

H. J. GEURINK.
WATER SUPPLY FOR FLUSH TANKS.
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955,457.

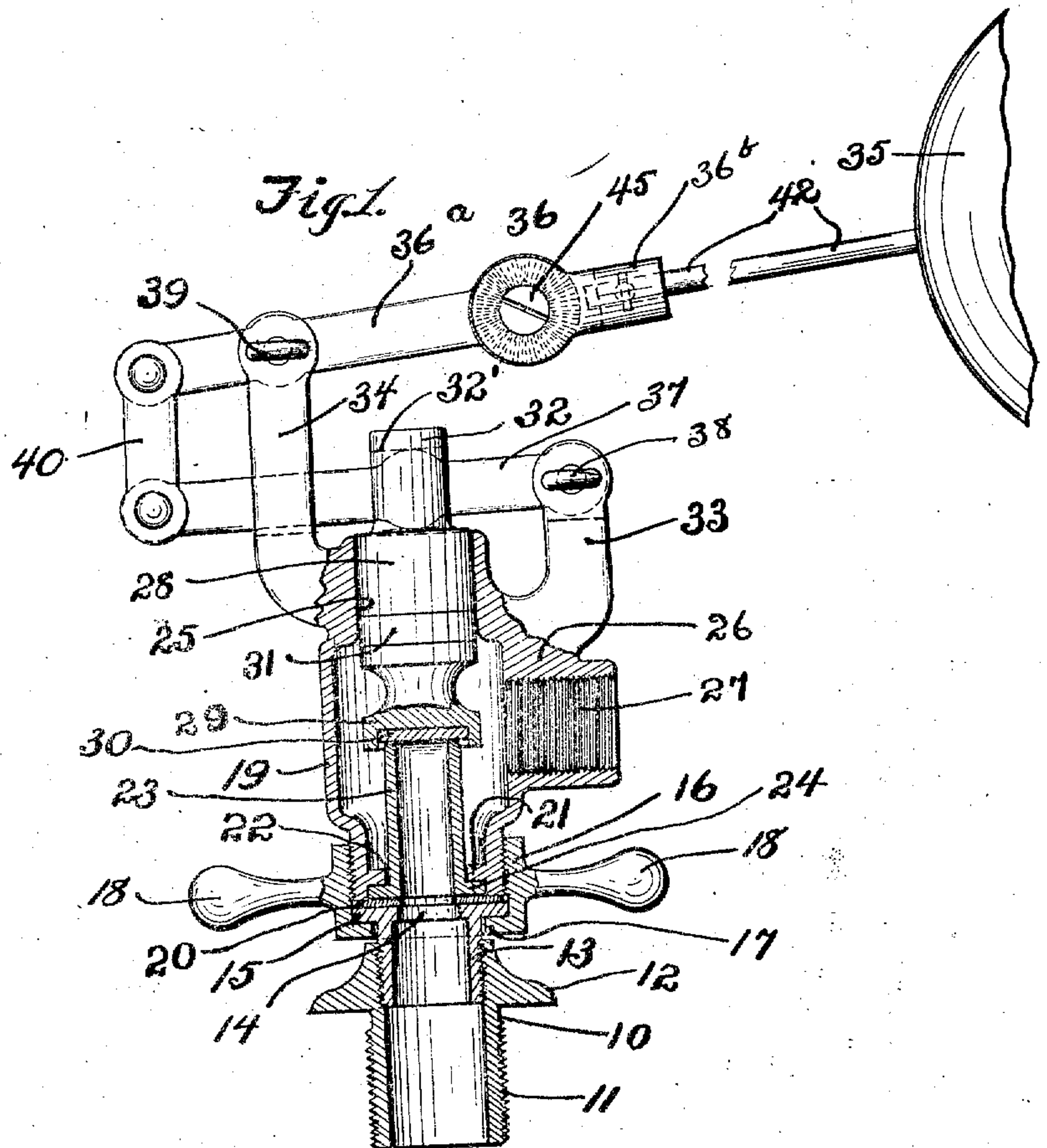
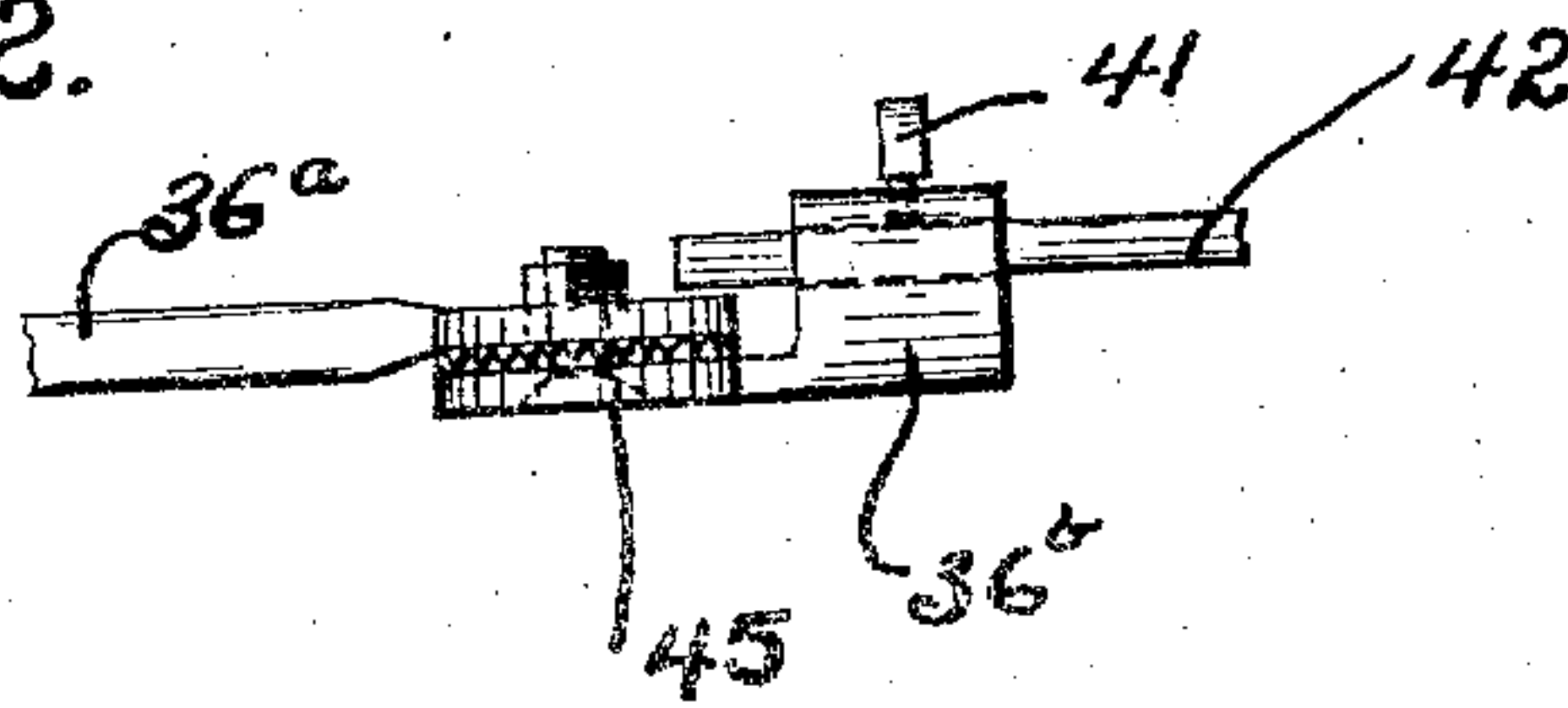


Fig. 2.



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UNITED STATES PATENT OFFICE.

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WATER-SUPPLY FOR FLUSH-TANKS.

955,457.

Specification of Letters Patent.

Patented Apr. 19, 1910.

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To all whom it may concern:

Be it known that I, HARRY J. GEURINK, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Water-Supply Valves for Flush-Tanks; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to water supply valves for flush tanks and particularly to the construction of the valve and valve chamber, the construction of the operating mechanism and to the means for connecting the valve and its operating mechanism to the supply pipe.

One of the objects of the present invention is the provision of a valve in which the usual hissing sound due to the passage of water through the valve opening particularly as the valve is being seated is entirely eliminated.

A further object is the provision of novel means for coupling the valve chamber to a pipe connection usually provided in the bottom of a tank in a manner such that the valve chamber can be quickly placed in position and can be readily removed together with all the operating mechanism.

A still further object is the provision of a valve having a construction such that all the parts may be readily removed for cleaning or repairing.

A still further object is the provision of a novel valve operating mechanism which is compact and will cause a considerable pressure to be transmitted to the valve plunger with a comparatively short arm or lever to which the float is attached, said lever having means whereby the normal height of the float may be readily adjusted.

With these ends in view and to the end of realizing other advantages hereinafter appearing, my invention consists in certain novel details of construction and combination and arrangements of parts which will be described in the specification and set forth in the appended claims.

Reference is had to the accompanying drawings in which—

Figure 1 is a vertical sectional elevation of a valve constructed in accordance with my invention. Fig. 2 is a detail view show-

ing the joint or connection between two parts of the lever carrying the float.

Referring now to the figures of the drawing, 10 represents a pipe connection consisting of a lower tubular member 11, the lower end of which is threaded so that it may be readily attached to a water supply pipe and having a flange 12 adapted to be drawn down tightly against the bottom of a tank, and of a second tubular member 13 which is screwed into the upper end of the member 11 and which has a centrally located inlet opening 14 and at its upper end an outwardly extending flange 15. Swiveled on the upper end of this member 13 is a coupler 16 having an inwardly extending flange 17 which fits loosely between the upper end of the tubular member 11 and the outwardly extending flange 15 of the tubular member 13. The purpose of this coupler is to secure in place the valve seat, valve chamber or casing, and all the mechanism carried thereby. This coupler is provided with a pair of outwardly extending handles 18 and is threaded on the interior.

At 19 is shown a valve chamber or casing which is somewhat cylindrical in shape and is provided at its lower end with a threaded portion which is engaged by the threaded portion of the coupler 16 and is drawn downward with its lower end in firm engagement with a gasket 20 seated on the upper end of the member 13, by simply rotating the coupler.

The valve chamber 19 is provided a short distance above its lower end with an internal flange 21 and with a centrally located opening 22 through which projects a tubular valve seat 23 which is provided at its lower end below the internal flange 21 of the chamber, with an outwardly projecting flange 24 of a size such that it engages the cylindrical wall of the lower portion of the chamber below the flange 21 and occupies the space in the lower end of the chamber below the flange 21. It will be seen that at the same time that the chamber is drawn downward against the gasket 20, the lower end of the valve seat 23 is likewise firmly seated upon the gasket 20 by the engagement of the internal flange 21 of the chamber with the outwardly projecting flange 24 on the lower end of the valve seat. The internal diameter of the chamber is larger than the external diameter of the valve seat 23 so that there is an annular space between the

chamber wall and the valve seat for the entire distance that it extends above the internal flange 21. The purpose of this will be referred to later. The valve chamber is provided at the top with an opening or passageway 25 directly above and in line with the valve seat 23 and the opening or passageway therein, and is provided on the side opposite the upper end of the valve seat 23 with a boss 26 having an opening or passageway 27 which forms the outlet opening for the water. This passageway 27 is threaded on the interior so that, if desired, it may be provided with a short outlet pipe.

Located in the passageway 25 at the top of the chamber and having a close but working fit therein is a valve stem or plunger 28 provided at its lower end with a valve seat 29 which is recessed on its lower side and carries a gasket 30 which is adapted to engage the upper end of the valve seat 23. The plunger is provided between its ends with a packing ring 31, the outer surface of which engages closely the inner cylindrical wall of the passageway 25, and the plunger has its upper end 32 projecting above the valve chamber, this portion of the plunger being reduced in diameter and having an elongated slot 32' indicated by the dotted line in Fig. 1.

Projecting upwardly from the top of the chamber on one side of the valve plunger 28 is an arm or bracket 33 which is bifurcated or slotted at its upper end, and projecting from the top of the chamber on the opposite side of the plunger is a second bracket or arm 34 longer than the bracket 33 and being likewise bifurcated or slotted. The valve is operated by a float 35 and two levers 36 and 37, the latter being fulcrumed upon a thumb screw 38 between the portion of the bifurcated end of the bracket 33 and projecting through the slotted upper end of the plunger and between the two arms or bifurcations of the bracket 34. The lever 36 is fulcrumed on a thumb screw 39 at the upper end of the bracket 34 and is connected to lever 37 by a link 40.

In order that the height of the float 35 and consequently the quantity of water which is retained in the tank may be readily varied the lever 36 is formed of two parts 36^a and 36^b, the latter being at the outer end of the lever and having secured thereto by a thumb nut 41 a stem 42 to which the float 35 is attached. These two portions 36^a and 36^b of the lever have enlarged flat ends the adjacent faces of which are toothed or serrated, and the serrated faces being held in engagement with each other by a transverse screw 45.

It will be seen from the above described construction that all the working parts of the valve can be quickly attached to the pipe

connection which is adapted to extend through the bottom of the tank, by simply turning the coupler 16, and that, when the working parts are disconnected the coupler is so mounted on the upper end of the pipe connection that it cannot become separated from the same. Not only are all the working parts readily connected or disconnected by the coupler, but when the valve chamber is removed, the construction and manner of securing the valve seat permits the same to be readily removed and separated from the other parts without the use of any tools, since the lower end thereof engages loosely the open lower end of the chamber.

As the tubular seat projects upward for considerable distance into the chamber and is spaced from the surrounding wall of the chamber, the unpleasant hissing sound due to the passage of water through the valve particularly as the movable valve member is being seated, is practically eliminated for the reason that the sound is deadened by the wall of the chamber and by the water which fills the same and for the reason that the pressure of the stream is greatly reduced by the latter.

By loosening the thumb nuts 38 and 39 the operating mechanism including the levers 36 and 37 and the float 35 can be removed, and the valve plunger 28 can then be withdrawn from the chamber for the purpose of cleaning or repairing.

By loosening the screw 45 and adjusting the position of the portion 36^b of the lever with respect to the portion 36^a the height of the float is adjusted quickly and easily.

I do not desire to be confined to the exact details shown but aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention.

What I claim is,—

1. In a valve for flush tanks, in combination, a pipe connection having a threaded coupler at its upper end, a valve chamber having near its lower end an internal flange and an opening formed thereby, a tubular valve seat projecting through said opening and having an outwardly projecting portion below said internal flange of the chamber, said chamber having its lower end threaded and engaged by the threaded portion of the coupler whereby said chamber and tubular valve seat are drawn downward upon the upper end of said pipe connection by turning said coupler, a valve adapted to engage said valve seat, and a float controlled lever for operating said valve.

2. In a valve for flush tanks, a pipe connection comprising a tubular member adapted to be connected to a supply pipe and a second tubular member secured to the first named tubular member and having at its upper end an outwardly projecting flange,

a coupler swiveled upon the upper end of said tubular member having the flange, a valve chamber having near its lower end an internal flange and a centrally located opening
 5 formed thereby, a tubular valve seat extending upward through said opening into the chamber, said valve seat having at its lower end an external flange below the internal flange of the chamber, the lower end of the
 10 chamber being threaded and engaged by said coupler, whereby the chamber and the valve seat are simultaneously drawn downward upon the upper member of the pipe connection.

15 3. In a valve for flush tanks, a pipe connection, a coupler swiveled to the upper end thereof, a valve chamber having an inwardly extending flange and a centrally located opening formed thereby, a tubular
 20 valve seat extending upward through said opening and having an external flange located below the internal flange of the chamber, said coupler engaging the lower portion of the chamber and serving to draw the latter and the tubular valve seat downward on
 25 the upper end of the pipe connection, said tubular valve seat projecting upward into the chamber and being spaced from the inner wall of the chamber for its entire length
 30 which projects above the internal flange of the chamber, a valve arranged to engage said

valve seat, and mechanism for controlling said valve comprising a float and lever.

4. In a valve for flush tanks, a pipe connection adapted to be connected at its lower
 35 end to a supply pipe, a coupler at the upper end of said pipe connection, an elongated cylindrical valve chamber secured at its lower end by said coupler, said chamber having near its lower end an internal flange,
 40 a tubular valve seat projecting through the bottom of said chamber and having an external flange at its lower end located below the internal flange of the chamber and engaged thereby, said tubular valve seat pro-
 45 jecting upward for a considerable distance into the chamber and being separated for its entire length from the interior cylindrical wall thereof, said chamber having an outlet opening opposite the upper end of the tubu-
 50 lar valve seat, a valve plunger adapted to engage said seat, and a float and lever mechanism arranged to operate said valve plunger.

In testimony whereof, I sign the foregoing
 55 specification, in the presence of two witnesses.

HARRY J. GEURINK

Witnesses:

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 N. L. McDONNELL.