Feb. 5, 1935. F. P. HELLER 1,989,859

DRAIN PIPE FOR FLUSH TANKS

Filed Jan. 31, 1934

Fig. 1.

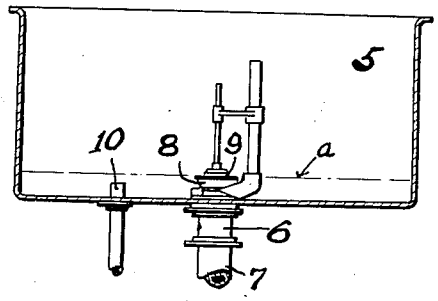


Fig. 2.

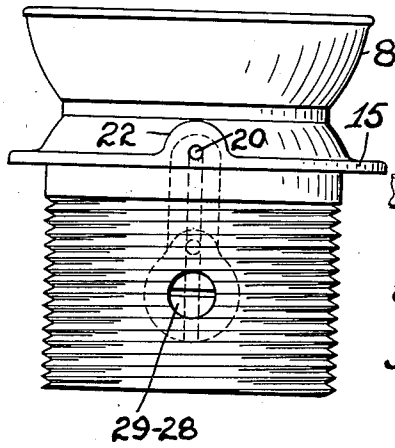
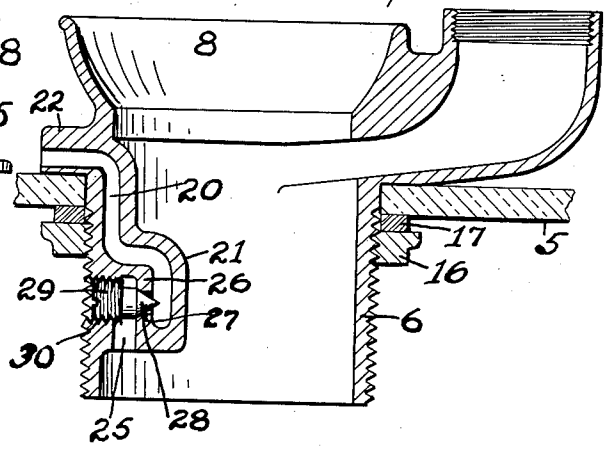


Fig. 3.



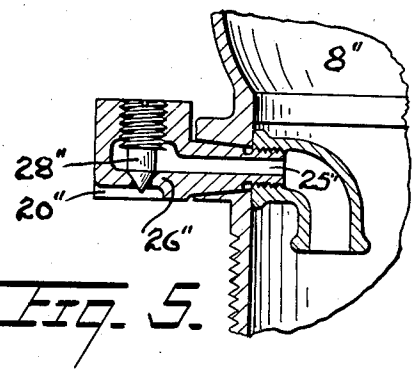


Fig. 5.

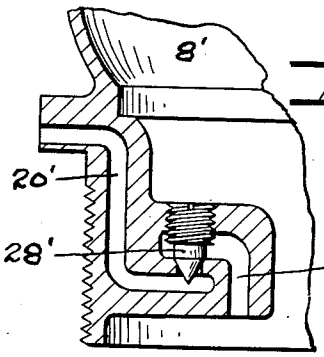


Fig. 4.

Frank P. Heller, Inventor

By W. E. D. Mason

Attorneys

Patented Feb. 5, 1935

1,989,859

UNITED STATES PATENT OFFICE

1,989,859

DRAIN PIPE FOR FLUSH TANKS

Frank P. Heller, Reading, Pa.

Application January 31, 1934, Serial No. 709,065

6 Claims. (Cl. 4—57)

This invention relates to flush tanks or the like, and more particularly to improved discharge means adapted to completely drain all the water from the tank not ordinarily discharged by the usual flush control valve.

Flush valves in common use, as well understood, are arranged to normally maintain a minimum level of water in the tank after each flush discharge, into which water the end of the supply pipe is immersed so as to silence the sound of water rushing in to refill the tank. This retained water ordinarily must be sopped up with a sponge or rag before repairs to the tank can be made, and to insure the tank against damage from freezing in houses closed for a winter season.

The present invention comprises improved means for conveniently draining such retained water into the outlet pipe when desired, and its manner of construction and use will be more fully described hereinafter in connection with the accompanying drawing, while its novel features will be pointed out in the appended claims.

Fig. 1 shows diagrammatically in vertical section a usual flush tank indicating particularly the usual flush outlet and overflow pipe, and the end of the usual water supply inlet pipe immersed below the minimum water level remaining after each flush discharge.

Figs. 2 and 3 indicate, on an enlarged scale, respectively, a side elevation, and a transverse cross-sectional elevation, of the flush discharge fitting shown in Fig. 1, and further shows a preferred embodiment of the tank draining conduit of the present improvements and the flow-controlling valve therefor.

Fig. 4 indicates a modified view of the flow-controlling valve for the drain conduit.

Fig. 5 indicates a modified structure in which the conduit is formed separately from the flush discharge fitting.

The present improvements are particularly applicable to flush tanks for closet bowls, and Fig. 1 indicates a tank 5 for such purpose formed with a bottom aperture in which is secured a flush control fitting comprising a discharge pipe 6 projecting through the tank aperture with its lower end 7 adapted for connection to a bowl extended pipe, not shown, and its upper end within the tank formed with a seat 8 for a discharge control valve 9. The seat 8 is located above the bottom of the bowl purposely to maintain a minimum water level, indicated by dotted line *a*, which level is sufficiently high to cover the end of the water supply pipe 10 so as to silence the flow in refilling the tank.

The above described tank structure is merely indicative of that usually employed, but it is practically universal to maintain a minimum water level as set forth, and the present improvements provide simple and convenient means to drain this tank-held water when desired or required for repairs or to prevent harm from freezing.

Referring to Figs. 2 and 3, which show on an enlarged scale the discharge fitting indicated in Fig. 1, the valve seat 8 is spaced above the bottom of the tank by a fitting flange 15 adapted to seat on said bottom, and water-tight connection therewith is secured by a usual clamping nut 16 and interposed washer 17 engaging against the underside of the tank bottom. The draining conduit 20 for the water held in the tank below the top edge of valve seat 8, is herein shown as an integral part of the fitting, being cast within an inward bulge 21 formed in the pipe 6, and a bulge 22 on the flange 15, the opening through the latter communicating with the tank 5 close to the bottom of the latter so as to completely drain the water therefrom. The lower end of the conduit 20 is shown with an off-set inner pipe communicating end portion 25 spaced from the portion 20 by a wall 26, provided with an opening 27 forming a valve seat for a flow controlling valve 28. The threaded extension 29 of said valve is shown as engaging a screw-threaded aperture 30 through the outer wall of the pipe 6 below the tank and clamping nut 16. The outer end of valve 28 is slotted for engagement of a screw driver and is preferably of such a length as to normally lie in aperture 30 beyond the depth of the screw-threads formed on the lower end of pipe 6. This arrangement, it will be noted, provides for outside operation of valve 28 without interference with clamping nut 16, and more particularly it provides for protecting the threaded extension 29 of valve 28, said threads when the valve is seated in wall opening 27 projecting in the water free off-set conduit portion 25, so as to avoid the crystalizing effect produced when immersed in water. The opening of valve 28 will neatly and quickly drain the tank-held water into the discharge pipe 6, leaving the tank 5 free to begin repairs, or safe against freezing temperature.

Fig. 4 indicates a modification in which the valve may be operated through the valve-seated top end of pipe 6 after usual flushing by merely lifting the valve 9 to one side, the parts similar to those of Figs. 1 and 2 having the same reference numerals as the latter with the addition of exponent prime (').

Fig. 5 indicates another modification in which

the conduit is formed as a separate unit secured to the pipe 6 and communicating with the tank 5 through a lateral fitting opening, the parts herein similar to those of Figs. 1 and 2 having the same reference figures with the addition of exponent secundus ('').

From the foregoing description it is believed the nature and operation of the improvements will be readily understood. It will also be understood that these improvements may be applied to other liquid tanks not completely drained by their outlets, and that further modifications and changes may be devised within the spirit of the invention as defined in the following claims.

What I claim is:—

1. In combination with a water storage tank having an outlet-engaged flush-pipe fitting provided with a discharge-controlled tank-enclosed end adapted to maintain a minimum level of tank-retained water, of a valve-controlled draining conduit for said tank-retained water formed integrally in the wall of said fitting and having one end communicating through said wall with said tank adjacent the bottom of the latter and outside said discharge-controlled end, and its other end communicating interiorly with said outlet pipe below said tank.

2. In combination with a water storage tank having an outlet-engaged flush-pipe fitting provided with a discharge-controlled tank-enclosed end adapted to maintain a minimum level of tank-retained water, of a draining conduit for said tank-retained water having an inlet end communicating with said tank adjacent its bottom wall, and an outlet end communicating with said outlet pipe below said tank, a valve seat in said conduit above said outlet end, and a valve for said seat having its operating screw-thread extending into said conduit beyond the conduit retained water when said valve is fully seated.

3. An outlet fitting for the bottom aperture of a flush tank or the like, comprising a tank-enclosed end provided with a discharge-controlled opening located above the bottom of said tank to retain a determined minimum level of water in the latter, and a valve-controlled drain conduit in said fitting for said retained water having an inlet opening through said fitting wall into said tank below said discharge-controlled opening, and an outlet opening within said fitting below the bottom of said tank.

4. An outlet fitting for the bottom aperture of a flush tank or the like, comprising a tank-enclosed end provided with a discharge-controlled opening located above the bottom of said tank to retain a determined minimum level of water in the latter, a drain conduit in said fitting for said retained water having an inlet opening through said fitting wall into said tank below said discharge-controlled opening, and an outlet opening within said fitting below the bottom of said tank, and a control valve for said conduit having its operating end extending laterally through said fitting wall below said tank.

5. An outlet fitting for the bottom aperture of a flush tank or the like, comprising an outlet pipe extending through said aperture and intermediately engaging the bottom wall of said tank, a discharge-control valve seat at the upper end of said pipe within said tank, a conduit in the wall of said pipe having an inlet opening through the wall of the latter into said tank below said valve seat and an outlet opening within said pipe below said tank bottom, and a valve for closing said conduit.

6. An outlet fitting for the bottom aperture of a flush tank or the like, comprising an outlet pipe extending through said aperture and intermediately engaging the bottom wall of said tank, a discharge-control valve seat at the upper end of said pipe within said tank, communicating conduits integrally formed in the wall of said pipe, one having an opening into the tank below said pipe valve seat and the other having an opening into said pipe below the tank bottom, and a valve controlling communication between said conduits.

FRANK P. HELLER.