C. ROGERS.
Water-Closets.

No. 209,295. Patented Oct. 22, 1878.

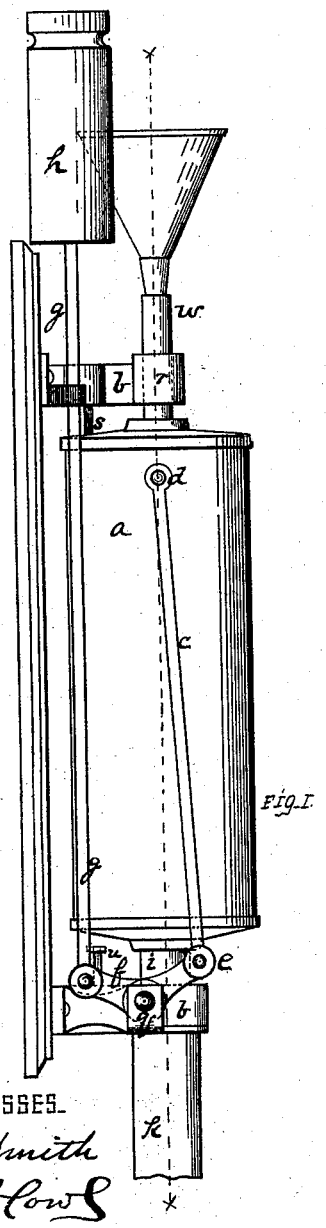

Fig. 1.

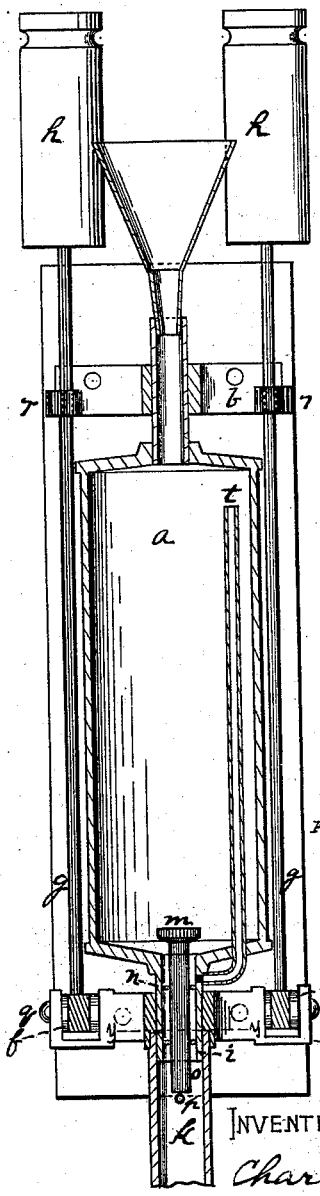

Fig. 2.

Fig. 3.

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CHARLES ROGERS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND THOMAS B. KERR.

IMPROVEMENT IN WATER-CLOSETS.

Specification forming part of Letters Patent No. **209,295**, dated October 22, 1878; application filed October 3, 1878.

To all whom it may concern:

Be it known that I, CHARLES ROGERS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Water-Closets; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation, Fig. 2 a vertical section, and Fig. 3 a detail section at *y y* of Fig. 2, of my improved water-meter.

My invention relates to an improvement in liquid-meters; and it consists specifically in a counterweighted vessel, which receives the water, and when it obtains the requisite quantity is caused to descend by the weight of the contained water, and thereupon to obtain an open water-way and discharge its contents.

The specific device shown by the drawing illustrates the application of my invention to use as the elevated reservoir of an anti-freezing water-closet of the class having an intermittent discharge of water into the basin, produced from a small but continuous stream flowing into the reservoir. Such device is placed in a convenient position above the basin, preferably by attachment to the wall or on a bracket, and the water is led from it to the basin by a pipe.

In this instance the vessel or reservoir *a* is attached to the wall by brackets *b*, which also serve as supports and guides for working parts.

I counterweight the vessel *a* by the following means, viz: rods *c*, having pivotal connections at *d* with the vessel and at *e* with one arm of bent levers *f*, the other arms of which are connected with and sustain the guide-rods *g*, upon which the weights *h* are placed. From the lower extremity of the vessel *a* a short tube, *i*, extends down into the tube or service-pipe *k*, which leads down to the basin. Inside of the vessel *a*, and seated at the mouth of the tube *i*, is a valve, *m*, the stem *o* of which extends down through and projects below the end of the tube *i*. This stem passes through the guide-bars *n*, which extend across the tube *i*, and thereby guides the valve truly to its seat and prevents its displacement. In the tube *k*, and standing directly across the path and within the range of motion of the valve-stem *o*, is a bar, *p*, which is designed to arrest the stem *o* as the vessel *a* descends, and thereby raise the valve *m* from its seat and permit the discharge of the water. The bent levers turn freely on pivots *q* on the lower bracket, and the rods *g* pass through guides *r* on the upper bracket. The weights *h* are sufficiently heavy to sustain the vessel *a* until it receives the required amount of water. The bent levers *f* are so pivoted and connected with the reservoir *a* and weights *h* that when there is a preponderance of weight on one arm sufficient to cause them to turn on their pivots or fulcrums *q* the leverage on the descending arm is constantly increased or multiplied, while on the other arm it is correspondingly lessened, the point of pressure on the descending arm receding from and that of the ascending arm approaching toward the center of motion, which center of motion is a vertical plane through the fulcrum *q*. By this construction the movement of the reservoir is constantly accelerated from the beginning of its movement, either up or down, to the close of such movement, and this enables me to avoid an equilibrium being established between the inflowing and outflowing streams, and the consequent stoppage of the movement of the reservoir.

The range of movement of the reservoir or vessel and the quantity of water necessary to create the same are regulated by the stops *s* and *u*, one at the top and the other at the bottom of the reservoir.

It is apparent that the nearer the weighted arms of the lever *f* are permitted to descend to the horizontal plane of their fulcrums the greater their pressure will be and the greater the quantity of water necessary to overcome such pressure and raise them. The same is true of the vessel *a*—that is, the farther it is permitted to descend the greater will be the weight necessary to raise it, because its sustaining lever-arms are moving from and the weighted arms toward the center of motion. By shortening or lengthening the screw-stops *s* and *u* the movement of the reservoir and the frequency of discharge are regulated. Here-

tofore the latter could be done only by regulating the supply-stream by a cock in the supply-pipe. I do not need the provision.

The operation is as follows: A small stream of water flows continuously into the vessel *a* through the pipe *w* until the desired quantity has accumulated therein. The vessel then descends under the weight of its load until the valve-stem encounters the bar *p* and the valve is opened. A rapid discharge follows, and the vessel being relieved of its load is returned to its elevated position and the valve closes. To prevent any overflow of the reservoir in case it should fail to descend, I have provided an overflow-pipe, *t*, extending from near the top of the vessel *a* through its bottom, and opening into the pipe *i* below the valve. Then, if the water reaches the height of the pipe *t* without a discharge, the surplus passes off through pipe *t*, so that it cannot rise above it and overflow from the vessel *a*. I prefer to place the valve-unseating device a distance below the stem sufficient to permit the vessel *a* to acquire an appreciable velocity or impulse of descent before the valve is opened, for the purpose of causing a sudden opening of the water-way to its fullest extent, and thereby obtain a discharge which is as nearly as possible instantaneous.

It is apparent to the skilled mechanic that the construction of the valve can be varied in numerous ways, or that it may be dispensed with altogether, and the same result obtained. As an instance of the latter, the lower portion of the vessel may be provided with a port or ports and slide in a case having a water-way or water-ways registering with said port or ports. Many other equivalent constructions can be observed. I prefer, however, the construction I have shown as being at once simple, economical, and effective.

My invention is applicable to the measuring of liquids and other purposes.

For the purpose of an anti-freezing water-closet it has great advantages in its freedom from internal obstructions, which would clog it and facilitate the freezing of the water, and also from internal working parts liable to be clogged by congelation of the water. Among its general advantages are reliability of operation and simplicity and economy of construction.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a supply-pipe, a discharge-pipe, and an interposed counterbalanced reciprocating measuring-tank, which effects a discharge into the discharge-pipe when it descends, said combination being and operating substantially as and for the purposes described.

2. The pivoted bent levers, sustaining by one arm the counter-weights and on the other the reservoir, having a limited vertical movement, combined and operating therewith substantially as and for the purposes described.

In testimony whereof I, the said CHARLES ROGERS, have hereunto set my hand this 2d day of October, A. D. 1878.

CHAS. ROGERS.

Witnesses:
JAMES I. KAY,
L. C. FITTER.