(No Model.)

J. B. ERWIN.

WATER METER.

No. 286,285. Patented Oct. 9, 1883.

Fig. 1.

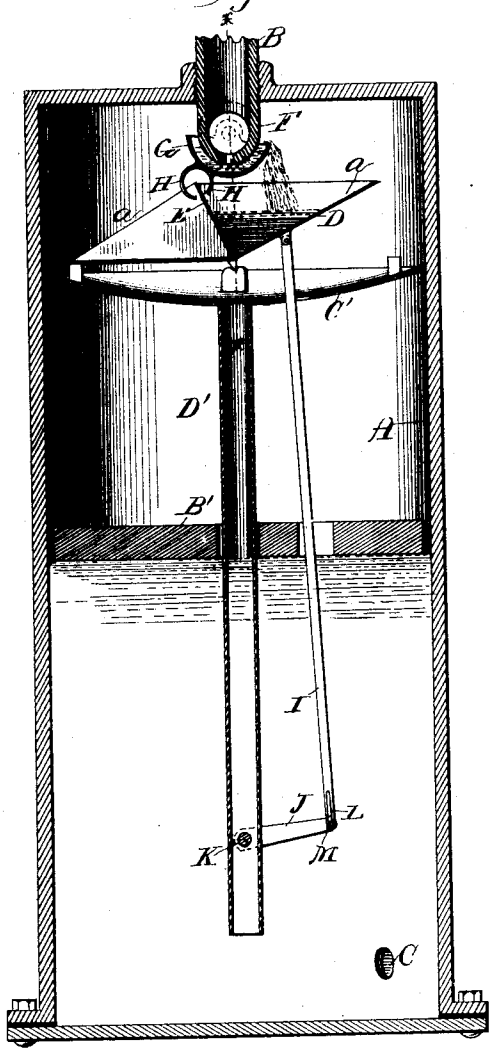


Fig. 2.

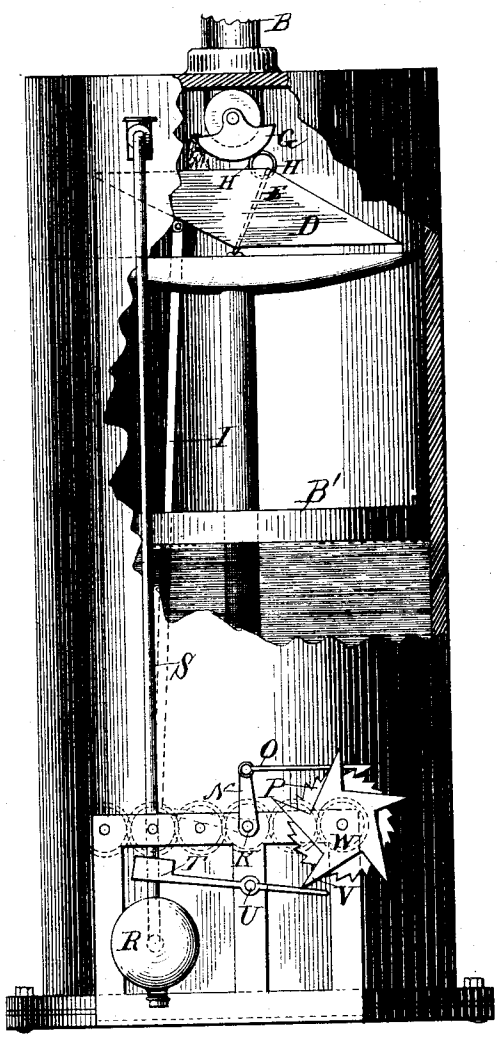


Fig. 3.

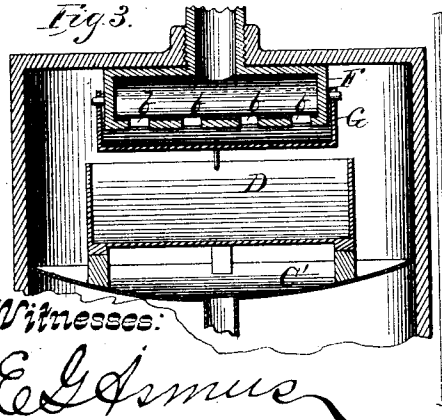
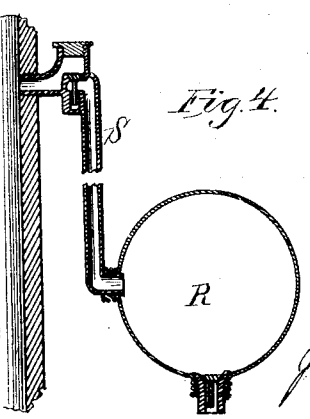


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES B. ERWIN, OF MILWAUKEE, WISCONSIN.

WATER-METER.

SPECIFICATION forming part of Letters Patent No. 286,285, dated October 9, 1883.

Application filed November 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. ERWIN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Water-Meters; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 represents a vertical section of my invention. Fig. 2 is a side view having a part broken away to show the internal mechanism. Fig. 3 represents a vertical section of the upper end of the device, drawn at right angles to that shown in Fig. 1. Fig. 4 is a detail showing a part of the mechanism for supplying the meter with air.

Like parts are represented by the same reference-letters throughout the several views.

A is an air-chamber, into which water is admitted from the reservoir through pipe B.

C is the outlet from which water is led to the place or places of escape.

D is an oscillating measuring-bucket, which is subdivided into two compartments by the partition E. The bucket D is adapted to oscillate beneath the inlet-pipe upon a centrally-located pivotal point, whereby the partition E is thrown alternately back and forth upon one side and the other of the stream, whereby the apartments *a a* are alternately filled and emptied.

To the mouth of the inlet-pipe B is attached a horizontal pipe, F, provided with a series of slots or perforations, *b b b b*, by which the stream is subdivided and its force broken before escaping, whereby it is caused to enter the measuring-bucket slowly.

G is an oscillating trough, which is suspended upon pivotal points beneath the pipe F. The bucket D and trough G are connected together by arms H H or other equivalent device. The arms H H are rigidly attached to the trough at their upper ends, while their lower ends extend down upon the respective sides of the partition E in such a manner that as the bucket D oscillates in one direction the partition E is brought against one of said arms H, thereby causing the trough G to be oscillated in the other direction. The water, in entering the air-chamber, escapes from the pipe F into the trough G, from whence it is alternately shifted from one apartment of the bucket D to the other. The object of the trough G is to stop the flow of the water to the respective apartments of the bucket as soon as such apartments are sufficiently full to begin to tip, and to retain what water flows while the bucket is tipping, as it is obvious that otherwise a certain quantity of water would continue to flow into and over the full side of the bucket after it had begun to tip. By the device as arranged the trough G is brought to an upright position at the same instant that the partition E of the bucket is brought beneath the center of the stream, and the capacity of the trough is such that it will retain all the water that flows into the meter while the bucket is oscillating, and discharge it into the empty side of the bucket when the water continues to flow through the trough into the bucket until the bucket is again filled. Thus it is obvious that the trough G serves as a cut-off to keep back the flow of water from the measuring-bucket while discharging its contents, without in any manner checking the flow of water into the meter, and that consequently a uniform pressure is maintained in the air-chamber, which is transmitted undiminished to the escaping water, which is discharged with a steady uniform flow.

The capacity of the subdivisions of the bucket D are preferably, but not necessarily, equal, as said bucket is so counterpoised as to oscillate in either direction before its subdivisions are quite full, and the registering device is so connected therewith as to be actuated with each alternate oscillation only of said bucket, whereby said register indicates the total capacity of said bucket, or the quantity of water contained in both of said subdivisions, and the relative capacity of said subdivisions is consequently immaterial. The space between the arms H H should be such as to permit of the free movement of the partition E between them as the bucket oscillates in either direction.

The registering device is actuated by the oscillations of the measuring-bucket through the connecting-rod I, lever J, and rod K. The rod K projects through the side of the air-chamber, preferably below the water-line in the air-chamber, it being desired to avoid all possible chances of the escape of air. The rod K may, however, be attached directly to the oscillating bucket in line with the pivotal point of the same. The rod J is provided with a slot, L, which is loosely fitted to the pin M, and is adapted to slide upward and downward past the pin M as the bucket oscillates, whereby the measuring-bucket is permitted to start and gain a certain momentum before meeting any resistance from the rod K or the registering device. The measuring-bucket, having thus gained a slight momentum in tipping the upper end of the slot strikes the pin M, and thus communicates a short downward motion to the lever J, whereby the rod K is slightly turned.

To the projecting end of rod K is attached the lever N. The upper end of the lever N has a slight oscillating movement corresponding with the movement of the rod K. To the upper end of the lever N is attached a pawl, O, which operates the ratchet-wheel P, from which wheel motion is communicated to an ordinary registering device, as indicated by dotted lines in Fig. 1. To insure a continuous supply of air in the air-chamber, a small air-injector, R, is provided, which is connected with the air-chamber, preferably above the water-line, by tube S. The air is forced from the injector by a stroke from the weighted lever T. The lever T is centrally supported by pivot U. The light end of the lever is pressed downward by the teeth of the largest ratchet-wheel V, whereby the weighted end is raised above and permitted to fall upon the injector R as the end of said lever T escapes from the ends of ratchet-teeth. The ratchet-wheel V is attached to one of the axles W of the registering device, by which it is revolved. B′ is a float by which the surface of the water is shielded from contact with the air. C is a catch-basin by which the water is conducted to pipe D′. From pipe D′ the water is led to the standing water below. The basin C is provided with a small opening for the reception of rod I, the location of which is above the central opening, whereby but a small and immaterial quantity of water only escapes around said rod.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a water-meter, a water-receiving air-chamber, A, current-reversing trough G, arms H, and oscillating measuring-bucket D, the compressed air in said chamber being adapted to prevent the water from rising to or obstructing said measuring-bucket while it transmits and maintains a uniform pressure from the reservoir to the escaping water, as set forth.

2. The combination, with an oscillating measuring-bucket, a current-reversing trough, and a water-receiving air-chamber, of an air-injector connected with and adapted to be operated by said measuring-bucket, whereby the supply of air in said air-chamber is maintained, as set forth.

3. The combination, with the oscillating measuring-bucket in a water-receiving air-chamber, of an injector and a register said bucket being adapted, as it oscillates, to simultaneously operate both the injector and register, as set forth.

4. In a water-receiving air-chamber, the combination of trough G, bucket D, and rod I, provided with slot L, said rod I being adapted to communicate motion from the bucket above the water to the operative mechanism of the register and injector below the surface of the water, substantially as and for the purpose specified.

5. The combination, with the water-receiver air-chamber A, of the float B′, said float being adapted to separate the air from the water, whereby the absorption of the air by the water is prevented, as set forth.

6. The combination of the air-chamber A, catch-basin C′, and tube *d*′, said basin and tube being adapted to receive the water as it is discharged from the bucket and discharge the same below the surface of the still water, as set forth.

7. The combination, with an air-chamber of a meter, of an injector and a weighted lever, said lever being connected with and adapted to be operated by the operating mechanism of the registering device, whereby the escape of air from said air-chamber is supplied by the action of the oscillating measuring-bucket, substantially as set forth.

8. The combination of axle W, ratchet-wheels P and V, lever T, and injector R, substantially as and for the purpose specified.

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

JAMES B. ERWIN.

Witnesses:
WM. J. SINNOTT,
C. T. BENEDICT.