

R. POZZI.
FLUSHING APPARATUS.
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1,155,005.

Patented Sept. 28, 1915.

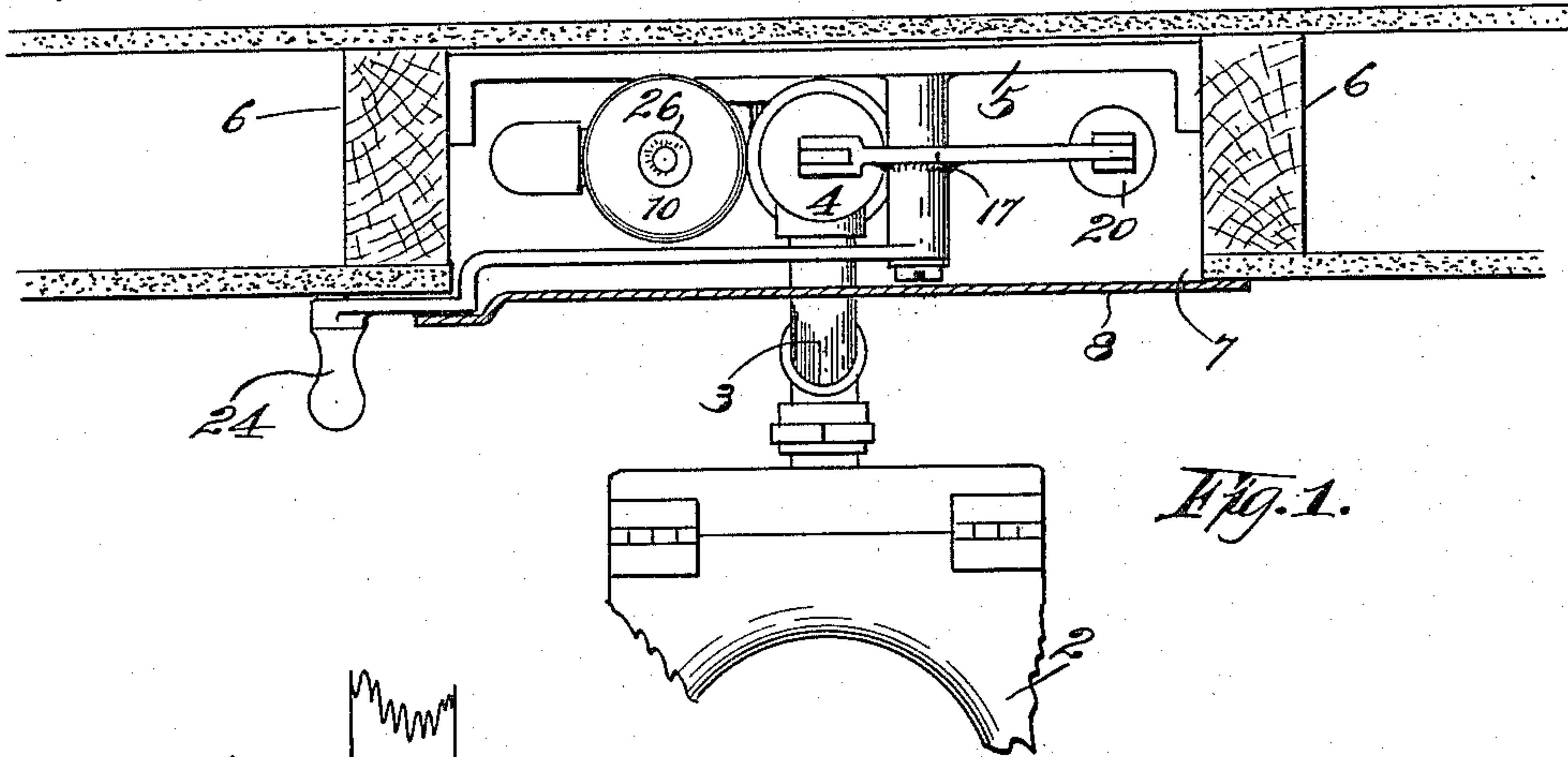


Fig. 1.

Fig. 4.

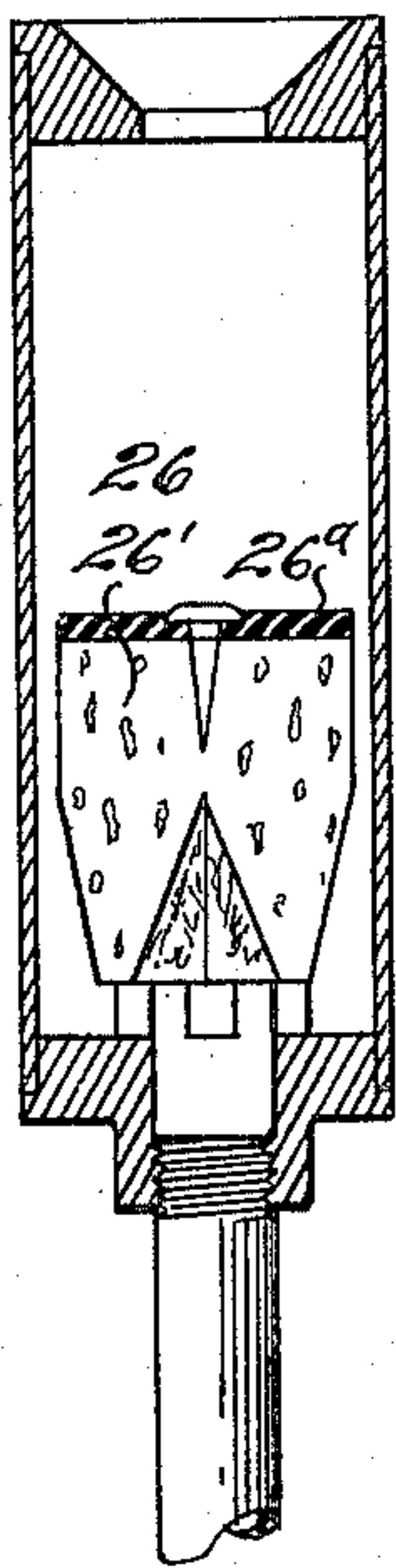


Fig. 2.

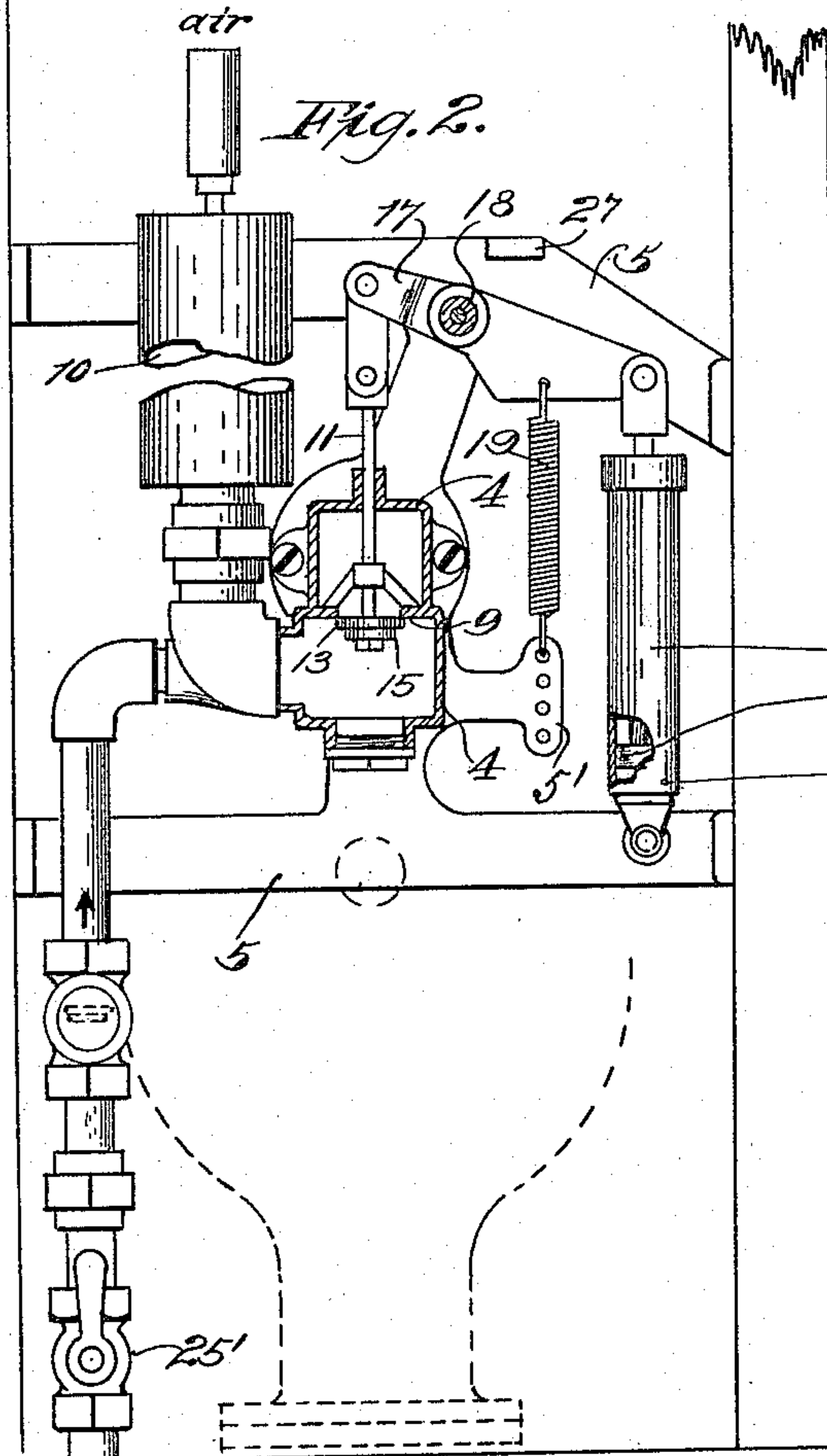
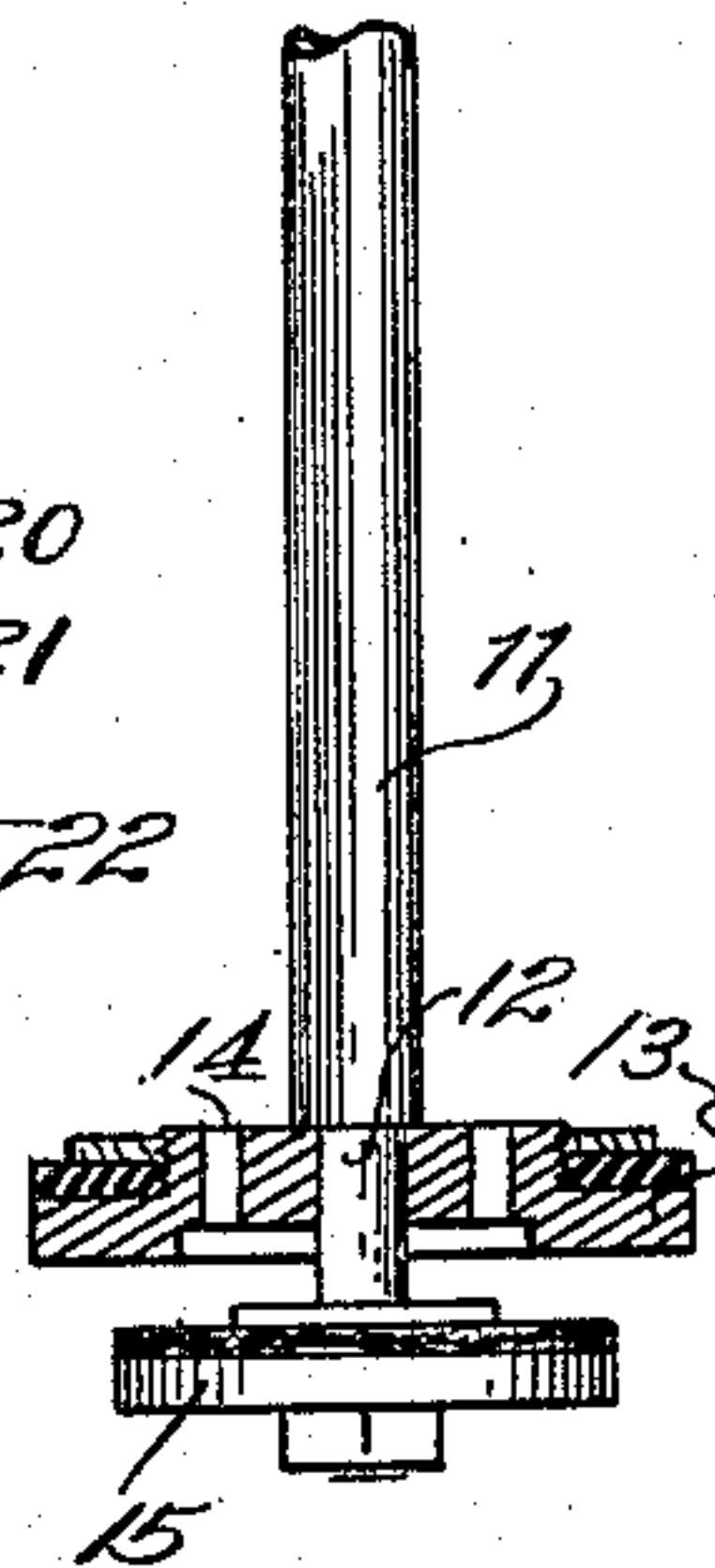


Fig. 3.



WITNESSES:

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ROMEO POZZI, OF OAKLAND, CALIFORNIA.

FLUSHING APPARATUS.

1,155,005.

Specification of Letters Patent.

Patented Sept. 28, 1915.

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To all whom it may concern:

Be it known that I, ROMEO POZZI, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Flushing Apparatus, of which the following is a specification.

This invention relates to improvements in toilet flushing systems, and particularly of the type of systems set forth in my application Serial Number 795,132, filed October 14, 1913.

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 plan view of the apparatus installed, showing the wall partitions in section. Fig. 2 is an elevation partly in vertical section. Fig. 3 is a detail of the double disk valve. Fig. 4 is a sectional detail of a form of air vent or relief valve.

At 2 is shown a toilet bowl, connected by a short section of pipe 3 to the discharge chamber of a valve casing 4, which is secured to a cast-iron bracket 5 whose ends are secured to adjacent faces of partition studs 6 of the partition. The partition has, in front of the bracket 5, an opening 7 through which access for adjustments of the apparatus may be had. The opening is closable by a suitable closure or sectional panel 8. The valve casing 4 has a valve seat 9 with a central port of large area, between the discharge chamber and the supply side, to which is connected a closed cistern 10, preferably in the form of a stand-pipe, the length and diameter of which is predetermined by requirements of service to furnish an ample quantity of water, and the upper part of which forms an air reservoir.

Inasmuch as the cistern is in direct and free communication with its valve casing 4, it is very desirable that a type of valve closure be provided which may be readily, easily and rapidly opened to the desired extent against the head or pressure of water in the cistern, which may be, for example, from six to ten feet. Therefore, I have designed, constructed and used, in actual practice, a valve with a stem 11 having a reduced neck 12, upon which is slidably mounted a disk 13 of a diameter sufficient to engage the valve seat 9. The body of the disk 13 is perforated at 14.

Fastened on the end of the valve stem 11 is a smaller disk 15, which, when held against the main disk 13, covers its apertures 14. By running the valve stem 11 through the discharge chamber of the valve a packing gland is eliminated. The outer end of the stem is connected to a lever 17, pivoted at 18 upon the bracket 5; the lever being engaged by a spring 19 by which it is operated to seat the valve, the opposite end of the spring being connected to a horizontal arm 5' extending laterally from the vertical member of the bracket 5. By changing the point of connection of the spring to the bracket, the speed of movement of the latter may be varied. To limit the speed of movement of the lever, and consequently the closing of the valve, the force of the spring 19 is opposed by a suitable means, here shown as a pneumatic dash-pot 20, to the piston 21 of which the lever is connected. The dash-pot is provided with an air escape duct 22, through which the air compressed on one stroke of the piston is expelled.

The apparatus operates as follows: To flush the bowl, the lever 17 is rocked against the force of its spring 19 by a hand crank 24, on the outside of the panel 8; the lever shifts the valve stem 11, the initial movement of which is effective to carry the smaller valve disk 15 away from the loose and main disk 13 which remains seated by the pressure of water in the cistern, which is connected to the water supply pipe 25, in which is interposed a check valve 25', so that it is subject to the pressure in the supply system, this pressure normally holding the differential or two-part valve closed in cooperation with the spring 19. Therefore, the smaller valve disk 15 is initially opened against the maximum pressure in the cistern, but because of the small aggregate area of the ports in valve disk 13 the former is easily opened and the water from the cistern tends to escape and thus lower the pressure upon the loose valve 13. The further movement of the lever shifts the shoulder of the stem against and moves the larger valve 13 from its seat. In order to obtain an instantaneous rush of the large volume of water from the cistern, at its top is connected an air inlet or vacuum-relief valve 26 which opens inwardly simultaneously with movement of the water when the valve 15 is opened.

The air valve breaks the vacuum at the

head of the closed cistern as the water moves and thus allows the body of water to fall rapidly through the open valve and to the bowl. As the valves 13—15 close and
 5 pressure again accumulates in the cistern, the relief valve 26 automatically closes.

To render the relief valve very sensitive to the accumulating pressure in the cistern, after the flush valve has closed or is closing,
 10 the moving member 26' of the valve is preferably made of a material that will float, as cork, its upper end being provided with a rubber washer 26^a. Thus before any pressure obtains in the cistern, as it fills,
 15 with the valve 26' open, the member 26 rises with the water and closes the valve port before an overflow can occur and is thus very sensitive to even light pressures.

The lever 17 is rocked until stopped by
 20 engagement with a stop lug 27 on the bracket when, if released by the operator, it will be returned by the spring 19 to close the valve. While the valve may be opened at any speed, the length of period of flush
 25 will be determined and controlled by the force of the closing spring and the rate of escape of air from the dash pot. Under control of these means the valve stem will shift the two valve parts 13—15 toward
 30 the seat 9 and the disk 13 will be shifted along the stem neck, when caught by the outflowing water and seated independently and in advance of the initial small disk 15. The perforated disk 13 though closed, per-
 35 mits a quantity of water to flow to and flood the bowl; this flow continuing until the lever 17 automatically closes the disk 15.

By connecting the supply pipe to the bot-

tom of the cistern and introducing the check valve, the cistern cannot be drained 40 of its charge as might happen were the supply connected to the bottom thereof without the safety provided by the check valve.

Having thus described my invention what I claim and desire to secure by Letters Pat- 45 ent is—

In a structure of the character described, a supporting bracket of substantially I-shape having an arm projecting laterally from the vertical member, a valve casing se- 50 cured to the vertical member of the bracket and provided with inlet and outlet openings, a valve in the casing for closing the outlet opening, a lever pivoted between its ends to the bracket with one end of the le- 55 ver overlying the valve casing, a connection between the valve and said superposed terminal of the lever, a spring connecting the opposite terminal portion of the lever to the lateral arm of the bracket to seat the 60 valve, a dash pot connected to the base of the bracket, a piston connected to the lever adjacent the spring and operable in the dash pot to oppose the force of the spring, a hand crank for rocking the lever to unseat 65 the valve, and a stop lug arranged on the top portion of the bracket over the lever terminal to which the spring is connected for limiting the rocking of the lever.

In testimony whereof I have hereunto set 70 my hand in the presence of two subscribing witnesses.

ROMEO POZZI.

Witnesses:

JAS. LEE,

C. E. SCHMIDT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."