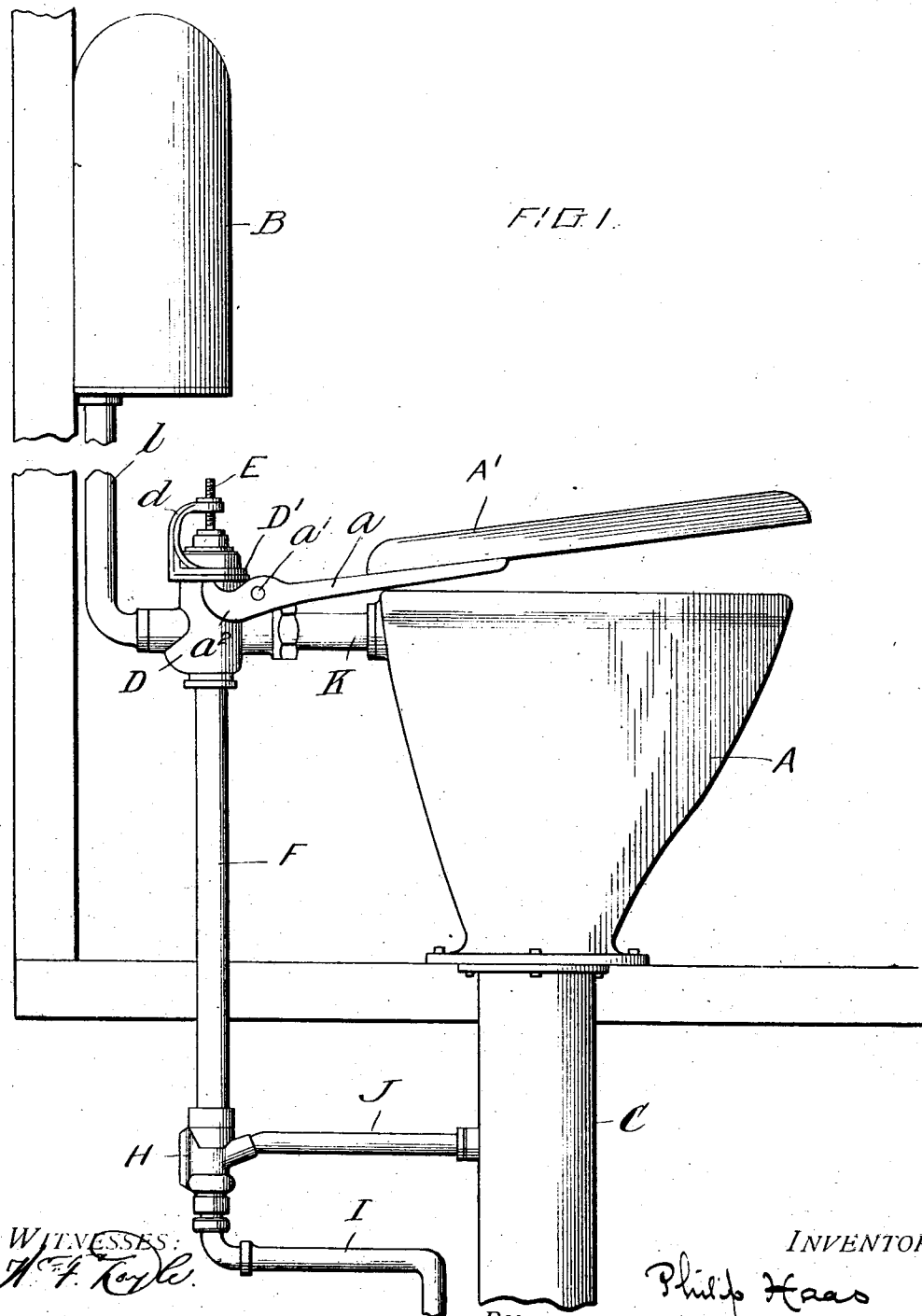


P. HAAS.
 FLUSHING DEVICE FOR WATER CLOSETS.
 APPLICATION FILED JUNE 23, 1911.

1,034,789.

Patented Aug. 6, 1912.
 3 SHEETS—SHEET 1.



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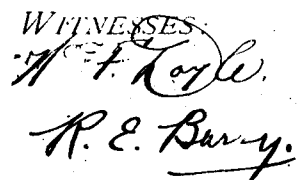
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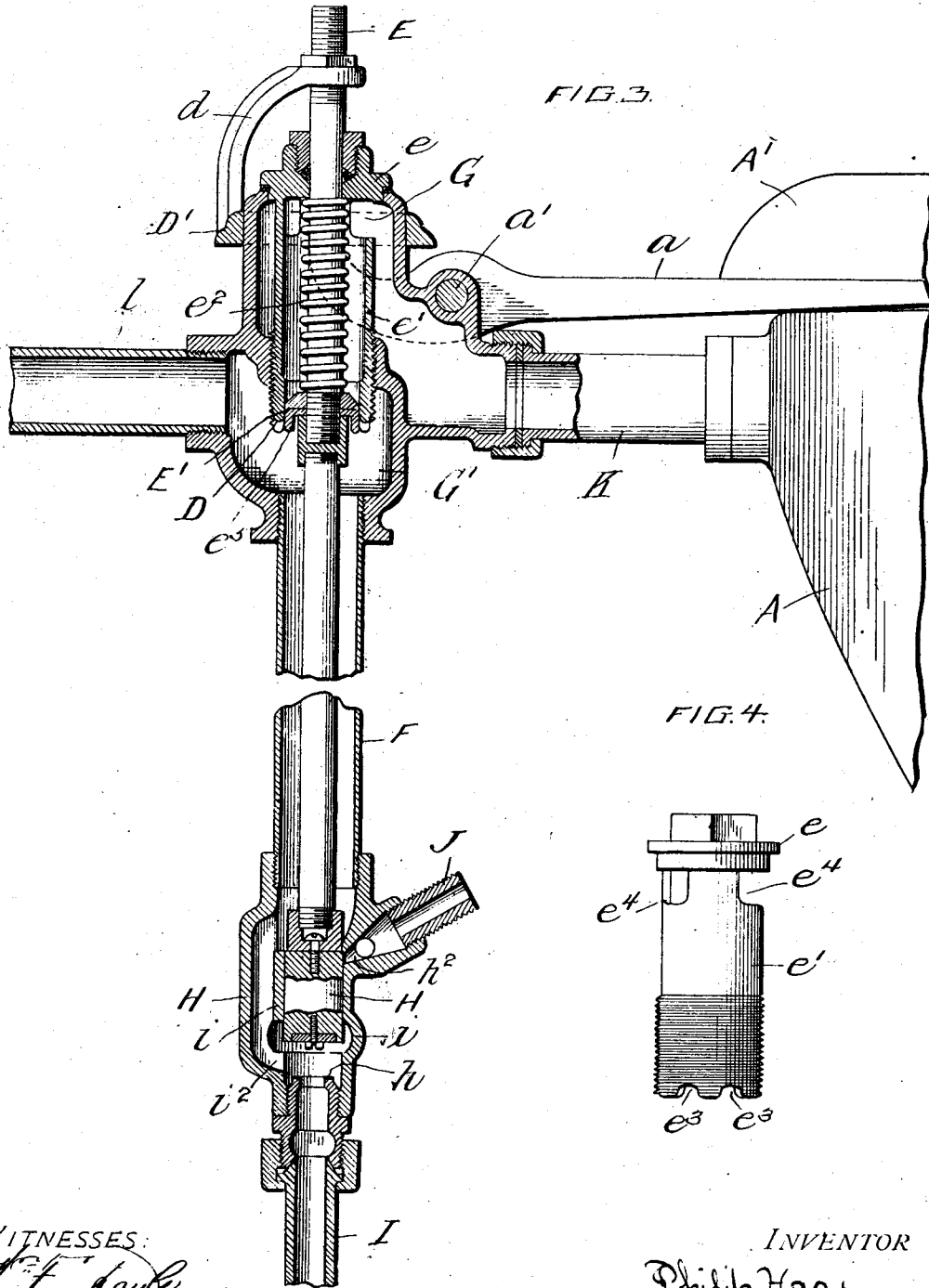
3 SHEETS—SHEET 2

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UNITED STATES PATENT OFFICE.

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FLUSHING DEVICE FOR WATER-CLOSETS.

1,034,789.

Specification of Letters Patent.

Patented Aug. 6, 1912.

Application filed June 23, 1911. Serial No. 694,959.

To all whom it may concern:

Be it known that I, PHILIP HAAS, citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Flushing Devices for Water-Closets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to the class of water closets and consists in an improved valve construction for use in connection with a flushing tank.

In the accompanying drawings I have illustrated the best form in which I have contemplated embodying my invention and my invention is set forth in the following description and claims.

In the drawings, Figure 1 is a view of my improved valve construction in elevation. Fig. 2 is an enlarged vertical section of the same when in normal rest position or when discharging water into the bowl. Fig. 3 is a like vertical section showing parts in position when filling the tank. Fig. 4 is a detail showing the construction of the sleeve the interior of which is engaged by the upper valve. Fig. 5 is a sectional view of the admission valve showing the parts just after the beginning of its upward movement.

In these drawings A is the bowl, B the flush tank and C is the water pipe from the bowl. A' is the seat and a is the seat supporting lever. This lever is pivoted at a' and is provided with two arms a² extending rearwardly from the point of pivoting, one on each side of the upper valve casing D and bearing against the underside of a ring D' surrounding the valve casing. This ring has an upwardly extending arm d curving inwardly and having its upper end located centrally above the valve casing D. At this point it is connected with valve rod E. This rod extends downwardly through a stuffing box e and through the valve casing D into the lower valve casing H. The valve casing D is divided interiorly into two chambers G, G'. The horizontally disposed diaphragm separating the two compartments is provided centrally with a threaded aperture and into this is screwed the lower end of a sleeve e' depending from the stuffing box e. This secures the stuffing box to the valve casing drawing the same down tightly

upon the packing interposed between them. The rod E is provided with a circular valve E' fitted to slide within and close the lower end of the sleeve e'. This valve is of a well known type having flexible material surrounding it forming a packing, and extending below the rigid parts of the valve in the form of a flange e⁵. A spring e² surrounding the rod E is interposed between the valve E' and the stuffing box, which tends at all times to depress the rod E and its connected parts. A cylindrical casing F connects the upper valve casing D with the lower valve casing H and this valve casing is connected with a water supply pipe I.

To the lower end of the rod E is secured the valve H' which consists of a cylindrical body, recessed at the bottom to receive suitable packing to engage the valve seat h and control the admission of water to the interior of the device. The valve casing H is provided with a tubular part i to receive and guide the valve H'. Below this guide the interior of the casing is expanded at i'. A passage in the nature of a by-pass extends from the casing above the valve H' down to the enlargement i', said passage extending slightly below the said enlargement on one side as shown at i². The valve casing H is also provided with an opening h² opening into a valve of the ball valve type. A drain pipe J is connected with this valve and leads to the waste pipe C. This valve acts as a check valve and prevents any influx of liquid from the waste pipe in case of a stoppage in the same. A pipe K leading to the bowl is connected with the chamber G of the valve casing D while a pipe l leads from the chamber G' to the tank B. The sleeve e' at its lower end is notched or recessed as shown at e³ (see Fig. 4) and at its upper end is provided with openings e⁴ communicating with the chamber G of the valve casing. The lower end of the sleeve e' being closed, the water as it rises will pass from chamber G' by pipe l to the tank B, until the same has been filled. In this operation the utility of the notches or recesses e³ in the lower end of the sleeve e' is readily seen. The water, when it engages the valve E' will exert its full pressure upon the inner side of the flexible flange e⁵ extending below the valve. This flange being of flexible material will be forced thereby outward and an undue amount of friction created between

said flange and the interior of the sleeve. The pressure is often so great as to arrest the movement of the valve. The recesses permit the water to engage the outside of the flange as well as on the inside and the outer pressure relieves this injurious effect, thereby enabling the valve to work easily and increasing the durability of the same.

10 By referring to Fig. 2 it will be seen that in the normal condition or when the device is at rest, the rod E and valve E' are depressed by the spring e² and draw down the ring D'. The ring D' depresses the rear end of the seat lever, raising the seat from the bowl. The valve H' is also depressed and all ingress of water from the pipe I is prevented while the opening into the drain pipe is uncovered and any water in the valve casing D or tank B will flow slowly out into the waste pipe C. On applying pressure to the seat, the seat lever operates through its connections to lift the rod E thereby raising the valve E' within the sleeve and closing the connection with the bowl. The valve H' is also raised and water admitted to the apparatus from pipe I. The valves are mounted on the rod E in such relation to each other that when the valve E' has closed the lower end of the sleeve e', the lower valve H' will have been raised only sufficiently to close the drain pipe and to admit water to the lower part of the by-pass at i² as shown in Fig. 5. The further movement of the seat raises the valve E' farther within the sleeve and brings the lower end of the valve H' into the enlargement i' of the casing H. The water can then flow around the valve H' to the full or approximately the full capacity of the pipe I. On releasing the seat from pressure the spring e² depresses the valve rod permitting the water to flow into the sleeve e' and thence through the openings e⁴ into the chamber G and through pipe K into the bowl, and the movable parts of the device will be restored to normal position. It will be seen that the openings e⁴ are considerably above the level of the upper edge of the bowl, and consequently, in case of the stoppage of the waste pipe from any cause, none of the impure contents of the bowl or pipe can flow back into the device. In descending the valve H' will first cut off the influx of water

from the supply pipe I except such as will pass through the downwardly extended portion of the by-pass at i² (see Fig. 5). Water will continue to flow through this small aperture for a little time thereafter and until the valve has completed its downward movement. Just before the valve H' reaches its lowermost position the opening into the drain pipe is uncovered. The relation of the parts is such that the valve H' will cut off the greater part of the inflow of water before water is admitted to the interior of the sleeve e'.

The provision for admitting a small initial flow of water to the device, and for continuing a slight flow after the main current has been in a great degree cut off, prevents hammering in the pipes.

What I claim and desire to secure by Letters Patent is:—

1. In a tank flushing device for water closets, the combination with the tank and bowl, of passages for delivering water from the tank to said bowl, a valve for controlling the flow of water to said bowl from the tank, the discharge opening from said passages and valve being above the level of the upper edge of the bowl, an inlet for water and a valve controlling the same, a drain pipe and a check valve for said drain pipe, whereby the tank flushing device is secured from all back flow of foul liquid.

2. In a tank flushing device for water closets, the combination with the bowl, of a passage for supplying water to the bowl to flush the same, said passage including an inlet and outlet chamber and a valve casing connecting them, a valve adapted to close the passage by entering and filling a portion of the valve casing extending into the inlet chamber, said valve having a depending flange of flexible material adapted to be expanded by the water pressure, the end of the valve casing engaged by said valve being provided with notches or recesses whereby there will be water pressure upon the outside as well as on the inside of the said flexible flange.

In testimony whereof I affix my signature, in the presence of two witnesses.

PHILIP HAAS.

Witnesses:

C. H. WHITAKER,
J. K. MOORE.