J. C. DUNER.

WATER CLOSET.

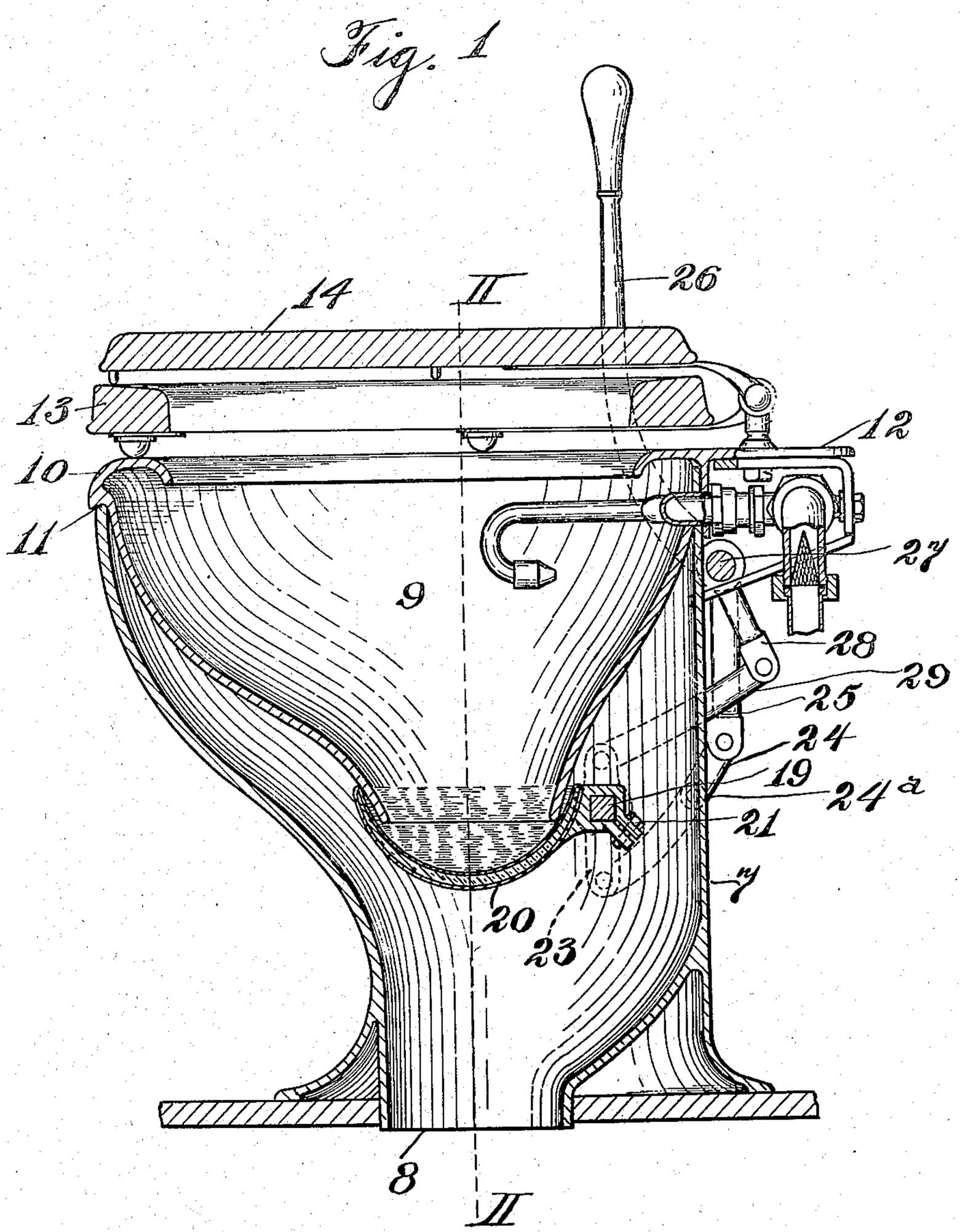
APPLICATION FILED OCT. 8, 1906.

936,706.

Patented Oct. 12, 1909.

3 SHEETS—SHEET 1.

Fig. 1



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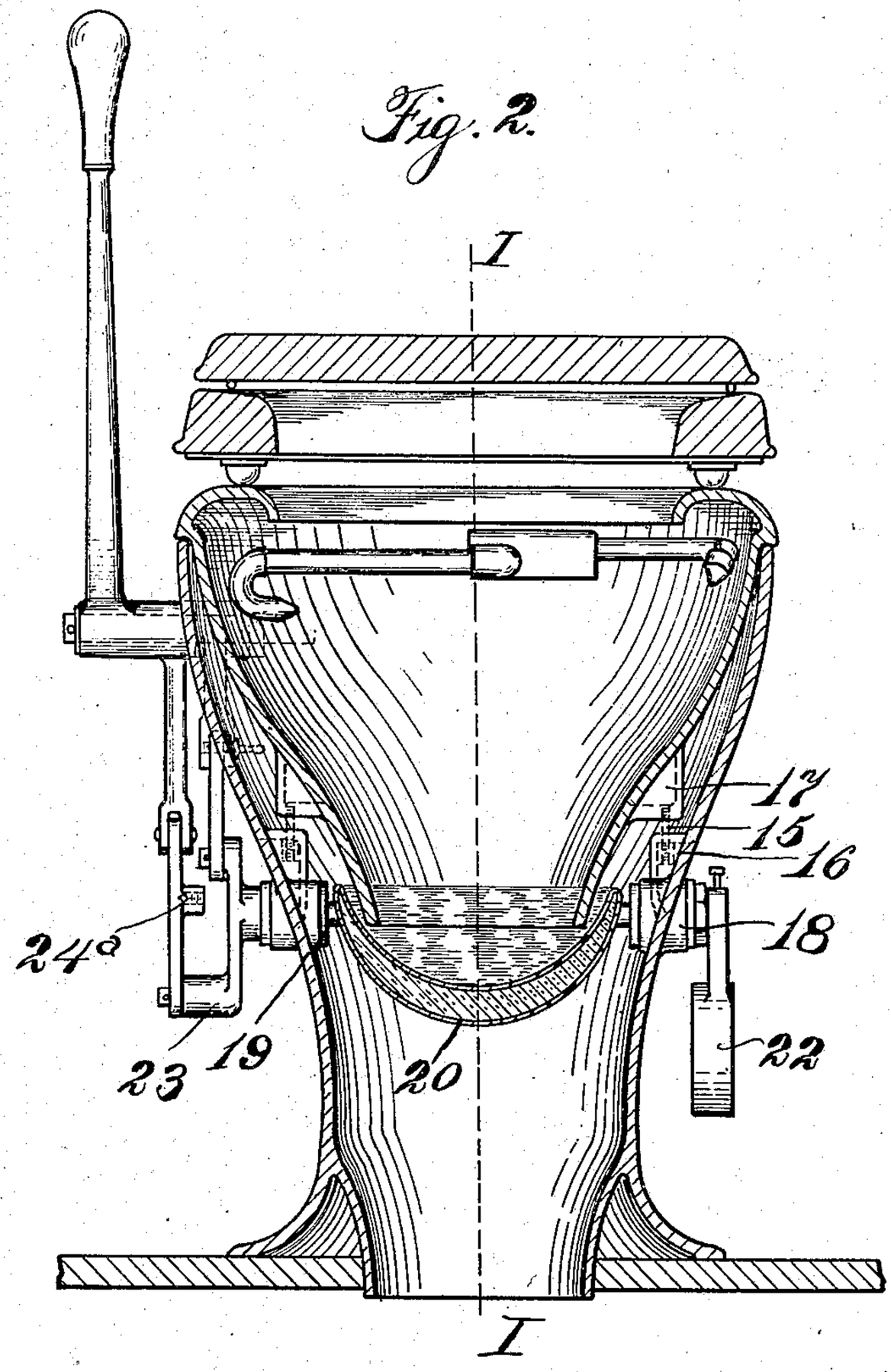
3 SHEETS—SHEET 2.

Fig. 2.



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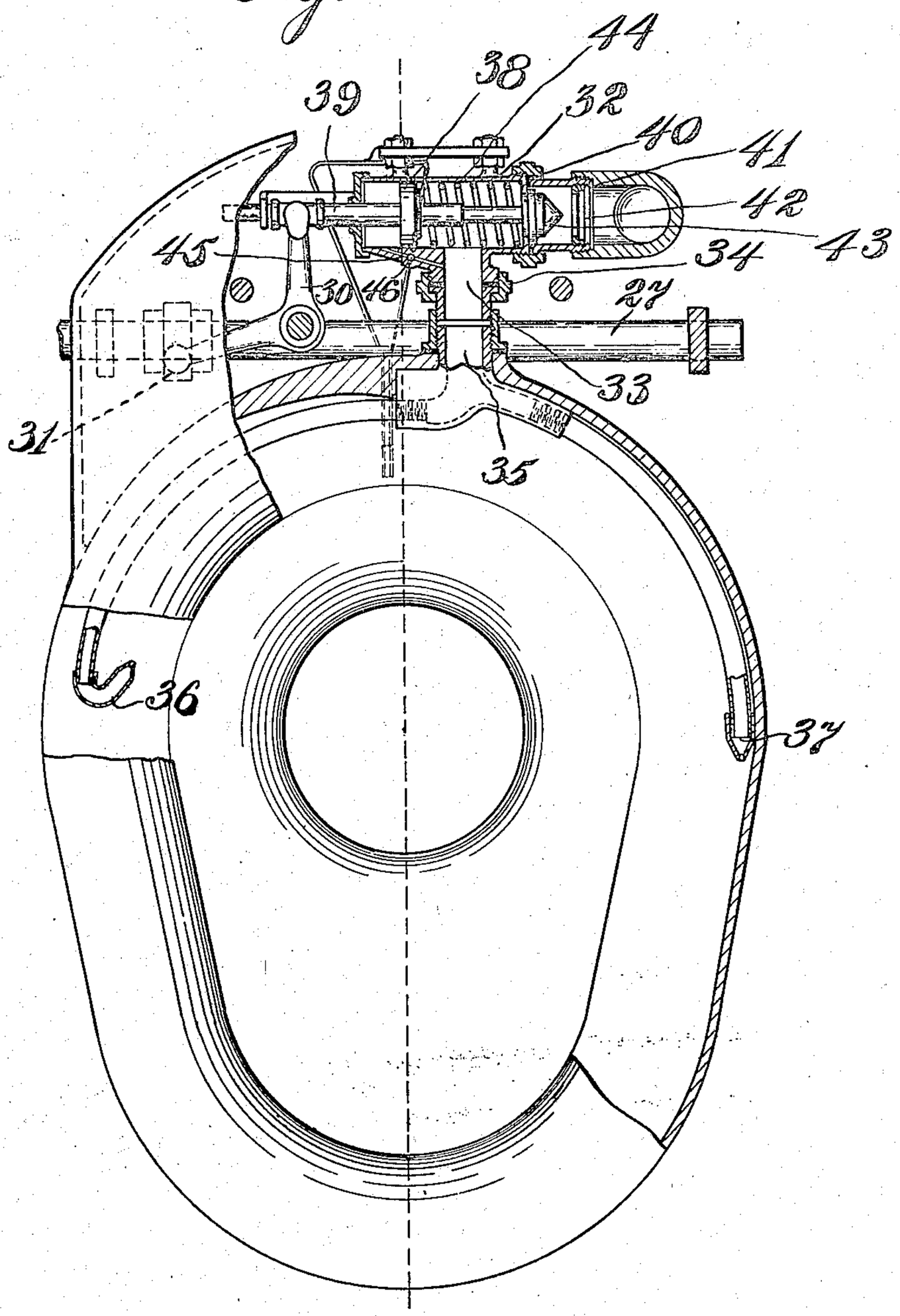
3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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WATER-CLOSET.

936,706. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed October 8, 1906. Serial No. 337,894.

To all whom it may concern:

Be it known that I, JOHN CHARLES DUNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Closets, of which the following is a specification.

My invention relates to water closets and more particularly to the hoppers or bowls and the means employed for emptying and flushing the same, and its objects are to provide an apparatus of an exceedingly simple, stable, and durable construction which may be readily taken apart and one in which the adjustable parts are readily accessible at all times; to provide an apparatus which may be used either as a manually emptying or continuously open closet as desired; to provide an apparatus in which means are provided for straining the water previous to its passage through the valves, thereby insuring the proper operation of the latter when muddy or dirty water is used; to provide a flushing device which will open quickly and close slowly in such a manner that the bowl will be thoroughly cleaned; to provide an apparatus in which the flushing valve will close automatically when the operating handle is held in the open position, and one which will consume a minimum amount of water and work equally well under all conditions irrespective of the pressure in the supply pipe. These objects and other advantages which may hereinafter appear I attain by means of the apparatus illustrated in preferred form in the accompanying drawings, wherein:

Figure 1 is a longitudinal vertical section of a water closet bowl and its connections, embodying my improved construction taken on the line 1—1 of Figure 2;

Figure 2 is a cross section of the same taken on the line 11—11 of Figure 1, and

Figure 3 is a plan view of the removable bowl and its connections with the valve mechanism in section.

By reference to the accompanying drawings it will be seen that my device as adapted to use in railway trains and other places where the bottom of the closet is open directly to the atmosphere, consists of a supporting casing 7, provided at its lower end with suitable flanges, resting upon and secured to the floor, and an opening 8 adapted to register with the opening through the floor. The bowl 9 is provided with an integral seat ring 10, around its upper edge, and a circumferential groove 11 which fits the upper edge of the casing 7 and serves to center the bowl within the casing. The bowl 9 is also provided upon its upper end with a rearwardly extending projection 12 to which the valve and its connections, together with the seat 13, and cover 14, are secured, in a manner to be presently described. The bowl is rigidly secured to the casing by means of screw bolts 15, engaging lugs 16 and 17 formed integral with the casing and bowl respectively as shown in Figure 2. The lugs 16 are made hollow in order that access may be had from the outside to the bolts 15, when it is desired to remove or secure the bowl to the casing.

The casing 7 is also provided in its sidewalls near the bottom of the bowl, with bearings 18 in which is journaled a transverse shaft 19 for the support of the dumping pan 20 secured thereto by means of the clips and bolts 21, so located that they will be readily accessible when the casing is removed from the bowl. The relative location of the shaft 19 and bowl 9 is such, that when the dumping pan 20 is held in its normal or raised position, by reason of the counterweight 22, secured to one end of said shaft, it will entirely inclose the lower end of the bowl 9, in such a manner as to cause it to be submerged in the water remaining in the pan.

To the end of the shaft 19 opposite the weight 22, is secured a double ended arm 23, which is in a vertical position when the pan is raised, as illustrated in Figures 1 and 2. The lower end of the arm 23 is pivotally connected by means of the link 24, to the lower end 25 of the operating handle 26 which is journaled upon and rotates around the valve operating shaft 27, rotatably mounted upon the rear of the casing 7. When the handle 26 is depressed the shaft 19 will be rotated and in doing so will dump the pan 20 and at the same time rotate the shaft 27 in the opposite direction through the medium of arm 28, secured to said shaft and connecting link 29 pivoted to the lower end of the arm 28 and the upper end of the arm 23. Coincidently with the rotation of the shaft 27, the valve mechanism will be operated through the medium of a bell crank lever 30, pivoted to the under side of the

projection 12 in position to be engaged by the arm 31 secured to said shaft, as shown in Figure 3.

The valve mechanism consists of a cylindrical casing 32, provided upon one side with an exhaust nozzle 33 connected by means of a union 34, to the flushing pipe 35 leading into the bowl 9. The flushing pipe 35 is provided within the bowl 9 with two jets 36 and 37 so arranged as to impart a swirling motion to the water, and direct it in the most advantageous directions to thoroughly cleanse the bowl.

A piston 38 is fitted loosely within the casing 32 and is provided with a hollow stem 39 which projects through the rear head of the casing and engages loosely with the lever 30, by means of which it is reciprocated. The piston 38 is also provided with a loose cup packing disk (not shown) which allows the water to pass behind it, but confines this water when the piston moves in the reverse direction (to the left Figure 3) and thereby forces it through the bleed passage 45. The opposite or forward end of the casing is provided with a valve seat 40 and abuts against and is secured to an inlet pipe 41 also provided with a valve seat 42. A valve 43 reciprocates within the pipe 41 between the seats 40 and 42, and is normally held against the seat 40 by the pressure of the water and against the seat 42 when the piston 38 is shifted toward the right (Figure 3). The piston 38 is gradually shifted toward the left by means of a spring 44 interposed between it and the forward end of the casing 32.

From the foregoing it will be seen that when the handle 26 is depressed the piston 38 will be shifted toward the right and in so doing will unseat the valve 43 from the seat 40 and move it toward the right until it becomes seated upon the seat 42, thus allowing water to be admitted into the casing 32 during the passage of the valve 43 between its seats. As the water enters the casing 32 part of it will be discharged into the bowl through the jets 36 and 37 and a portion will pass around the piston 38 and fill the space between it and the rear head of the casing. A bleed passage 45, provided with a regulating screw 46, connects said space with the pipe 35 so that when the piston 38 is shifted toward the left by the spring 44 the water will be gradually forced through said passage and out through the jets 36 and 37 thus insuring the utilization of the entire amount of water admitted to cleanse the bowl. By means of this arrangement it is impossible to waste the water as the valve 43 will remain seated at 42 as long as the handle 26 is depressed and will instantly return to its seat 40 when the handle is raised. When it is desired to use the apparatus as a dry closet the pan and valves may be locked in their open and closed positions respectively by withdrawing the pivot pin connecting the links 24 and 25 and allowing the pan to drop until the lever 24 is in such a position that the hole 24ª (Figures 1 and 2) will register with the pin connecting the arm 28 and link 29, when said pin which is made long for the purpose can be inserted into the hole 24ª and the parts remain locked.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. The combination with a water closet provided with a dumping pan, of flushing means for the closet, controlling means for the flushing means, a handle for simultaneously operating the pan and the controlling means, automatic means for returning the handle and pan to normal position, the controlling means and pan being so constructed and so connected to the handle that a flow of water to the bowl is permitted and the pan opened as the handle moves from normal to extreme position, the flow is cut off when the handle reaches extreme position and the pan closed and a second flow is permitted as the handle and pan return automatically to normal position.

2. In a water closet the combination, of a bowl and support therefor, a dumping pan adjacent the lower end of said bowl, means for flushing the same, a valve controlling said flushing means adapted to close flushing means in both of its opposite extremes of movement, and means connecting the valve and dumping pan and provided with a handle whereby the valve will be operated coincidently with the operation of the pan and the valve moved to its closed position when the pan is in either its raised or lowered position, and means coöperating with the means for connecting the valve and dumping pan whereby the pan may be locked in open position and the valve in closed position.

3. In combination in a water closet, a bowl and flushing means therefor comprising a pair of stationary pipes with nozzles constituting the ends thereof and lying on opposite sides of the bowl, one of the nozzles being arranged for directing the water circumferentially thereof and the other being recurved at its end for directing the water backwardly.

4. In combination in a water closet, a bowl and flushing means therefor comprising a pair of pipes with nozzles constituting the ends thereof and lying on opposite sides of the bowl, one of the nozzles being arranged for directing the water circumferentially thereof, and the other being curved rearwardly and downwardly at its end for directing the water to the rear and toward the bottom of the bowl.

5. In a water closet, the combination with a bowl, flushing means and a valve therefor, of a shaft provided with a dumping pan and a cross lever secured intermediate its ends to the shaft, a rotatable valve operating shaft, a crank arm secured thereto, connections between the valve operating shaft and the valve whereby a rotation of such shaft opens the valve, an operating handle pivoted on the valve operating shaft, and link connections from the handle to one end of the said cross lever and from the other end of the cross lever to the crank arm on the valve operating shaft.

In testimony whereof, I have hereunto signed my name in the presence of the two subscribed witnesses.

JOHN C. DUNER.

Witnesses:
PAUL CARPENTER,
JAMES NICHOLAS LORENZ.