nipple 12, course through the valve 30 about the expanded stem-section 26, and thus enter the chambers 8 and 7 to flow from the latter, by way of the nipple 15, into the tank 16 and fill it to the extent permitted by its air-bound condition. In flowing through the valve 30, the water, by its pressure exerted through the holes 33 against the interior surface of the packing 30, expands the latter to closely cover the drain-outlet and thus prevent any of the supply from loss by draining. When the pressure is removed from the seat it rises under the stress of the weight 41, thereby relieving the valve-stem from depression. As the result of this release of seat-pressure, the pressure of water in the tank 16 exerted against the valve 24 raises the stem until arrested by engagement of the stop 23 thereon with the cap 18, thereby bringing the valve 25 above the plane of the ports 13 to shut off the water-supply to the valve-device, and bringing the valve 24 into the chamber 6 to permit the discharge from the tank to pass that valve and flow upwardly through the casing and nipple 17 into the flush-rim of the bowl to flush the latter. In the rise of the valve-stem, the valve 30 is carried above the outlet in the draining-nipple 14, to uncover it and permit any remnant of water in the tank and casing to drain off by way of the expanded hollow stem-section 26, thus insuring thorough evacuation of the valve-device of water against its freezing therein.

As will be seen, by turning the stem-section 22 in one direction or the other, the extent of play of the stop 23 relative to the cap 18 may be increased or reduced, to vary accordingly the play of the valve 24, which when permitted to rise more or less closely to the upper end of its containing chamber 6 prolongs the flushing operation by reducing the flow of water past it.

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

In a valve-device of the character described, the combination of a casing containing an inlet near one end adapted to be connected with a water-supply, an opening adapted to be connected with a flush-tank, an outlet adapted to be connected with the flush-rim of a water-closet bowl, and a drain-outlet, a valve-rod reciprocally confined in said casing and provided with valves for controlling said inlet, opening and outlet respectively, and constructed and arranged to be normally upwardly pressed by the water-supply and in such position afford a passage from the tank to the rim, and an adjustable stop on said rod engaging said casing to limit its upward movement under the water-pressure for controlling the flow of water from said tank to the rim.

JOHN KELLY.

In the presence of—

W. B. DAVIES,  
C. W. WASHBURN.