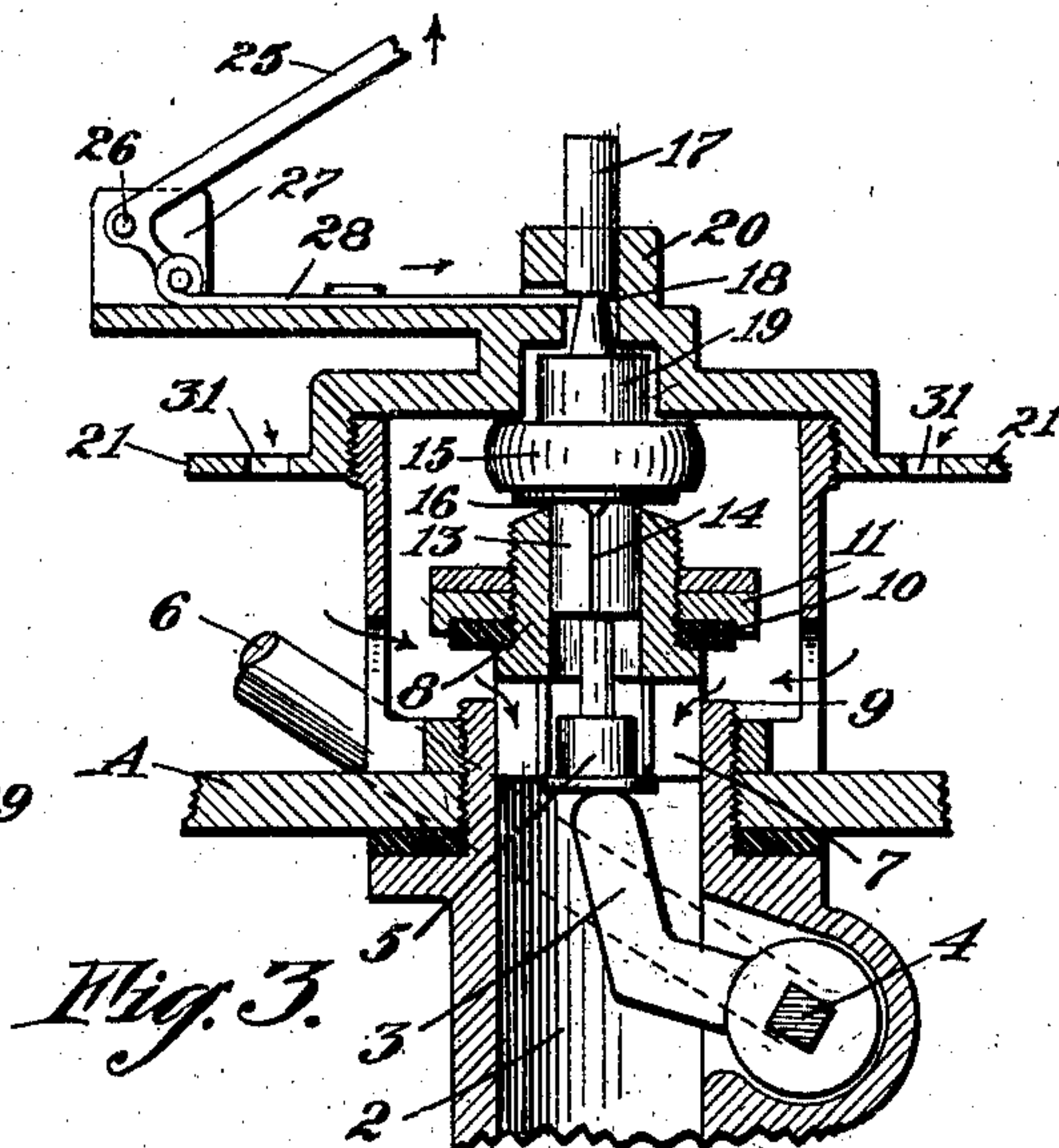
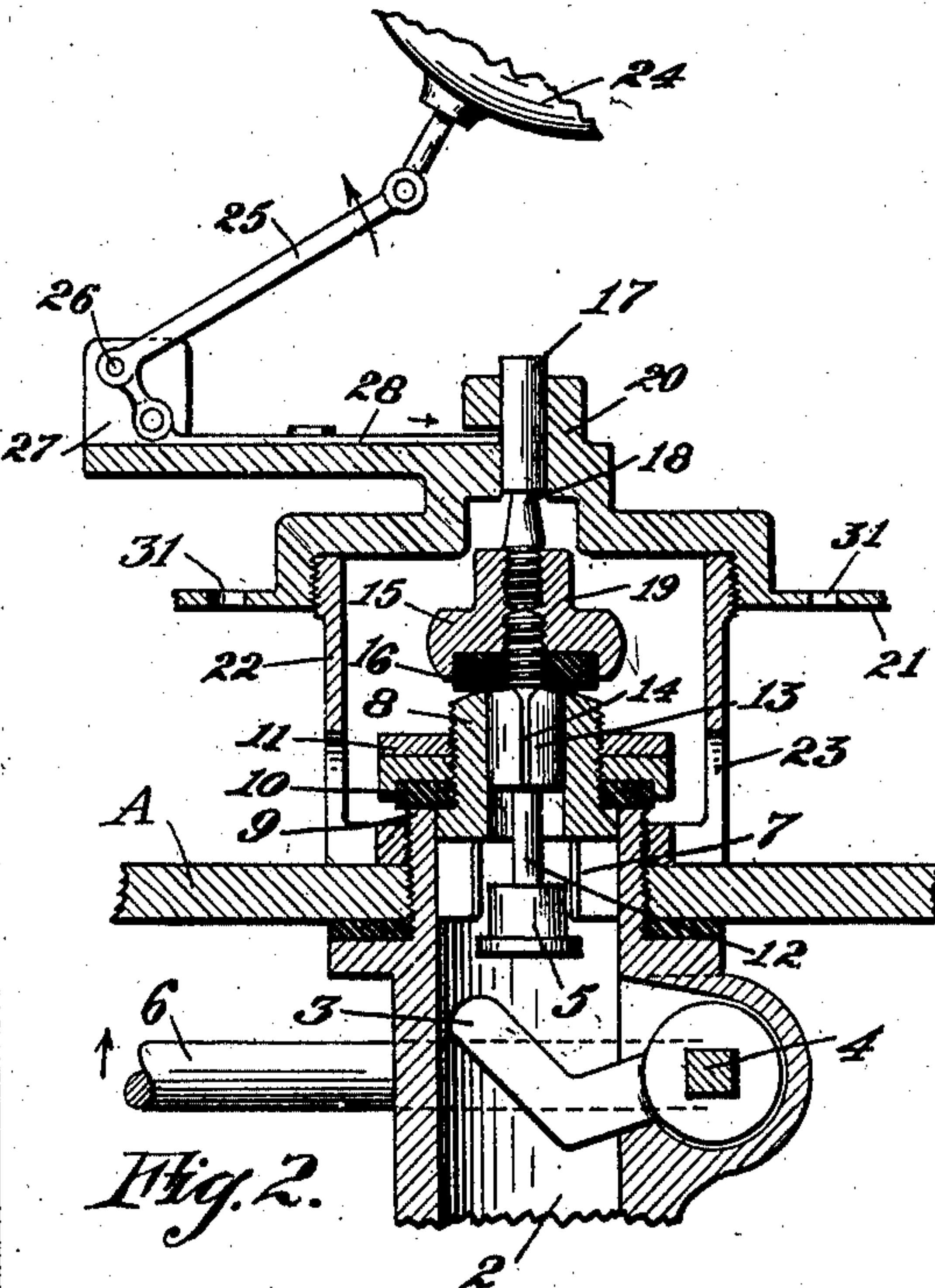
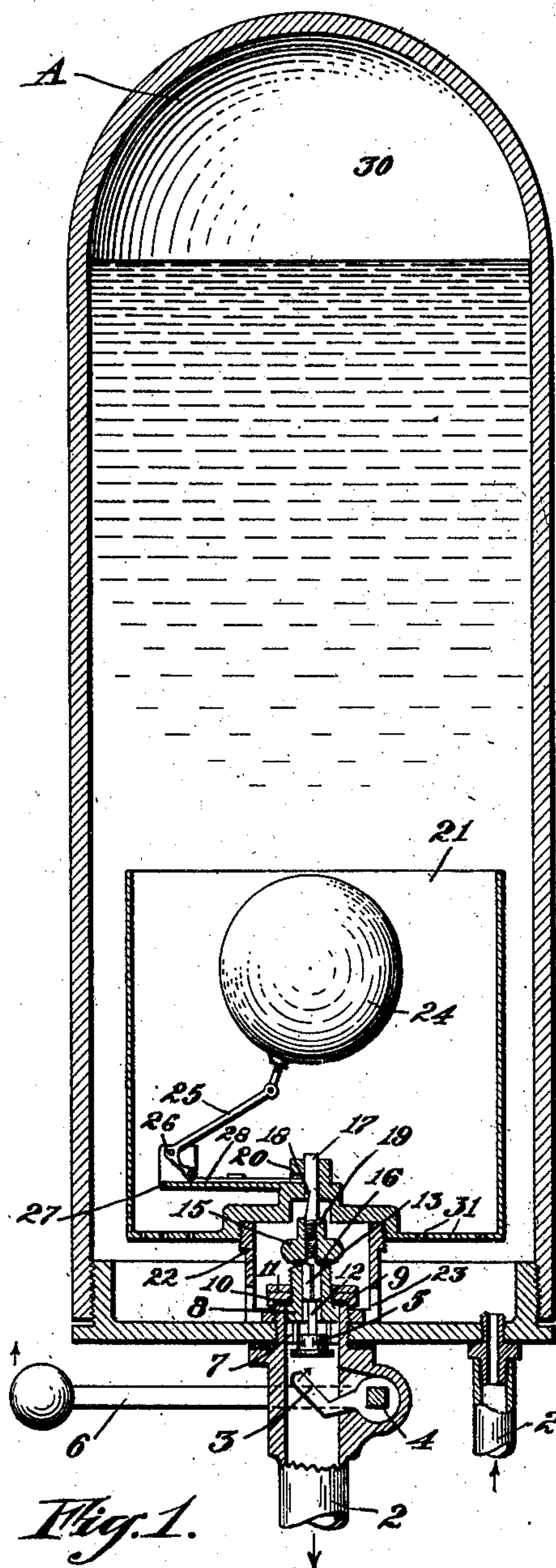


H. J. GOSSE & W. WAGNER.
FLUSHING APPARATUS.
APPLICATION FILED JUNE 1, 1909.

963,707.

Patented July 5, 1910.



WITNESSES:

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HENRY J. GOSSE AND WILLIAM WAGNER, OF RENO, NEVADA.

FLUSHING APPARATUS.

963,707.

Specification of Letters Patent.

Patented July 5, 1910.

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To all whom it may concern:

Be it known that we, HENRY J. GOSSE and WILLIAM WAGNER, both citizens of the United States, residing at Reno, in the county of Washoe and State of Nevada, have invented new and useful Improvements in Flushing Apparatus, of which the following is a specification.

This invention relates to flushing apparatus, and particularly pertains to flushing tanks used in connection with toilets and the like.

It is the object of this invention to provide a simple, practical flushing apparatus, so constructed as not to be liable to get out of order; which is adapted to be connected to a toilet or other fixture in close proximity thereto, and to be discharged under pressure direct from the main source of water supply; and which is exceedingly simple in construction, and positive, efficient and silent in operation.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a view in vertical section of the invention. Fig. 2 is an enlarged detail of the valves and operating mechanism in their normal position. Fig. 3 is a detail showing the valves in the open or flushing position.

In the drawings, A is a sealed pressure tank or reservoir of any suitable size, shape or material, in which the operating parts of the invention are mounted. Suitably secured to the under side of this tank is the discharge pipe 2 which may be attached at its opposite end to any desired fixture, as a bowl or the like, not necessary here to be shown. Suitably mounted within the head of the pipe 2 at a point adjacent to the tank cylinder A, is a crank-arm or trigger 3 attached to a shaft 4 and adapted to be raised to press against the head of a plunger 5 by means of a hand-lever 6. The plunger 5 slides between guides formed on a spider 7 on the hollow flushing valve 8, which latter normally rests on the seat 9 formed by the upwardly projecting mouth of the discharge pipe 2 within tank A. A suitable cushion or buffer washer 10 is held in position on the seating face of valve 8 by means of a lock nut 11 threaded on the outside of the valve. A stem 12 connected to the plunger 5 ex-

tends up through valve 8 and is enlarged, at 13, to form a guide which is longitudinally slotted at 14. This stem 12—13 carries at its upper end a pressure releasing valve 15 which seats, at 16, upon the valve head 8 and is lifted slightly by the action of the trigger 3 in advance of the opening of the larger valve 8.

A guide stem 17, notched at 18, is secured to an upwardly projecting portion 19 of the pressure releasing valve 15 and slides in a bearing 20 formed in the bottom of an inner flush-regulating tank 21. The bearing 20 and tank 21 are threaded to a valve cage 22 and form the top thereof. The valve cage 22 is threaded to the upwardly projecting seat portion 9 of the pipe 2, and bears against the bottom of the tank A. Openings 23 are provided in the valve casing 22 to allow the water to flow freely from the tank A to the discharge pipe 2 when the valve 8 is opened. The tank 21 is open on top and has a perforated bottom, as shown, but these perforations are of limited size so that discharge therethrough takes place slowly, for the purpose shortly to be described.

A float 24 is pivotally mounted on the long arm of a bell crank lever 25 pivoted at 26 to a bearing 27 formed on the bearing 20 with the flush-regulating tank 21. The short arm of the crank lever 25 is pivoted to a sliding bar or latch 28 which is adapted to enter a slot in the bearing 20 and engage the notch 18 in the stem 17 and hold up the valve 8 whenever the latter is lifted by the operating lever 6; assuming, of course, the water in the tanks A and 21 is high enough to buoy up the float 24. This float, in fact, acts with a yielding pressure normally to press the latch 28 against the stem 17 as long as the water remains at a sufficient level in tanks A and 21.

In operation, water from any suitable source of supply, as the city mains, under pressure, is admitted to the flushing tank A at 29, in Fig. 1. The water practically fills the tank A and compresses such air as may be therein, up into the upper dome portion of the tank A, which latter we prefer to construct in cylindrical form, as shown in Fig. 1. When the tank A is filled, the valves before described and the floating ball 24 are submerged. The tendency of the ball 24 to rise in the water causes an upward pull on the lever-arm 25, and thus keeps the sliding

latch 28 in close, pressing, yielding contact with the notched stem 17. The filling of the tank A of course fills the flush-regulating tank 21 and submerges the float 24. When it is desired to flush a toilet or the like, the handle 6 is raised so as to turn the shaft 4 and raise the crank or trigger arm 3 upward against the plunger 5. The first slight pressure of the crank-arm 3 against the plunger 5 lifts the relief-valve 15 from its seat 16 on the top of valve 8, thus allowing the escape of a small quantity of water through the grooves 14 in the piston 13 to relieve the pressure of water in the tank A, and to a degree equalize the pressure on the two sides of valve 8. Continued pressure by the trigger 3 carries the plunger 5 against the guides 7 and lifts the valve 8 off the seat 9, thereby allowing the rapid discharge of a heavy volume of water under pressure from the tank A into the flushing pipe 2 in the direction of the arrows shown in Fig. 3. The discharge from tank A through openings 23 and around the inside tank 21 is much more rapid than is the discharge from tank 21 through the holes 31 in the bottom of tank 21. The upward movement of the stem 17, which is simultaneous with that of the valve 8, brings the notch 18 above the sliding latch 28, which latter is caused to engage the notch 18 by reason of the upward pull of the ball 24. The handle 6 may then be released, whereupon the crank-arm 3 falls back to its normal position. The sliding latch 28 retains the valve 8 open until the water in the tank A is discharged, and as tank 21 gradually empties through the holes 31 the float 24 drops until the latch 28 is withdrawn from the notch 18 in the stem 17, whereupon valves 8 and 15 drop back to their closed and normal position, and the tank A is again rapidly refilled through the pipe 29. This arrangement of a perforated inner tank and cushioned valves gives a flushing apparatus that is almost silent in operation, and one in which a predetermined quantity of water will be discharged each time.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. A flushing apparatus comprising a tank having an inlet and an outlet, with an air dome in its top, a normally closed valve in the outlet, means for opening the valve, means inside the tank to hold the valve open until the tank is discharged, and then to automatically release the valve and allow it to close, said valve having a relief means operating in advance of the valve and actuated by the valve opening means.

2. In a flushing apparatus, two tanks, one within the other and arranged so that when the outside tank is full the inside tank is filled, the inside tank having a comparatively

small opening in its bottom through which the inner tank may discharge when the outer tank is discharged, a valve controlling the discharge from the outer tank, means for opening the valve, a relief valve mounted in the controlling valve and operated by the opening means thereof, and means in the inside tank for controlling the closing movements of said controlling valve.

3. In a flushing apparatus, two tanks, one within the other and arranged so that when the outside tank is full the inside tank is filled, the inside tank having a comparatively small opening in its bottom through which the inner tank may discharge when the outer tank is discharged, a valve controlling the discharge from the outer tank, means for opening the valve, a relief valve mounted in the controlling valve and operated by the opening means thereof, and means in the inside tank for controlling the closing movements of said valve, said last-named means including a float in the inner tank, with mechanism operated by the float engageable and disengageable with the controlling valve.

4. In a flushing apparatus, inner and outer tanks in communication with one another, a valve controlling discharge from the outer tank, the inner tank adapted to discharge into the outer tank, and means operated by the water level in the inner tank for controlling the closing movement of said valve, said valve having a relief means operating in advance of the opening movement of the valve.

5. In a flushing apparatus, the combination of two tanks, one a reservoir for the flushing water and the other a flush-regulating tank, said flush-regulating tank discharging into the reservoir tank, a valve controlling discharge from the reservoir tank, means for operating said valve, a relief valve carried by the controlling valve and operated by the opening means thereof, and mechanism operative by the level of the liquid in the flush-regulating tank for controlling the closing movement of the valve.

6. In a flushing apparatus, the combination of two tanks, one a reservoir for the flushing water and the other a flush-regulating tank, said flush-regulating tank discharging into the reservoir tank, a valve controlling discharge from the reservoir tank, means for operating said valve, and mechanism operative by the level of the liquid in the flush-regulating tank for controlling the closing movement of the valve, said valve having a supplemental relief-valve operated by its opening means.

7. In a flushing apparatus, the combination of a reservoir tank and a flush-regulating tank, said flush-regulating tank filled from the reservoir tank and having a discharge back therein, said reservoir tank having an outlet with a valve, means for

opening the valve, said valve having a relief valve which operates in advance of the controlling valve and is actuated by the opening means of the latter, and mechanism operated by the varying levels in the flush-regulating tank to control the closing movement of the valve.

8. In a flushing apparatus, the combination of a reservoir tank and a flush-regulating tank, said flush-regulating tank filled from the reservoir tank and having a discharge back thereinto, said reservoir tank having an outlet with a valve, means for opening the valve, said valve having a relief valve which operates in advance of the controlling valve and is actuated by the opening means of the latter, and mechanism operated by the varying levels in the flush-regulating tank to control the closing movement of the valve, said discharge from the flush-regulating tank back into the reservoir tank being of more restricted area than said valved discharge from the reservoir tank.

9. In a flushing apparatus, the combination of a reservoir tank and a flush-regulating tank, said flush-regulating tank filled from the reservoir tank and having a discharge back thereinto, said reservoir tank having an outlet with a valve, means for opening the valve, and mechanism operated by the varying levels in the flush-regulating tank to control the closing movement of the valve, said valve having a relief-valve attachment and operative by said valve opening means in advance of the opening of said first-named valve.

10. In a flushing apparatus, a reservoir tank closed except for an inlet for fluid under pressure and for an outlet in which is a valve, means for opening the valve, said valve having a relief valve which operates in advance of the controlling valve and is actuated by the opening means of the latter, a flush-regulating tank in the reservoir tank, said flush-regulating tank filled from the reservoir tank and having a discharge back thereinto, a float in the flush-regulating tank, and mechanism operated by said float to maintain the valve temporarily open until practically all the water from the reservoir tank has been discharged through said outlet.

11. In a flushing apparatus, a reservoir

tank closed except for an inlet for fluid under pressure and for an outlet in which is a valve, means for opening the valve, said valve having a relief valve which operates in advance of the controlling valve and is actuated by the opening means of the latter, a flush-regulating tank in the reservoir tank, said flush-regulating tank filled from the reservoir tank and having a discharge back thereinto, a float in the flush-regulating tank, and mechanism operated by said float to maintain the valve temporarily open until practically all the water from the reservoir tank has been discharged through said outlet, said last-named mechanism including a latch operative by the float, and means on the valve engageable by the latch.

12. In a flushing apparatus, a reservoir tank closed except for an inlet for fluid under pressure and for an outlet in which is a valve, means for opening the valve, said valve having a relief valve which operates in advance of the controlling valve and is actuated by the opening means of the latter, a flush-regulating tank in the reservoir tank, said flush-regulating tank filled from the reservoir tank and having a discharge back thereinto, a float in the flush-regulating tank, and mechanism operated by said float to maintain the valve temporarily open until practically all the water from the reservoir tank has been discharged through said outlet, said last-named mechanism including a latch operative by the float, and a notched stem connected with the valve and engageable with the latch when the valve is lifted.

13. In a flushing apparatus, the combination of a tank having an outlet, a valve in said outlet, said valve having a port and a relief-valve seating in said port, means acting first on the relief-valve to open it, and then to open the main valve, and mechanism operative by the level of the water in the tank to maintain the main valve open after the release of said means for opening the said valve.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

HENRY J. GOSSE.
WILLIAM WAGNER.

Witnesses:

LAWRENCE E. KING,
CLARENCE FARNSWORTH.