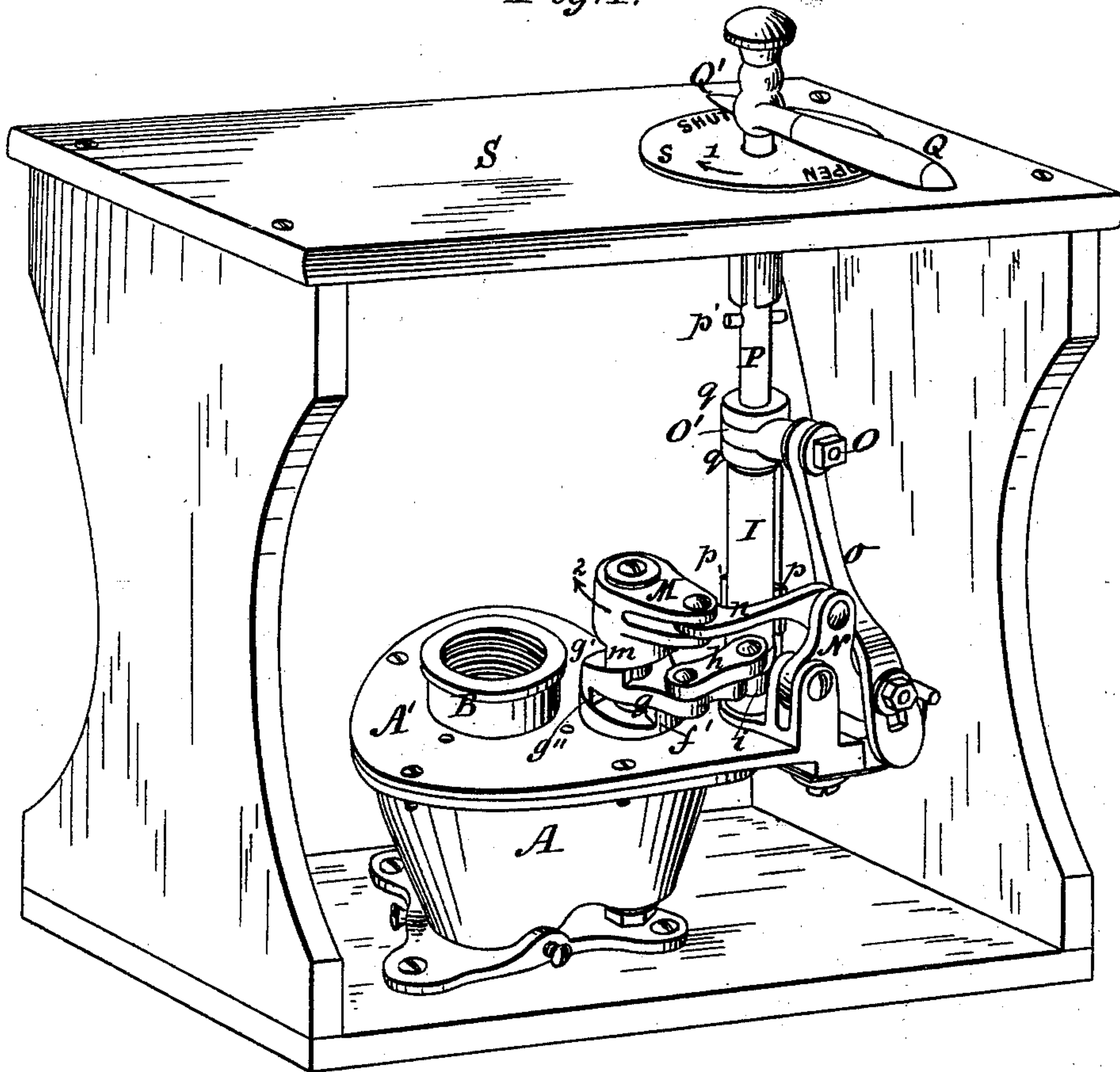


F. MILLINGTON & F. WATSON.
Waste-Pipe Cut-Off and Valve.
No. 223,371. Patented Jan. 6, 1880.

Fig. 1.



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W. E. Bowen

Inventors:

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Fig. 2.

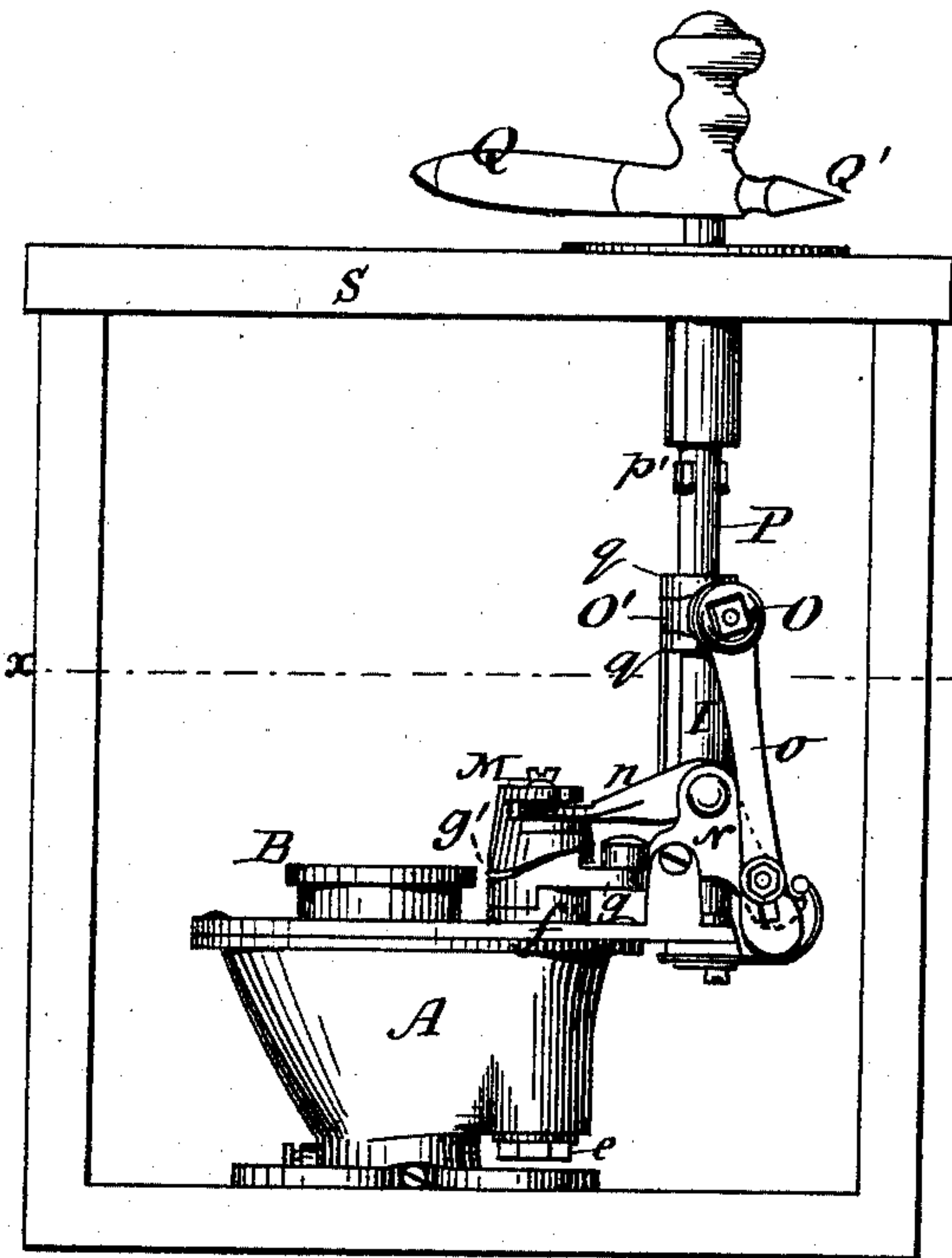


Fig. 3.

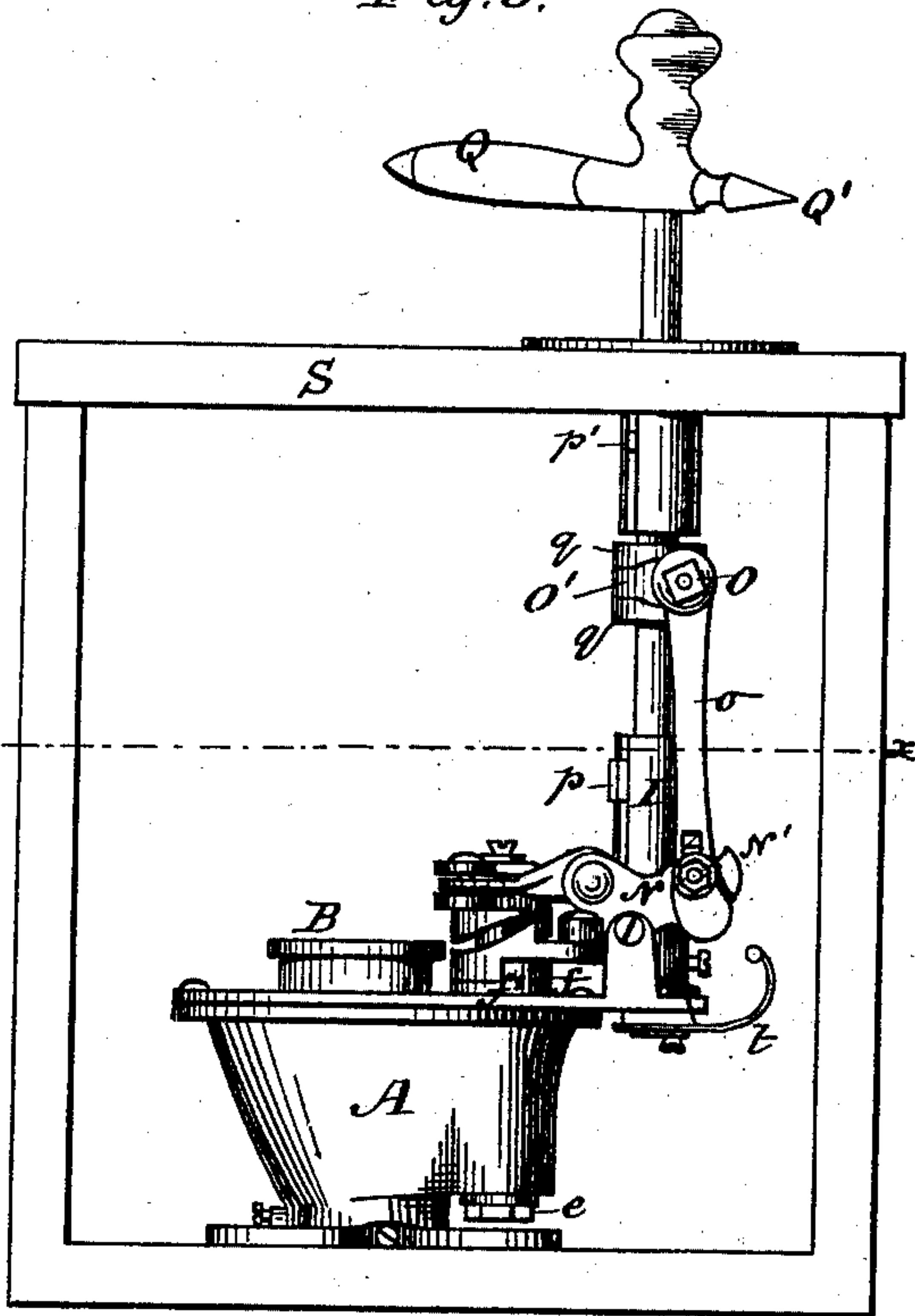


Fig. 4.

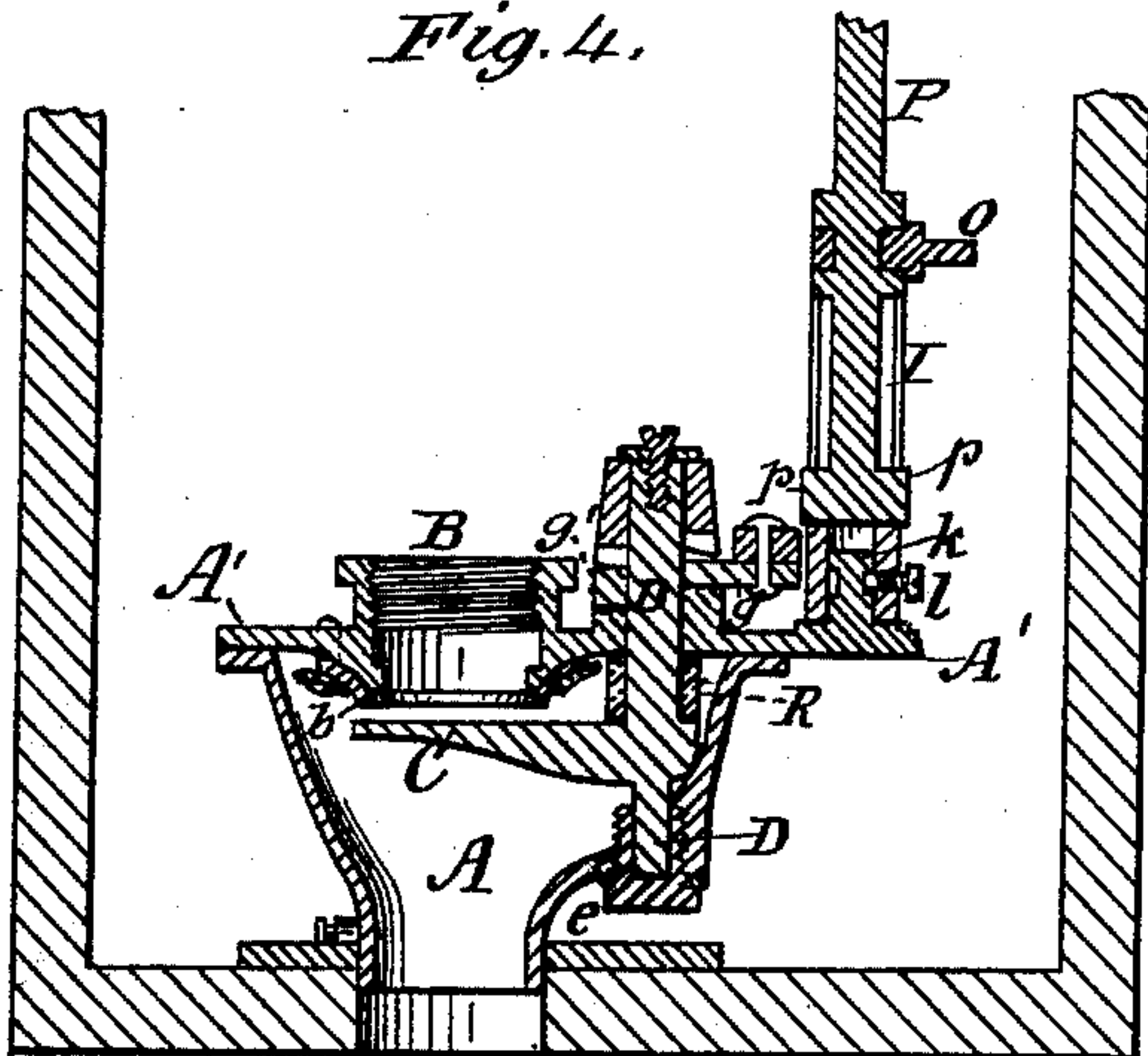
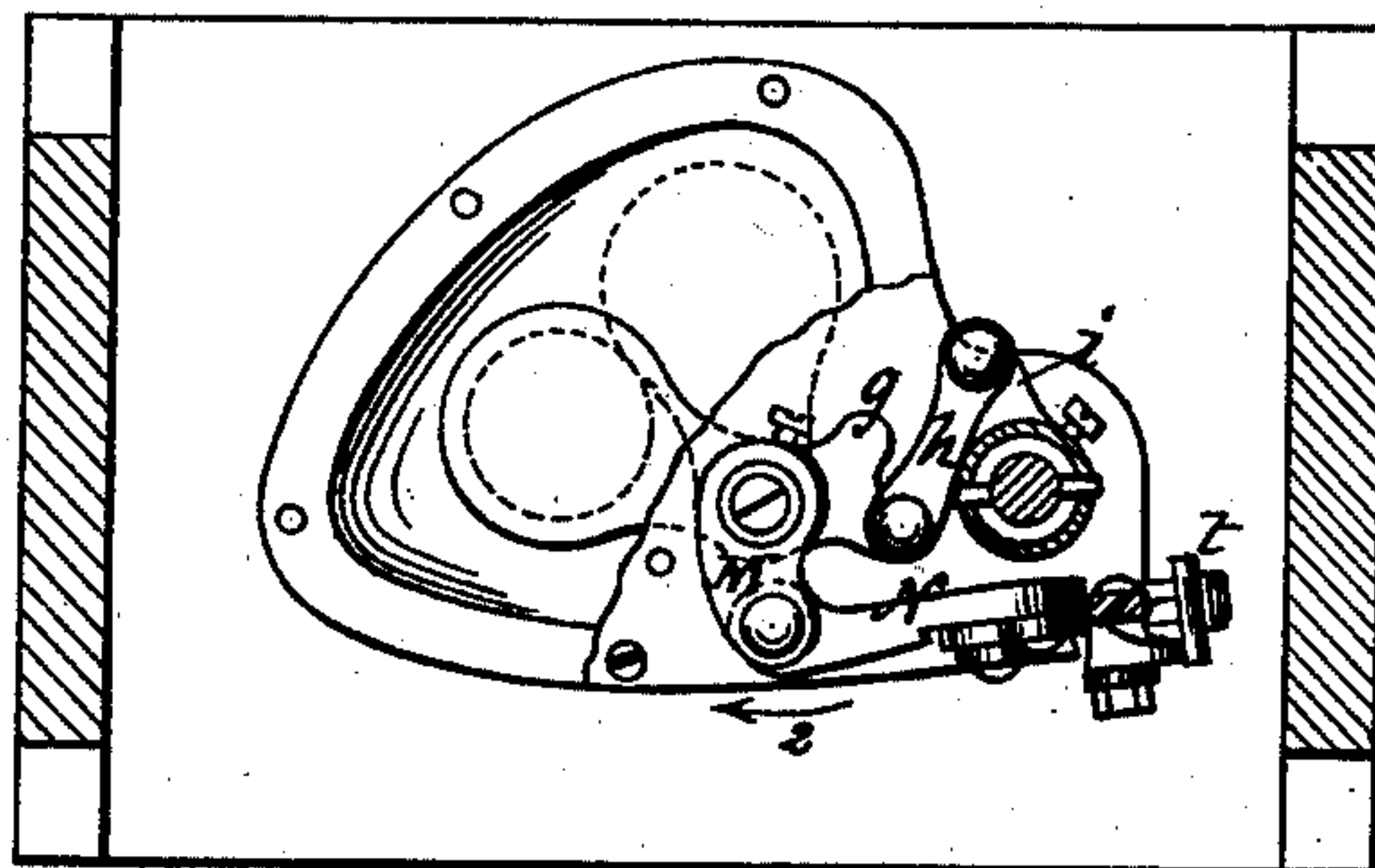


Fig. 5.



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att'y

UNITED STATES PATENT OFFICE.

FRANK MILLINGTON AND FRANK WATSON, OF HOOSICK FALLS, NEW YORK.

WASTE-PIPE CUT-OFF AND VALVE.

SPECIFICATION forming part of Letters Patent No. 223,371, dated January 6, 1880.

Application filed August 5, 1879.

To all whom it may concern:

Be it known that we, FRANK MILLINGTON and FRANK WATSON, both of Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Waste-Pipe Cut-Offs and Valves; and we hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

This invention relates to an improved waste-pipe valve especially intended for use in water-closets.

It consists, mainly, in providing a waste-pipe with a swinging cut-off or valve which has also a dropping movement on being first opened, and the final and complete closing of which is effected by a rising movement of the valve or cut-off after it has been swung under its seat by a hand-lever operating upon its stem, so that in the operation of the cut-off or valve there is no rubbing friction between it and its seat. Neither said valve or seat is, therefore, liable to become untrue by abrasion, but a close joint will always be formed when the valve is closed, effectually preventing the upward escape of sewer-gas from the waste-pipe.

In the accompanying drawings, Figure 1 is a perspective view of the casing and outside operative devices of the valve or cut-off. Fig. 2 is a side elevation, showing the parts in position as when the valve or cut-off has performed its dropping movement. Fig. 3 is a similar view, showing the positions of the parts when the valve or cut-off has dropped and been swung to one side. Fig. 4 is a vertical central section of Fig. 2; and Fig. 5 is a horizontal section taken on line *x x*, Figs. 2 and 3.

The letter A indicates the head of the waste-pipe, having a cover-plate, A', provided with a screw-nozzle, B, to which the water-closet pan is to be connected. On the under side of the cover-plate is formed a valve-seat, preferably made of leather, *b*, or other yielding substance, secured to the rim of the nozzle B, against which closely fits a valve or cut-off, C, when closed. This valve or cut-off C projects horizontally from, and is carried by, a vertical spindle, D, the lower end of which is stepped in a cup-bearing, *e*, screwed into the wall of

the waste-pipe head, and the upper end of which extends through the cover-plate.

Upon the top of the cover-plate and surrounding the spindle is firmly secured an annular seat, *f*, the upper surface of which is formed by an inclined plane, the opposite ends of which are arrested by a vertical shoulder, *f'*. Resting upon this seat is the end *g'* of an arm, *g*, the under surface of which is correspondingly shaped, and fits snugly upon seat *f* when the two shoulders *f'* and *g''* are brought together.

The arm *g* is connected by a link, *h*, with an arm, *i*, which projects from a vertical hollow shaft, I, the lower end of which fits upon a stud-bearing, *k*, rising from the cover-plate, and the hollow shaft is prevented from moving upward from said bearing by a thumb-screw, *l*, the top of which extends into a groove therein.

At the top of the spindle D is firmly fixed an arm, M, the under side of which is formed upon an inclined plane the opposite ends of which are connected by a vertical shoulder, *m*, the inclination of this plane being just the reverse of that of the arm *g*.

The arm M is connected by a link, *n*, with a bell-crank lever, N, fulcrumed between two short standards rising from the cover-plate of the waste-pipe head. The opposite end of the bell-crank lever is connected by a link, *o*, with a stud, O, projecting from a ring, O', which surrounds a shaft, P, and is prevented from moving lengthwise of said shaft by collars *q q*. This shaft P extends into the hollow shaft I, and is prevented from turning therein by lugs *p*, which project through longitudinal slots in said hollow shaft.

The upper portion of the shaft P passes through the seat-board S and a split sleeve, projecting downward from a plate, *s*, arranged upon the said seat-board. A pin, *p'*, projects from said shaft, and entering said split sleeve is prevented thereby from turning while the handle is elevated; and the top of the shaft is provided with a handle, Q, and pointer Q'.

Referring to the sectional Fig. 4, the letter R indicates an india-rubber spring, which surrounds the spindle D between the valve or cut-off C and the under side of the cover-plate A'. When the spring is distended naturally it

forces the valve downward, the spindle having a longitudinal movement. When the valve is closed, however, which is its normal condition, the spring is compressed and the several parts stand in the position shown in Fig. 1, the shoulders f' , g'' , and m of the inclined planes being separated by a considerable distance. If now the handle Q be turned in the direction of the arrow 1, the arm i and link h will draw the arm g around and cause shoulder g'' to strike shoulder f' , the inclined plane of the lower side of arm g sliding down that of the seat f , and the incline of the upper side of said arm moving toward the foot of the incline of arm M . This, it will be observed, permits the spring R to expand and force the valve or cut-off C downward, and thus is accomplished the first (a dropping) movement of the valve when being opened. Now, in order to swing the valve to one side in order to open it fully, as shown by dotted lines in Fig. 5, the shaft P is drawn upward to the position shown in Fig. 3, when, through the link o , bell-crank lever N , and link n , the arm M is swung in the direction of arrow 2, carrying the spindle D and valve C in the same direction.

In order to close the valve the reverse movements of the shaft P are necessary, the final turning of the same to bring the pointer Q' in coincidence with the word "shut" on the plate s causing the spring R to be compressed, and the valve or cut-off to be drawn squarely up against its seat, which may be faced with leather or other packing, if desired. Thus it will be seen the seat and valve are not worn by friction, and the spring R insures a close joint between them, and effectually prevents the escape of sewer-gas from the waste-pipe.

To retain the valve C in position under its seat after having been brought there by lowering the handle Q , and prevent it from being carried away from said seat while being elevated by the beveled faces of the arm g , the extremity N' of the bell-crank lever N is made in the form of a hook or rest to receive the free end of a spring, t , secured to the cover-plate, and the pressure of this spring is sufficient to overcome the tendency of the valve to revolve, caused by the friction of the arm g upon its stem; but the bell-crank is easily released while elevating the handle to turn the valve on one side, the spring being at the same

time forced aside by the lower eccentric end of the link o , as shown.

Having now described the construction and explained the operation of our invention, we claim—

1. The combination, with a suitable valve-seat formed in a waste-pipe, of a valve or cut-off adapted to be closed by a movement directly upward toward said seat, and opened by a corresponding downward motion, said valve or cut-off having a horizontal vibratory motion to remove it from and bring it back under its seat, substantially as described.

2. The combination, with the valve-seat formed upon the cover-plate A' of the waste-pipe, of the valve C , attached to the spindle D , stepped in the cup-bearing e , and extending above said cover-plate, the spring R , arranged between the cover-plate and cut-off or valve, and mechanism for giving said spindle a rising-and-falling and a rocking motion, substantially as described.

3. The combination, with the valve or cut-off, and its spindle projecting above the cover-plate A' , of the seat f , having an upper inclined surface, the loosely-attached arm having upper and lower inclined surfaces, and the arm M , firmly fixed to the spindle and having a lower inclined surface, and suitable mechanism for operating said arms successively, substantially as described.

4. The combination of the valve-spindle D and its spring, the seat f , arm g , pivoted loosely on said spindle and connected by a suitable link with the rocking shaft I , the arm M , fixed to said spindle and connected to shaft P , moving longitudinally in said rocking-shaft I , by devices adapted to communicate a vibratory motion to said arm, substantially as described.

5. The combination of valve-spindle D , seat f , arm g , connected by link h to the rocking shaft I , arm M , link n , bell-crank lever N , link o , connected to swiveling stud O , and the shaft P , carrying said swiveling stud and playing longitudinally in shaft I , substantially as described.

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Witnesses:

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