J. KELLY.

FLUSH TANK.

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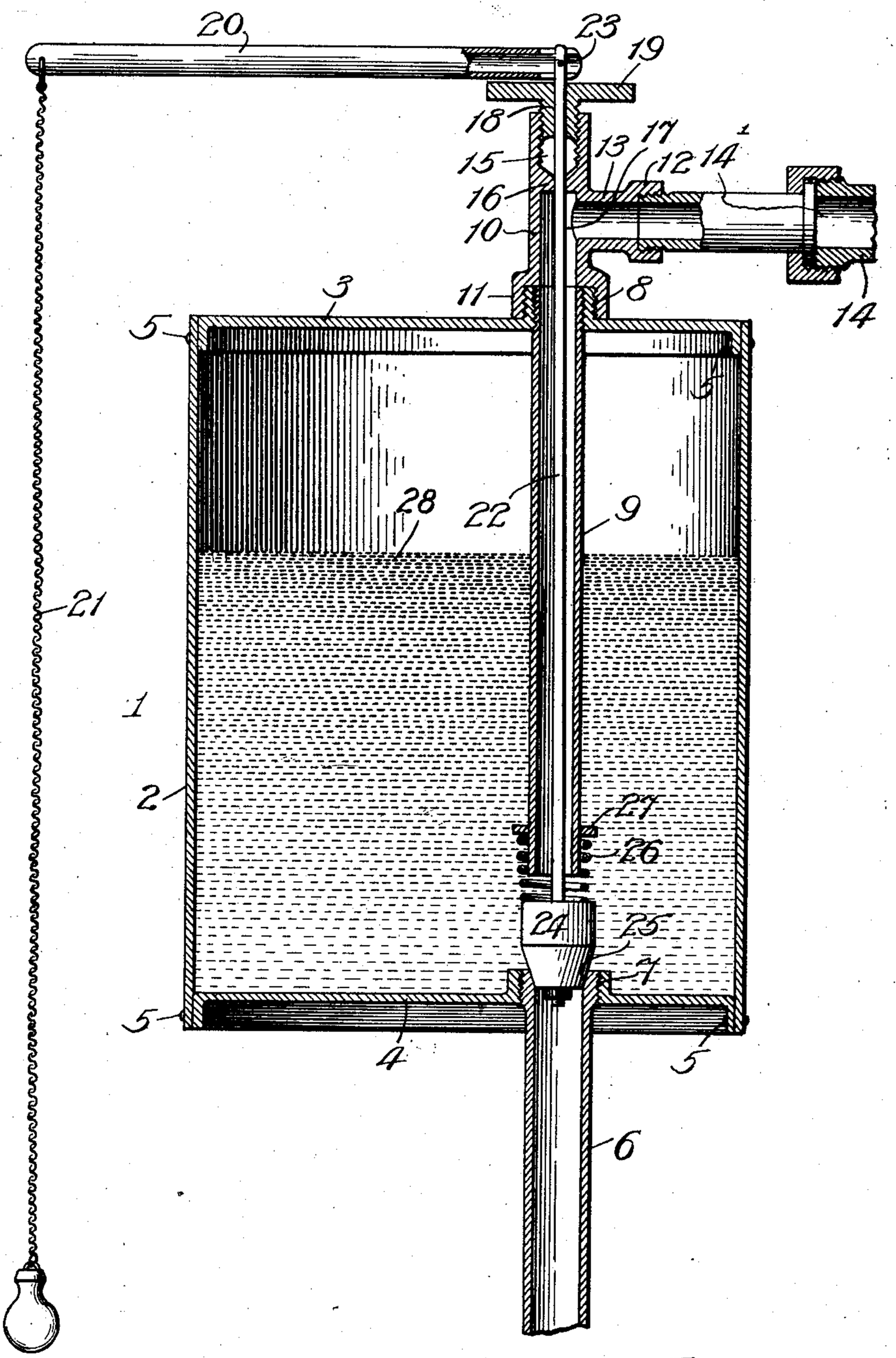
997,560. **Patented July 11, 1911.**



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UNITED STATES PATENT OFFICE.

JOHN KELLY, OF CHICAGO, ILLINOIS.

FLUSH-TANK.

997,560. Specification of Letters Patent. **Patented July 11, 1911.**

Application filed February 8, 1910. Serial No. 542,667.

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 Flush-Tanks, of which the following is a specification.

My invention relates to improvements in water-closet flush-tanks of the class in which the flush-water in the tank, with the latter in overhead or lower position, is under valved confinement therein and compresses air above the water-level in the tank to force the flushing discharge upon opening the valve.

The accompanying drawing is a broken view in sectional elevation of a flush-tank equipped with my improvements.

The tank 1 is preferably constructed of a sheet-metal cylindrical body 2 having circumferentially-flanged upper and lower heads 3 and 4, as malleable-castings, secured in place in the body by rivets 5. The flush-pipe 6 extends to the bowl (not shown) from a flanged discharge-opening 7 in the lower head, into which the pipe is screwed. This opening is shown slightly offset relative to a flanged inlet-opening 8 formed in the upper head, into which is screwed the upper end of a dip-pipe 9 to depend slightly out of alinement with the discharge-opening. A T-head 10 has one leg screwed at its enlargement 11, about the internally threaded flange at the opening 8, and has screwed into the enlarged end 12 of its stem 13 a coupling 14^1 for the water-supply pipe 14, which may lead from any suitable source of water-supply, as from one of city-pressure. The upper end of the head 10 contains an internally-threaded socket 15, and a partition 16 above the pressure-inlet 17, the socket having screwed into it a plug 18 depending from a flat head 19, preferably of disk-shape. A lever 20, which finds its fulcrum against the edge of the head 19, has a handle-equipped pull-chain 21 suspended from its outer end, and its opposite end is bifurcated to embrace the upper end of a valve-rod 22, to which it is pivotally connected by a pin 23. The rod 22 extends, in its raised condition, centrally through the dip-pipe, below which it carries a tapered plug-valve 24 to close against a tapering seat 25 provided to receive it in the upper end of the pipe 6; and the valve is rendered spring-pressed by a spiral spring 26 confined between it and a collar 27 surrounding the dip-pipe.

The flush-water, the level of which in the tank is indicated at 28, is supplied thereto from the pipe 14 through the dip-pipe 9 when the valve is seated, and it compresses air above it in the tank for discharging water therefrom through the flush-pipe 6 each time the valve 24 is raised from its seat on pulling upon the chain 21 to raise the rod 22 by turning the lever 20. The valve is raised against the resistance of the spring 26, the principal purpose of which is to seat the valve in the event of the tank becoming empty, dependence being otherwise had on the water-pressure in the tank for seating it, and when the valve is so raised and while held in that position, it closes the outlet-end of the dip-pipe, thereby, in the event of the tank becoming air-bound by material loss from it of air-pressure, shutting off the flow of water through the dip-pipe while water in the tank flows slowly, by gravity, or trickles out of the tank at the opening 7 until the reëstablishment in it of air-pressure by air entering it through the pipe 6 and bubbling up through the body of water in the tank into the upper part of the latter.

As will be understood, in the normally-operating condition of the tank, water is stored in it, and only a part of the stored supply is discharged for flushing each time the valve is raised, it not being the intention with the type of flush-tank shown that the valve shall be kept open until the tank is emptied; and after each operation of pulling the chain the tank is replenished from the supply-pipe 14 through the dip-pipe to the extent of the amount discharged. The dipping of the pipe 9 into the water in the tank causes it to seal the latter against loss of its air-pressure by way of the head 10 or the pipe 14 in the event of the stoppage of flow through the latter, as by opening a faucet in the course to that pipe or from other cause.

By providing the offset relation to the seat 25 of the valve, when raised it is delayed in seating, when released for the purpose, by the necessity for guiding itself truly into its seat, which its tapered shape causes it to do by affording to it a guide, the rod 22 being sufficiently resilient to permit its deflection by the valve in seating, as represented. This delay produces what is

known as an "after-fill", signifying a reduced after-flow of flushing water to the bowl.

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

1. In combination, a tank of the character described provided with a water-supply inlet in its upper end and a discharge-outlet in its lower end having a flush-pipe extending from it, a valve-seat at said outlet with its center offset relatively to that of said inlet, a dip-pipe depending from said inlet and communicating with the water-supply to the tank, a resilient valve-rod extending through the dip-pipe, a valve on the rod, means for maintaining the valve and rod eccentrical with reference to the valve-seat when said valve is raised, means for guiding the valve to seat it, and means for raising the rod to unseat the valve, for the purpose set forth.

2. In combination, a tank of the character described provided with a water-supply inlet in its upper end and a discharge-outlet in its lower end having a flush-pipe extending from it, a valve-seat leading to said pipe, a dip-pipe depending from said inlet, a T-head on the upper end of the tank at said inlet, having its stem adapted for connection with a water-supply pipe, said head having a socket in its upper end, a head supported in said socket, a valve-rod extending through said heads and dip-pipe, and a lever carrying a pull-chain on one end, engaging at its opposite end with the upper end of said rod and having its fulcrum between said ends on the edge of said socket-supported head, and a valve on the lower end of the rod closing against said seat and opening against the lower end of the dip-pipe to close it, for the purpose set forth.

JOHN KELLY.

In presence of—
R. A. SCHAEFER,
JOHN WILSON.