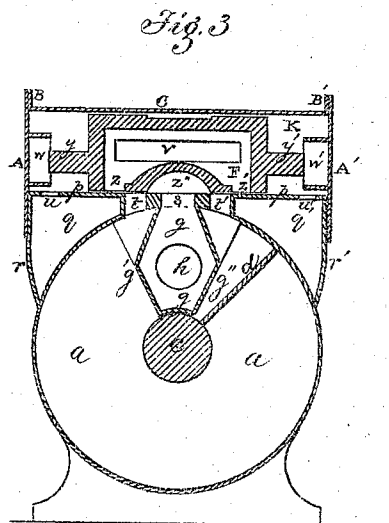
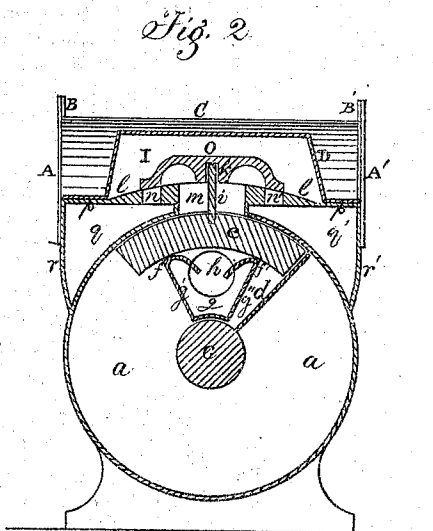
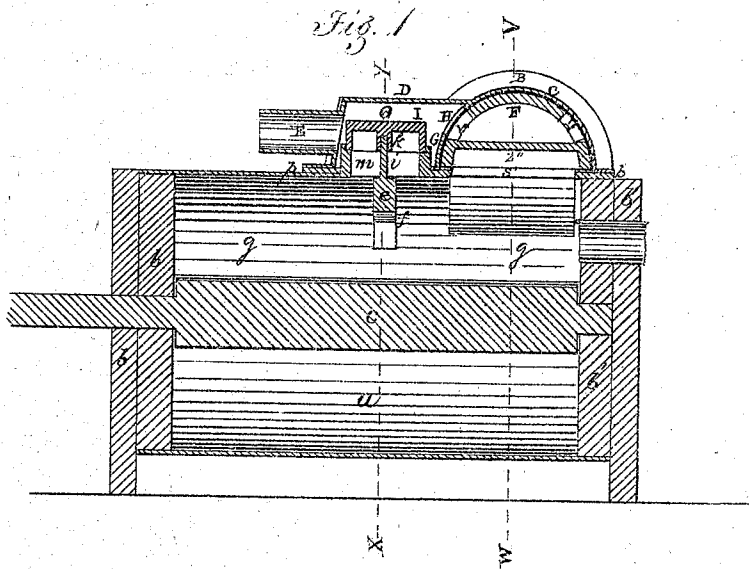


H. M. BARTLETT.

Improvement in Water-Meters.

No. 131,929.

Patented Oct. 8, 1872.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY M. BARTLETT, OF SOUTH DEDHAM, MASSACHUSETTS.

IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. 131,929, dated October 8, 1872; antedated October 5, 1872.

To all whom it may concern:

Be it known that I, HENRY M. BARTLETT, of South Dedham, in the county of Norfolk and State of Massachusetts, have invented certain Improvements in Water-Meters, of which the following is a specification:

Figure 1 of the drawing is a central vertical longitudinal section of my improved water or other liquid meter; Fig. 2 is a transverse vertical section taken in the line X Y; and Fig. 3 is a transverse vertical section taken in the line W V of the same.

The present invention relates to certain new and useful improvements on a former invention in water-meters, patented by me September 19, 1871, whereby the operation of the same is simplified and a more economical and effective meter is produced. My improvements consist mainly in operating, by a radial action, a transverse sliding valve-piston in connection with a longitudinal main valve-piston, each supplied with a peculiar arrangement of ports, channels, and valves—as will be more fully explained hereafter—so as to produce a reciprocal motion that will actuate proper registering devices connected with a meter.

In the drawing, *a a* represent a cylinder provided with supporting-heads *b b' b'*, which form bearings for a rod or piston, *c*, that has a radiating wing, *d*, which revolves with it and acts on either end of a curved transverse slide, *e*, which travels through and is supported in slots *f f'*, formed in the upper portion of the angular sides *g' g''* of a longitudinal abutment-chamber, *g g*, extending the length of the cylinder *a a*, and formed by the angular sides *g' g''*, and a segmental bottom extending over the top of the rod *c*, and closed at the ends by the heads *b b'*, through the latter of which an eduction-pipe, *h*, connecting with the abutment-chamber *g g*, passes. The curved transverse slide *e* is provided with a vertical stem, *i*, that extends up from its top and connects with a socket, *k*, formed on and extending downward from the under side of a valve, *O*, which slides transversely on and is held by the upward extended sides of a curved bridge, *l l*, which is formed with a central square port, *m*, and two side ports, *n n'*, arranged transversely with the bridge *l l*, which is formed on the top *p p* of a portion of the meter that extends up from the cylinder *a a*, forming longi-

tudinal chambers or channels *q q'* between the top of the cylinder *a a* and the bottom and sides *r r'* of the upper portion *p p* of the meter. The upper portion *p p* is provided with a longitudinal exhaust-port, *s*, which connects with the abutment-chamber *g g* and its eduction-pipe *h*, and has two longitudinal ports, *t t'*, on each side of the exhaust-port *s*, connecting with the interior of the cylinder *a a*. The channels *q q'* are each provided with longitudinal ports *u u'*, formed in the top of the upper portion *p p* of the meter, and connecting with the ports *n n'* of the slide-valve *O*. Sliding transversely on the upper portion *p p* of the meter, so as to open or close the ports *s t t'* and *u u'*, is a semicircular main valve-piston, *F*, formed with longitudinal ports *v v'*, formed in its periphery above two side transverse ports, *z z'*, and a central dome-valve, *z''*, formed parallel with the ports *z z'*. The main or valve-piston *F* is provided at each end with projecting stems *y y'*, which act against bumpers *w w'*, formed on the inside of semicircular heads *A A*, attached to the sides *r r* of the upper portion *p p*, and flanges *B B'*, formed on the ends of a semicircular case, *C*, that is attached to the upper portion *p p* of the meter, and fits over the main valve-piston *F*, and has formed on it a case, *D*, that covers the sliding valve *O*, and is provided with an induction-pipe, *E*, attached to its front. The side of the case *C* forms a partition, *G*, which is provided with a port, *H*, formed longitudinally with the valves *O F*, and divides the cases *C* and *D* into chambers *I* and *K*.

The operation of my improved meter is as follows: The water or other fluid entering through the induction-pipe *E*, passes through the pressure-chamber *I* into one of the ports *n* or *n'* of the sliding valve *O*, and thence into one of the channels *q* and through the port *u*, is brought to bear against one end of the main valve-piston *F*, causing it to travel to the opposite side of the meter, and, opening the port *t*, through which the water or other fluid passes, and pressing against one side of the wing *d*, causes the rod or piston *c* to revolve and carry the wing *d* around to the opposite side *g'* of the abutment *g g*, thus striking the other end of the curved slide *e*, and carrying the slide-valve *O* and opening its opposite port *n'*, thereby causing the water or other fluid to

pass into the channel q' , and through the port u' , and operate against the other end of the main valve-piston F, thus forcing it back to its former position and opening the port t' , which admits the water, &c., against the other side of the wing d , thereby revolving it in an opposite direction and operating the slide-valve O and valve-piston F, so as to close one set of ports and open the other; the water, &c., in the meanwhile, passing out through the exhaust-port s into the abutment-chamber $g g$, and finding its final exit through the eduction-pipe h .

By continuing the operation as above described, the wing d is constantly revolved from one side to the other, thus actuating the slide e so as to produce a continued reciprocating movement to the valves O and F, by which any suitable indicating device connected with the meter may be operated.

The channels $q q'$ are direct in their communication from the valves O and F through the ports $n n'$ to the ports $u u'$, instead of being cross-channels, as in my previous patent; and instead of forming the valve-piston F with two exhaust-spaces, as formerly, it is arranged, in the present instance, with but one exhaust-space, z'' ; thus economizing labor and material in the construction, and, by the arrangement of the several devices hereinabove described, producing a meter effective in its operation.

Having thus fully described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. A water or other fluid meter provided with a radial wing, d , revolving with a rod or piston, c , against either end of a curved transverse slide, e , so as to operate reciprocally back and forth transversely with the meter, a sliding valve, O, and a main valve-piston, F, and open and close ports s , t' , $u u'$, $v v'$, $z z'$, $n n'$, and m , by the action of the water on the said wing d through the said ports and channels $q q'$, chambers $g g$ I K, pipes E h , and port H, so as to regulate and correctly indicate, on a suitable registering device connected with the meter, the flow of water or other fluid passing through the same, substantially as specified.

2. The rod or piston c , provided with radial wing d , operating against either side of abutment-chamber $g g$, in combination with slide e , bridge $l l$, and sliding valve O, substantially as specified.

3. The cylinder $a a$, formed with upper portion $p p$, provided with curved bridge $l l$, ports $m n n' s t t' u u'$, and chambers or channels $q q'$, abutment-chamber $g g$, heads $b b b'$, in combination with the rod or piston c , wing d , valve O, and main valve-piston F, substantially as specified.

4. The sliding valve O formed with socket k , and traveling forward and back on the bridge $l l$, transversely with the meter, so as to open and close the ports $n n'$, in combination with slide e , piston c , and cylinder $a a$, substantially as specified.

5. The main valve-piston F, formed with longitudinal ports $v v'$, transverse ports $z z'$, dome-valve z'' , projecting stems $y y'$, and operating parallel with the sliding valve O transversely back and forth on the meter, in combination with the valve O, piston c , slide e , cylinder $a a$, and cases C D, substantially as specified.

6. The case C, attached to the top of the meter and formed with projecting case D, partition G, port H, eduction-pipe E, chambers I K, flanges B B', heads A A', and bumpers $w w'$, in combination with main piston-valve F, sliding valve O, and cylinder $a a$, substantially as specified.

7. The curved transverse slide e , provided with stem i traveling in slots $f f'$, in combination with sliding valve O, piston c , wing d , and abutment $g' g''$, substantially as specified.

8. The abutment-chamber $g g$, formed with angular sides $g' g''$, slots $f f'$, in combination with piston c , wing d , cylinder $a a$, valve O, main valve-piston F, and cases C D, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY M. BARTLETT.

Witnesses:

SAML. M. BARTON,
CARROLL D. WRIGHT.