No. 762,405. PATENTED JUNE 14, 1904.

W. A. & J. B. HENN.

FLUSH TANK.

APPLICATION FILED AUG. 28, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

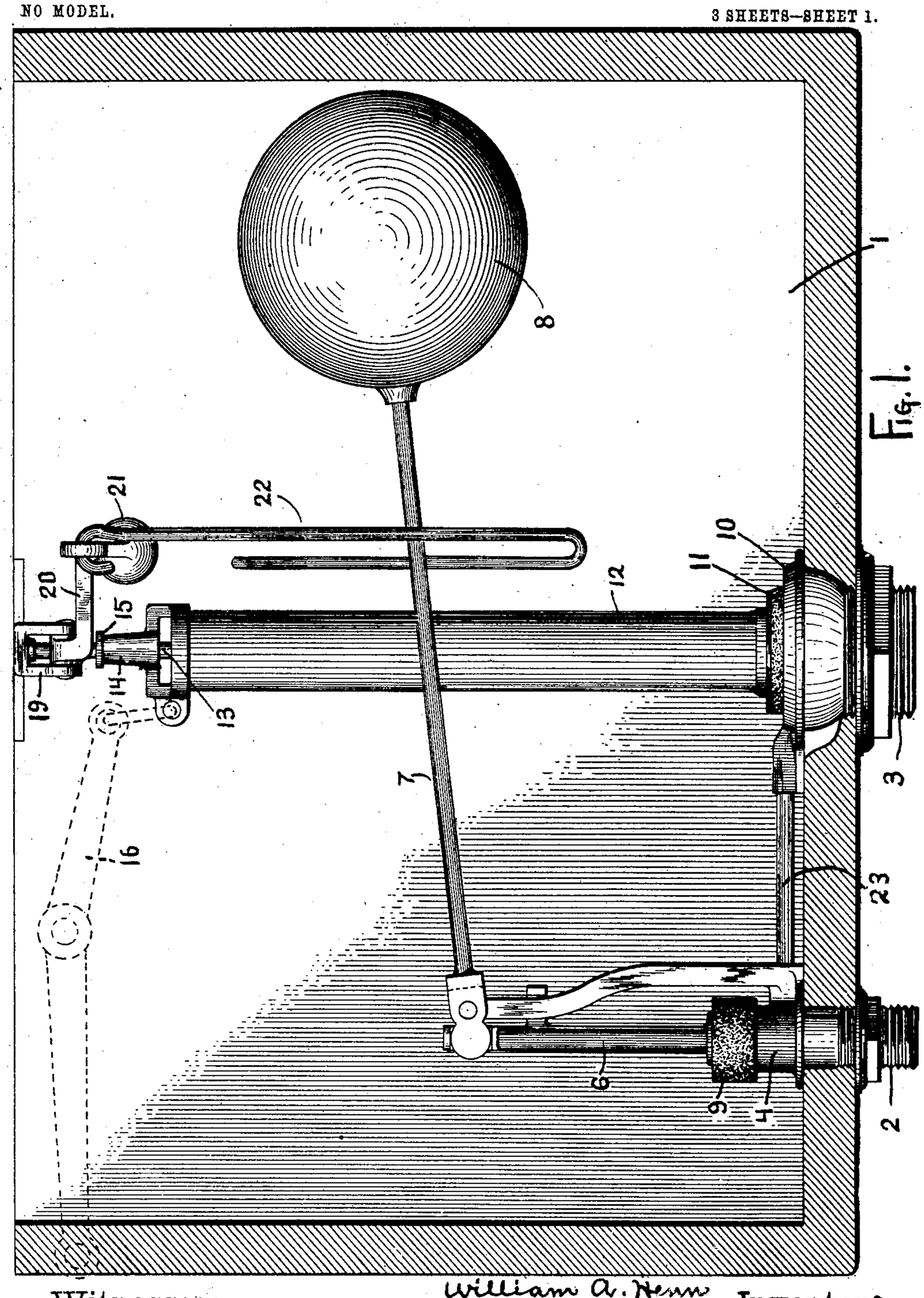

FIG. 1.

Witnesses:
Elmer R. Shipley.
M. S. Belden.

William A. Henn
Jacob B. Henn
Inventors
by James W. See
Attorney

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NO MODEL. 3 SHEETS—SHEET 2.

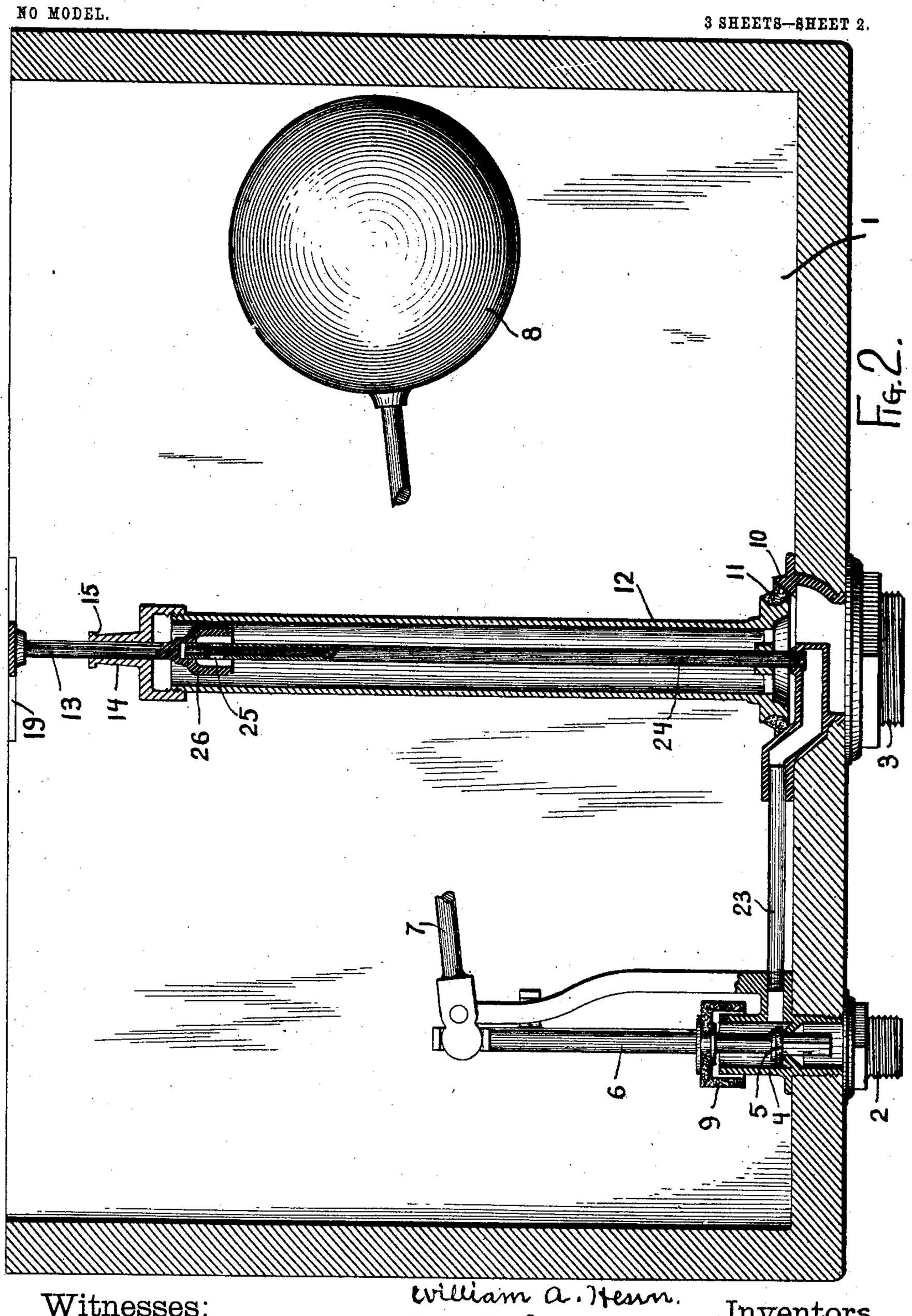

FIG. 2.

Witnesses:
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M. S. Belden.

William A. Henn.
Jacob B. Henn.
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NO MODEL. 3 SHEETS—SHEET 3.

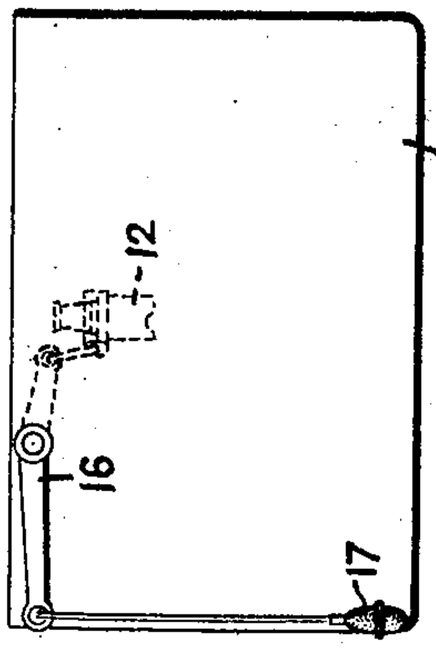

FIG. 4.

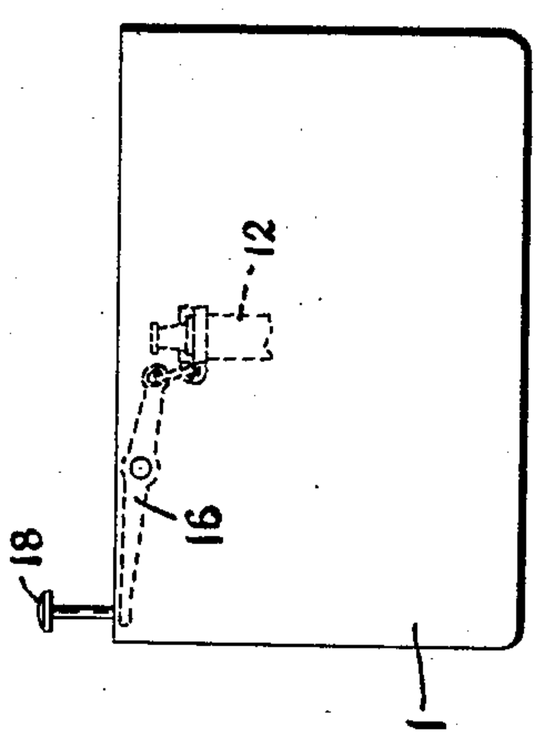

FIG. 5.

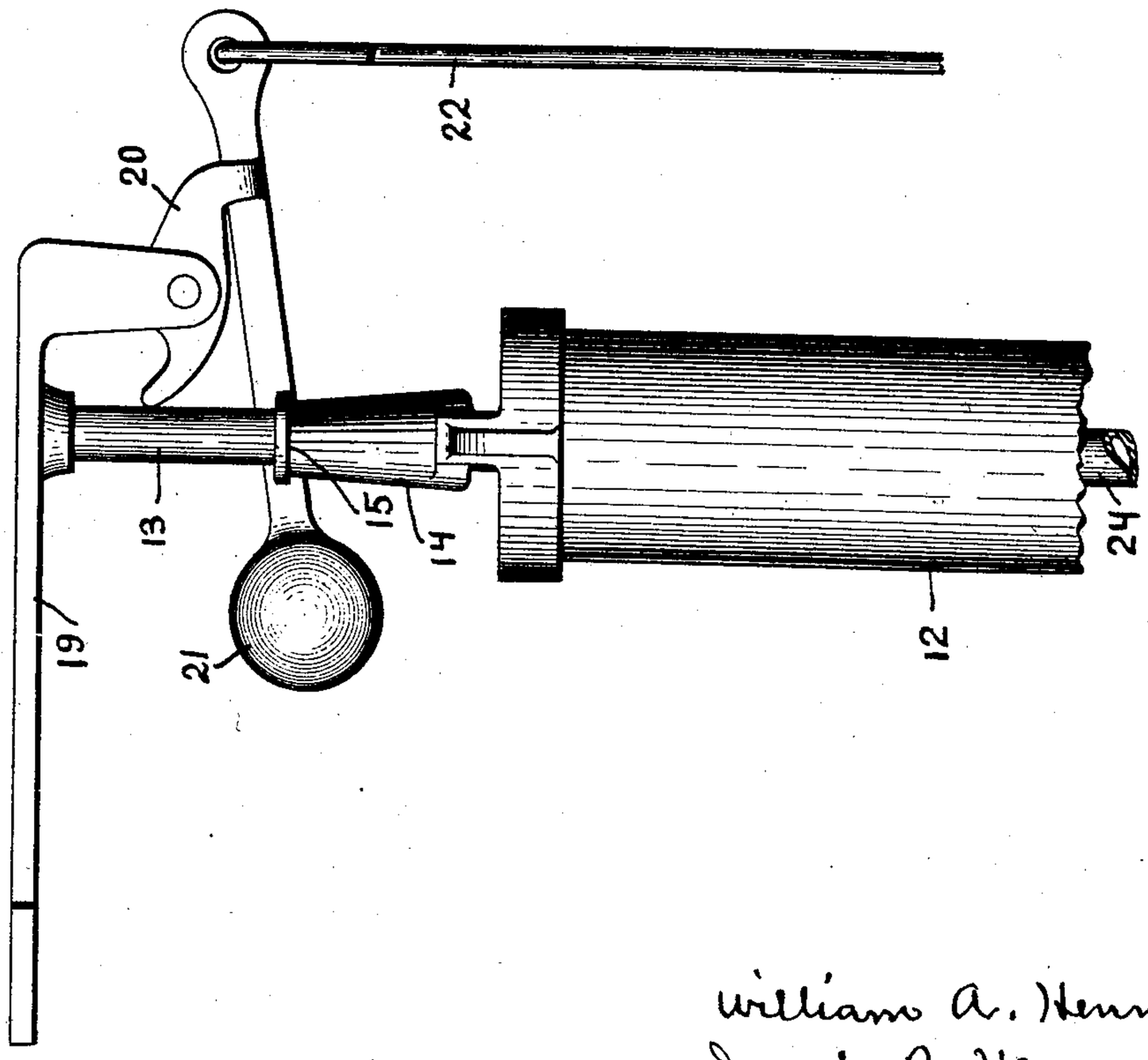

FIG. 3.

Witnesses:
Elmer R. Shipley.
M. S. Belden

William A. Henn
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Inventors
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No. 762,405. Patented June 14, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM A. HENN AND JACOB B. HENN, OF HAMILTON, OHIO, ASSIGNORS TO THE SANITARY MANUFACTURING COMPANY OF HAMILTON, OHIO.

FLUSH-TANK.

SPECIFICATION forming part of Letters Patent No. 762,405, dated June 14, 1904.

Application filed August 28, 1903. Serial No. 171,061. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. HENN and JACOB B. HENN, citizens of the United States, residing at Hamilton, Butler county, Ohio, (post-office address, No. 167 Water street, Hamilton, Ohio,) have invented certain new and useful Improvements in Flush-Tanks, of which the following is a specification.

This invention, pertaining to improvements in flush-tanks, will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a flush-tank exemplifying our invention, the interior parts appearing in elevation; Fig. 2, a similar view with interior parts appearing in vertical section; Fig. 3, a side elevation of the latch mechanism, the same being viewed at right angles to the plane of Figs. 1 and 2; and Figs. 4 and 5, front elevations of tanks, showing various devices for opening the flush-valve.

In the drawings, 1 indicates the tank; 2, the supply connection; 3, the flush-pipe connection; 4, the body of the ball-cock, to which the supply connection leads; 5, the valve of the ball-cock, disposed within the body 4 and seating toward the pressure of supply, the body 4 of the ball-cock projecting upwardly around the valve 5; 6, the stem of the ball-cock valve; 7, the ball-lever with its pivot rigidly supported by the tank, the short end of this lever engaging the stem of the ball-cock valve; 8, the ball-float on the long end of lever 7; 9, an inverted cup of soft material, preferably rubber, secured to stem 6 and capping down over the upwardly-projecting protion of the body of the ball-cock, the fit of this rubber cup upon the body being loose enough to permit the inflow of supply-water under pressure; 10, the flush-valve seat, formed with flush connection 3, this valve-seat being an upwardly-presenting conical seat; 11, the flush-valve, seating upon the seat 10 and formed, preferably, of rubber; 12, the flush-valve stem, the same being hollow and extending up far enough to reach the highest desired level of water in the tank in order to form an overflow; 13, a guide-rod rigidly supported by the tank at the upper end of the flush-valve stem to form a top guide therefor; 14, a cap upon the upper end of the flush-valve stem, this cap working vertically on guide-rod 13 and having side openings to permit the free inflow of water from the tank to the flush-pipe in case of overflow; 15, a latch-collar carried by cap 14; 16, a lever on a pivot supported by the tank, the inner end of this lever being linked to flush-valve stem 12, so that by the rocking of the lever by hand the stem and the flush-valve may be raised; 17, Fig. 4, a hand-pull connected with this lever and illustrating one means for the operation of the lever by hand from the exterior of the tank; 18, Fig. 5, a push-button illustrating another means for operating the lever in opening the flush-valve; 19, a housing rigidly supported by the tank and giving support to guide-rod 13; 20, a latch-lever pivoted to this housing on a horizontal pivot, its inner end normally resting against guide-rod 13 at a point above the plane of the pivot of the latch-lever; 21, a weighted extension at the inner end of the latch-lever, serving to urge the point of the latch inwardly; 22, a link hanging from the outer end of the latch-lever and straddling the stem of the float, the lower extremity of this link being in such position that the float will trip the latch as the float approaches its lower limit of motion; 23, an after-seal pipe leading from the interior of the tank into communication with the flush-pipe, the admission end of this pipe being connected with the body 4 of the ball-cock, so as to take its water therefrom; 24, a pipe disposed centrally within flush-valve stem 12 and forming an upward prolongation of after-seal pipe 23 to carry the outlet of that pipe to a point above the normal high level of the water in the tank, the upper end of this pipe being preferably anchored in the lower end of guide-rod 13; 25, side ports at the upper end of pipe 24, the extreme upper end of this pipe being closed by its connection with guide-rod 13, and 26 an inverted cup at the upper end of pipe 24, capping down around the ports 25.

Assume the tank to be filled to a level near the top of the flush-valve stem 12, whose open

upper end provides an overflow. The flush-valve is seated and held so by its gravity. The valve at the ball-cock is seated and held so by the buoyancy of the float. If now lever 16 be operated, the flush-valve will be raised, and the contents of the tank will be free to flow to the flush-pipe. As the flush-pipe is raised the latch-collar 15 displaces and passes above the point of latch-lever 20, the point of the latch-lever then catching under the collar and holding the flush-valve open. As the water flows from the tank the float descends and permits the supply-cock to open and a refilling of the tank to begin. The outflow of flushing-water will exceed the inflow of supply-water, the consequence being that the float continues to descend and open the supply-valve still wider. As the float approaches its lower extremity of motion, due to the emptying of the tank, its stem engages link 22 and triggers the latch and permits the flush-valve to close, whereupon the tank proceeds to refill to normal level, the inflow ceasing when the float shall have closed the supply. During the refilling of the tank the rubber cup 9 directs downwardly and throttles and muffles the noise of the incoming water, a practically noiseless refilling of the tank being thus secured. During the earlier stages of the refilling of the emptied tank, while the supply-valve is wide open, the force of the supply-pressure expends itself partly in discharging water into the tank from under rubber cup 9 and partly in discharging into the flush-pipe through after-seal pipe 23, an after-seal for a closet-bowl thus being provided. If the outlet end of after-seal pipe 23 were low down in the tank, then the tank could waste through it into the flush-pipe, and to prevent this the outlet end of the pipe is by means of rising pipe 24 carried upward to a point above the normal level of water in the filled tank. Cup 26 prevents any upward splashing or noisy discharge of the resealing-water.

It is not new to place a loose metallic cap over the inlet-nozzle to prevent splashing and to muffle the noise of the inflow. Such a cap is efficient in preventing splashing and for low pressures serves somewhat in preventing certain kinds of noises incident to the inflow; but when the inlet-pressures are very high, as they are in some cities, then the metallic cap loses much of its efficiency in muffling these noises and by its own presence introduces a new set of noises, which are in some cases more annoying than any noises that would be present if there were no cap at all. The old conditions are remedied by a peculiarity of structure consisting in the provision of a resilient tubular lip surrounding the discharge or inlet orifice. This lip prevents the noises of the old metallic devices and also prevents the noise inherently incident to the old devices under high-pressure conditions.

We claim as our invention—

1. In a flush-tank, the combination, substantially as set forth, of a tank, a flush-valve seat in the bottom thereof, a downwardly-closing flush-valve engaging said seat, a hollow stem projecting upwardly from said flush-valve to a point above the water-line and adapted to serve as an overflow, a downwardly-projecting guide-rod rigidly supported over said hollow stem and in the axial line thereof, a cap rigidly secured to the upper end of said stem and having side openings and having a bore engaging said guide-rod, a latch-collar carried by said cap, a horizontal pivot rigidly supported alongside said guide-rod, a latch-lever mounted on said pivot and having an engaging point disposed above said pivot and above and in the path of said collar and adapted to engage under the collar when the flush-valve is open, means for urging said engaging point inwardly and downwardly, lever mechanism for raising the flush-valve, a float, a float-stem, and a slotted open-ended link pivoted to the latch-lever, through which the float-stem travels, having a closed lower end to cause the descent of the float-stem to release the latch-lever.

2. In a flush-tank, the combination, substantially as set forth, of a tank, a flush-valve seat in the bottom thereof, a flush-valve engaging said seat, mechanism for opening and closing said valve, a supply inlet valve-body projecting into the tank and containing a valve-seat, a valve engaging said seat and opening in the direction of the discharge of water into the tank, a stem and float for the control of said valve, and a cap of soft material, as rubber, fitting loosely over and around the discharge portion of said supply valve-body and having a resilient tubular lip surrounding said discharge portion.

3. In a flush-tank, the combination, substantially as set forth, of a tank, a flush-valve seat in the bottom thereof, a flush-valve engaging said seat, a hollow stem rising from said valve to a point above normal high-water level, mechanism for opening and closing said valve, ball-cock mechanism for refilling the tank, and an after-seal conduit leading from the ball-cock to below the flush-valve seat and upwardly in the hollow stem of the flush-valve to a point above normal high-water level.

4. In a flush-tank, the combination, substantially as set forth, of a tank, a flush-valve seat in the bottom thereof, a flush-valve engaging said seat, a hollow stem rising from said valve to a point above normal high-water level, mechanism for opening and closing said valve, ball-cock mechanism for refilling the tank, an after-seal conduit leading from the ball-cock to below the flush-valve seat and upwardly in the hollow stem of the flush-valve to a point above normal high-water level and discharging sidewise at such point through side ports,

and an inverted cup surrounding the discharge end of said after-seal conduit.

5. In a flush-tank, the combination, substantially as set forth, of a tank, a flush-valve seat in the bottom thereof, a flush-valve engaging said seat, mechanism for opening and closing said valve, a supply inlet valve-body projecting into the tank and containing a valve-seat, a valve engaging said seat and opening in the direction of the discharge of water into the tank, a stem and float for the control of said valve, a pipe connecting the inlet valve-body with the flush-valve, and a cap of soft material, as rubber, fitting loosely over and around the discharge portion of said supply valve-body and having a resilient tubular lip surrounding said discharge portion.

6. In a flush-tank, the combination of a tank, a flush-valve seat in the bottom thereof, a flush-valve engaging said seat, mechanism for opening and closing the valve, a supply inlet valve-body projecting into the tank provided with a valve-seat intermediate of the ends of the valve-body and opening in the direction of the discharge of water into the tank, a stem and float controlling the valve, and a cap mounted on the stem fitting loosely over and around the valve-body, but at all times unseated therefrom and having a resilient tubular lip surrounding said discharge portion.

7. In a flush-tank, the combination of a supply valve-body, a valve, a valve-stem, and a soft-rubber cap upon the valve-stem having a resilient tubular lip fitting over and around the discharge end of the valve-body but not in seating contact therewith.

In testimony whereof we have signed this specification this 25th day of August, 1903.

WILLIAM A. HENN.
JACOB B. HENN.

Witnesses:
J. W. See,
Horace C. Shank.